

## Lymphoma - Non-Hodgkin - Treatment Options [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 11/2014

**ON THIS PAGE:** You will learn about the different ways doctors use to treat people with this type of lymphoma. To see other pages, use the menu on the side of your screen.

This section outlines treatments that are the standard of care (the best proven treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test approaches such as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, visit the [Clinical Trials](#) [3] and [Latest Research](#) [4] sections.

### Treatment overview

In cancer care, different types of doctors often work together to create a patient's overall treatment plan that combines different types of treatments. This is called a [multidisciplinary team](#) [5]. The multidisciplinary team will also include a variety of advanced practitioners, such as nurse practitioners, physician assistants, and pharmacists, and allied health professionals, such as social workers, dieticians, and genetic counselors.

There are three main treatments for NHL: chemotherapy, radiation therapy, and immunotherapy. Occasionally, surgery or stem cell transplantation may be considered. Often, combinations of these treatments are used. Descriptions of these treatment options are listed below. Treatment options and recommendations depend on several factors, including [the type](#) [6] and [stage](#) [7] of NHL, possible side effects, and the patient's preferences and overall health. Your care plan may also include treatment for symptoms and side effects, an important part of cancer care. Take time to learn about all of your treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your doctor and what you can expect while receiving the treatment. Learn more about [making treatment decisions](#) [8].

### Watchful waiting

Some patients with indolent lymphoma may not need immediate treatment if they are otherwise healthy and the lymphoma is not causing any symptoms or problems with other organs. During

watchful waiting, also called watch-and-wait or active surveillance, patients are closely monitored using physical examinations, CT scans or other imaging tests, and laboratory tests on a regular basis. Treatment only begins if the person develops symptoms or tests indicate that the cancer is getting worse. For some patients with indolent lymphoma, the watch-and-wait approach does not affect the chances of survival as long as they have regular and careful follow-up care.

## Chemotherapy

Chemotherapy is the use of drugs to destroy cancer cells in the lymph nodes, lymph organs, and bone marrow, usually by stopping the cancer cells' ability to grow and divide. It is the main treatment for NHL. Chemotherapy is given by a medical oncologist, a doctor who specializes in treating cancer with medication. A medical oncologist is most often the primary cancer specialist for patients with lymphoma.

Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally). A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.

The chemotherapy regimen used depends on the stage [9] and type [10] of NHL. The most common chemotherapy combination for the initial treatment of NHL is called CHOP and contains four drugs: cyclophosphamide (Cytoxan, Neosar), doxorubicin (Adriamycin), vincristine (Vincasar, Oncovin), and prednisone (multiple brand names). For patients with B-cell lymphomas, adding rituximab to CHOP works better than using CHOP alone. See the section on monoclonal antibodies below. There are other common combinations of chemotherapy regimens as well, including BR (bendamustine and rituximab), R-CVP (rituximab, cyclophosphamide, vincristine, prednisone), and fludarabine-based combinations.

The side effects of chemotherapy depend on the individual, type of drug and dose used, and how long it is taken, but they can include fatigue, temporary lowering of blood counts, risk of infection, nausea and vomiting, hair loss, loss of appetite, constipation or diarrhea, rash, damage to nerves, and decreased heart function. These side effects can be managed during treatment and usually go away once treatment is finished.

Chemotherapy may also cause long-term side effects, also called late effects. People with lymphoma may also have concerns about if or how their treatment may affect their sexual function and fertility [11]. Talk about these topics with the health care team before treatment begins. Learn more about late effects of treatment [12].

Learn more about chemotherapy [13] and preparing for treatment [14]. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using searchable drug databases [15].

## Radiation therapy

Radiation therapy is the use of high energy x-rays or other particles like electrons or protons to destroy cancer cells and shrink cancerous tumors. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. Radiation treatment for NHL is usually external-beam radiation therapy, which is radiation given from a machine outside the body. A radiation therapy regimen usually consists of a specific number of treatments given over a set period of time.

Radiation therapy is usually given following or in addition to chemotherapy, depending on the NHL subtype [6]. It is most often given to patients who have lymphoma that is located in only one area of the body or who have a lymph node that is particularly large, usually more than 10 centimeters across. It may also be given for the treatment of pain or in very low doses to patients with advanced disease who have localized symptoms that can be relieved using radiation therapy.

General side effects from radiation therapy may include fatigue and mild skin reactions. There may also be side effects related to the part of the body that received the radiation. For example, patients who have had radiation therapy directed at the chest may experience lung inflammation called pneumonitis, and patients who had radiation therapy directed at the bones may have low blood counts.

Most side effects go away soon after treatment is finished, but radiation therapy may also cause late effects [12]. Sexual problems and infertility may occur after radiation therapy to the pelvis. Before treatment begins, talk with your doctor about the possible sexual and fertility-related side effects of your treatment and the available options for preserving fertility for both men [16] and women [17].

Learn more about radiation therapy [18].

## **Immunotherapy**

Immunotherapy, considered a type of biologic therapy, is designed to boost the body's natural defenses to fight the cancer. It uses materials made either by the body or in a laboratory to improve, target, or restore immune system function. Monoclonal antibodies, interferon, and vaccines [19] are biologic therapies being tested in clinical trials as treatments for different subtypes of NHL [6]. Each is described below.

**Monoclonal antibodies.** Monoclonal antibodies are directed against a specific protein and do not affect cells that don't have the protein. A monoclonal antibody called rituximab is used to treat many different types of B-cell lymphoma. Rituximab works by targeting a molecule called CD20 that is located on the surface of all B cells and B-cell lymphomas. When the antibody attaches to this molecule, some lymphoma cells die, and others appear to become more likely to die with chemotherapy. Although it works well by itself, research shows that it worked better when added to chemotherapy for patients with most types of B-cell NHL. Rituximab is also given after remission for indolent lymphomas to increase the length of the remission. There are two other monoclonal antibodies against CD20 that are approved for use in lymphomas that have returned after initial treatment: ofatumumab (Arzerra) and obinotuzimab (Gazyva).

Brentuximab vedotin is another type of monoclonal antibody, called an antibody-drug conjugate. Antibody-drug conjugates attach to targets on cancer cells and then release a small amount of chemotherapy or other toxins directly into the tumor. Brentuximab vedotin was approved in 2011 for the treatment of systemic anaplastic large cell lymphoma for patients who did not benefit from at least one type of chemotherapy and for Hodgkin lymphoma patients who did not benefit from stem cell transplantation or were unable to undergo stem cell transplantation. Research on the benefits of other newer monoclonal antibodies for lymphoma is ongoing.

**Radiolabeled antibodies.** Radiolabeled antibodies are monoclonal antibodies with radioactive particles attached that are designed to focus the radiation directly to the lymphoma cells. These types of drugs are new, and research is ongoing. In general, the radioactive antibodies are thought to be stronger than regular monoclonal antibodies but more damaging to the bone marrow. This type of therapy is also called radioimmunotherapy (RIT).

Learn more about [immunotherapy](#) [20].

## **Stem cell transplantation/bone marrow transplantation**

A stem cell transplant is a medical procedure in which bone marrow that contains cancer is replaced by highly specialized cells, called hematopoietic stem cells, that develop into healthy bone marrow. Hematopoietic stem cells are blood-forming cells found both in the bloodstream and in the bone marrow. Today, this procedure is more commonly called a stem cell transplant, rather than a bone marrow transplant, because it is stem cells in the blood that are typically being transplanted, not the actual bone marrow tissue.

Stem cell transplantation is considered an aggressive treatment and is generally used only for patients with NHL whose disease is progressive or recurrent (see the [Stages](#) [7] section). For some NHL subtypes, such as mantle cell lymphoma and some T-cell lymphomas, stem cell transplantation may be recommended as part of the initial treatment plan to prevent recurrence. Before recommending transplantation, doctors will talk with the patient about the risks of this treatment and consider several other factors, such as the type of NHL, results of any previous treatment, and patient's age and general health. It is important to talk with a doctor at an experienced transplant center about the risks and benefits of stem cell transplantation.

There are two types of stem cell transplantation depending on the source of the replacement blood stem cell: allogeneic (ALLO) and autologous (AUTO). ALLO uses donated stem cells, while AUTO uses the patient's own stem cells. In both types, the goal is to destroy all of the cancer cells in the marrow, blood, and other parts of the body using high doses of chemotherapy and/or radiation therapy and then allow replacement blood stem cells to create healthy bone marrow. Higher doses of chemotherapy are often more effective against recurrent NHL than standard doses of chemotherapy. Learn more about [stem cell and bone marrow transplantation](#) [21].

## **Getting care for symptoms and side effects**

Lymphoma and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the disease, an important part of care is relieving a person's symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient

with his or her physical, emotional, and social needs.

Palliative care can help a person at any stage of illness. People often receive treatment for the lymphoma and treatment to ease side effects at the same time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, and radiation therapy. Talk with your doctor about the goals of each treatment in your treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and supportive care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it is addressed as quickly as possible. Learn more about [palliative care](#) [22].

## **Remission and the chance of recurrence**

A remission is when lymphoma cannot be detected in the body and there are no symptoms. This may also be called "no evidence of disease" or NED.

A remission can be temporary or permanent. This uncertainty causes many survivors to feel worried or anxious that the disease will come back. While many remissions are permanent, it's important to talk with your doctor about the possibility of the disease returning. Understanding the risk of recurrence and the treatment options may help you feel more prepared if the lymphoma does return. Learn more about [coping with the fear of recurrence](#) [23].

As explained in the [Stages](#) [7] section, if the cancer does return after a remission, it is called recurrent cancer. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

When this occurs, a cycle of testing will begin again to learn as much as possible about the recurrence, including whether the cancer's stage has changed. Sometimes, another tissue biopsy is required to prove that the lymphoma has not changed or transformed into a more aggressive subtype. After testing is done, you and your doctor will talk about your treatment options. Treatment for recurrent NHL depends on three factors: where the cancer is, the type of treatment given previously, and the patient's overall health. Often the treatment plan will include the therapies described above, such as chemotherapy, radiation therapy, immunotherapy, or stem cell transplantation, but they may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about [dealing with cancer recurrence](#) [24].

## Progressive NHL

Some patients with NHL may not experience a complete remission and will have small amounts of residual disease that is stable or will have residual disease that is actively growing despite treatment. If there is a small amount of residual disease that is stable, some patients with indolent NHL may be observed for a period of time or be treated with monoclonal antibodies or other drugs. These patients may have breaks in treatment, sometimes lasting many years. If the lymphoma begins to grow or spread, this is called progression of disease, and active treatment will begin again. It is important to understand that remission is not always possible in some indolent lymphomas; however, patients can be safely monitored even if there is leftover disease, as long as there are no symptoms and the lymphoma has not affected blood counts or other organs.

For NHL patients with residual disease that is growing despite active treatment, see Refractory NHL below.

## Refractory NHL

If standard treatments stop working well for NHL or the lymphoma comes back within six months of standard treatment, this is called refractory NHL. Patients with this diagnosis are encouraged to talk with doctors who are lymphoma experts to discuss options for the best treatment plan. Learn more about seeking a [second opinion](#) [25] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include [clinical trials](#) [3].

Choice of treatment for refractory NHL depends on three factors: where the cancer is, the type of treatment given previously, and the patient's overall health. The doctor may suggest chemotherapy, stem cell transplantation, or a clinical trial. Supportive care will also be important to help relieve symptoms and side effects.

For most patients, a diagnosis of refractory NHL is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a [support group](#) [26].

## If treatment fails

Recovery from NHL is not always possible. If treatment is not successful or diagnosed at a very late stage, the disease may be called advanced lymphoma.

This diagnosis is stressful, and this is difficult to discuss for many people. However, people with advanced NHL, especially those with indolent lymphoma, may continue to live for a long time after a diagnosis of advanced cancer. It is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced cancer and who are expected to live less than six months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about [advanced cancer care planning](#) [27].

After the death of a loved one, many people need support to help them cope with the loss. Learn more about [grief and loss](#) [28].

*The next section helps explain clinical trials, which are research studies. Use the menu on the side of your screen to select About Clinical Trials, or you can select another section, to continue reading this guide.*

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**Links:**

- [1] <http://www.cancer.net/cancer-types/lymphoma-non-hodgkin/treatment-options>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/19216>
- [4] <http://www.cancer.net/node/19220>
- [5] <http://www.cancer.net/node/25356>
- [6] <http://www.cancer.net/node/19210>
- [7] <http://www.cancer.net/node/19214>
- [8] <http://www.cancer.net/node/24582>
- [9] <http://www.cancer.net/cancer-types/lymphoma-non-hodgkin/stages>
- [10] <http://www.cancer.net/cancer-types/lymphoma-non-hodgkin/subtypes>
- [11] <http://www.cancer.net/node/25240>
- [12] <http://www.cancer.net/node/19218>
- [13] <http://www.cancer.net/node/24723>
- [14] <http://www.cancer.net/node/24473>
- [15] <http://www.cancer.net/node/25369>
- [16] <http://www.cancer.net/node/25268>
- [17] <http://www.cancer.net/node/29096>
- [18] <http://www.cancer.net/node/24728>
- [19] <http://www.cancer.net/node/24721>
- [20] <http://www.cancer.net/node/24726>
- [21] <http://www.cancer.net/node/24717>
- [22] <http://www.cancer.net/node/25282>
- [23] <http://www.cancer.net/node/25241>
- [24] <http://www.cancer.net/node/25042>
- [25] <http://www.cancer.net/node/25355>
- [26] <http://www.cancer.net/node/25383>
- [27] <http://www.cancer.net/node/25113>
- [28] <http://www.cancer.net/node/25111>