

[Home](#) > [Types of Cancer](#) > [Lymphoma - Non-Hodgkin - Childhood](#) > [Lymphoma - Non-Hodgkin - Childhood - Treatment Options](#)

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## [Lymphoma - Non-Hodgkin - Childhood - Treatment Options](#) [1]

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

In general, cancer in children is uncommon, so it can be hard for doctors to plan treatments unless they know what has been most effective in other children. That's why more than 60% of children with cancer are treated as part of a clinical trial. [Clinical trials](#) [3] are research studies that compare standard treatments (the best known treatments available) with newer approaches to treatments that may be more effective. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Studying new treatments involves careful monitoring using scientific methods and all participants are followed closely to track their health and progress.

To take advantage of these newer treatments, children with cancer should be treated at a specialized cancer center. Doctors at these centers have extensive experience in treating children with cancer and have access to the latest research. A doctor who specializes in treating children with cancer is called a pediatric oncologist. If a pediatric cancer center is not nearby, general cancer centers sometimes have pediatric specialists who are able to be part of your child's care.

In many cases, a team of doctors works with a child and the family to provide care; this is called a [multidisciplinary team](#) [4]. Pediatric cancer centers often have extra support services for children and their families, such as child life specialists, dietitians, physical and occupational

therapists, social workers, and counselors. Special activities and programs to help your child and family cope may also be available. These services can reduce emotional pain and financial concerns and should be used to the fullest extent possible.

Descriptions of the most common treatment options for NHL are listed below. Four main types of treatment are used for NHL in children: chemotherapy, immunotherapy, radiation treatment, and stem cell/bone marrow transplantation. Sometimes, the treatments are used in combination. Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, and the patient's preferences and overall health. Take time to learn about your child's treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your child's doctor and what your child can expect while receiving the treatment. Learn more about [making treatment decisions](#) [5].

The treatment of childhood NHL often involves prolonged hospital stays during each treatment cycle (one to two weeks). Some of the treatments may cause significant [mucositis](#) [6] (inflammation of the mucous membranes) that may lead to pain, discomfort, and difficulty eating and drinking. Be sure to talk with your child's health care team about ways to relieve such side effects. Care for side effects is an important part of your child's overall treatment plan.

## **Chemotherapy**

Chemotherapy is the primary treatment for NHL. Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping the cancer cells' ability to grow and divide. Chemotherapy is given by a pediatric or medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy gets into 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). In some cases, chemotherapy may be injected into the cerebral spinal fluid (CSF). Chemotherapy delivered by any of these ways eventually enters the bloodstream to reach cancer cells throughout the body.

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.

Because chemotherapy attacks rapidly dividing cells, including those in normal tissues such as the hair, lining of the mouth, intestines, and bone marrow, children receiving chemotherapy may lose their hair, develop mouth sores, or have nausea and vomiting. In addition, chemotherapy may lower the body's resistance to infection, lead to increased bruising and bleeding, and cause fatigue. These side effects can be controlled during treatment and usually go away after chemotherapy is completed. The severity of the side effects depends on the type and amount of the drug being given and the length of time the child receives the drug.

Treatment for NHL often includes drugs such as cyclophosphamide, doxorubicin, vincristine, prednisone, 6-mercaptopurine, methotrexate, cytarabine, asparaginase, and sometimes ifosfamide and etoposide. Your child's doctor may decide to use a specific drug based on the subtype or stage.

Learn more about the basics of [chemotherapy](#) [7] and [preparing for treatment](#) [8]. The medications used to treat cancer are continually being evaluated. Talking with your child's doctor is often the best way to learn about the medications prescribed for your child, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using [searchable drug databases](#) [9].

## **Immunotherapy**

Immunotherapy, also called 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. Learn more about the basics of [immunotherapy](#) [10].

## **Radiation therapy**

Radiation therapy is the use of high-energy x-rays or other particles to destroy cancer cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. The most common type of radiation therapy is called external-beam radiation therapy, which is radiation given from a machine outside the body. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

Radiation therapy for NHL in children is generally used only in emergency or life-threatening situations. For example, it may be used to treat pressure from a tumor on the windpipe or spinal cord. Also, it may be used if the lymphoma affects the central nervous system (CNS; brain and spine) at the time of diagnosis.

Side effects from radiation therapy include fatigue, mild skin reactions, upset stomach, and loose bowel movements. Most side effects go away soon after treatment is finished. Learn more about the basics of [radiation therapy](#) [11].

## **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 bone marrow transplant, because it is the stem cells that are typically being transplanted, not the actual bone marrow tissue.

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 the patient's age and general health.

There are two types of stem cell transplantation, depending on the source of the replacement blood stem cells: 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. Learn more about the basics of [stem cell and bone marrow transplantation](#) [12]

### **[13]Getting care for symptoms and side effects**

Cancer and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the cancer, an important part of cancer care is relieving a child'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 is any treatment that focuses on reducing symptoms, improving quality of life, and supporting patients and their families. Any person, regardless of age or type and stage of cancer, may receive palliative care. It works best when palliative care is started as early as needed in the cancer treatment process. People often receive treatment for the cancer and treatment to ease side effects at the same time. In fact, children 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, emotional support, and other therapies. Your child may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, or radiation therapy. Talk with your child's doctor about the goals of each treatment in the treatment plan.

Before treatment begins, talk with your child's health care team about the possible side effects of your specific treatment plan and palliative care options. And during and after treatment, be sure to tell your child's doctor or another health care team member if your child is experiencing a problem so it can be addressed as quickly as possible. Learn more about [palliative care](#) [14].

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

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

A remission may be temporary or permanent. This uncertainty causes many people to worry that the cancer will come back. While many remissions are permanent, it's important to talk with your child's doctor about the possibility of the cancer returning. Understanding your child's risk of recurrence and the treatment options may help you feel more prepared if the NHL does return. Learn more about [coping with the fear of recurrence](#) [15].

If the cancer does return after the original treatment, 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. After testing is done, your child's doctor will talk with you about treatment options. Often the treatment plan will include the therapies described above such as chemotherapy and bone marrow/stem cell transplantation but they may be used in a different combination or given at a different pace. Your child's doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer. Whichever treatment plan you choose, palliative care will be important for relieving symptoms and side effects.

Choice of treatment for recurrent NHL depends on three factors:

- Whether the tumor came back in the same place or in another part of the body
- The type of treatment the child had for the original tumor
- The overall health of the child

People with recurrent cancer often experience emotions such as disbelief or fear. Patients and their families 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](#) [16].

## **If treatment fails**

Although treatment is successful for the majority of children with NHL, sometimes it is not. If a child's cancer cannot be cured or controlled, this is called advanced or terminal cancer. This diagnosis is stressful, and advanced cancer may be difficult to discuss. However, it is important to have open and honest conversations with your child's doctor and health care team to express your family's 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.

Parents or guardians are encouraged to think about where the child would be most comfortable: at home, in a home-like setting elsewhere, in the hospital, or in a hospice environment. Hospice care is a type of palliative care for people who are expected to live less than six months. It is designed to provide the best possible quality of life for people who are near the end of life. Nursing care and special equipment can make staying at home a workable alternative for many families. Some children may be happier if they can arrange to attend school part-time or keep up other activities and social connections. The child's health care team can help parents or

guardians decide on an appropriate level of activity. Making sure a child is physically comfortable and free from pain is extremely important as part of end-of-life care. Learn more about [caring for a terminally ill child](#) [17] and [advanced cancer care planning](#) [18].

The death of a child is an enormous tragedy, and families may need support to help them cope with the loss. Pediatric cancer centers often have professional staff and support groups to help with the process of grieving. Learn more on [grieving the loss of a child](#) [19].

*The [next section in this guide is About Clinical Trials](#) [3] and it offers more information about research studies that are focused on finding better ways to care for people with cancer. Or, use the menu on the side of your screen to choose another section to continue reading this guide.*

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## Links

[1] <http://www.cancer.net/cancer-types/lymphoma-non-hodgkin-childhood/treatment-options>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/19201>

[4] <http://www.cancer.net/node/25356>

[5] <http://www.cancer.net/node/24582>

[6] <http://www.cancer.net/node/25051>

[7] <http://www.cancer.net/node/24723>

[8] <http://www.cancer.net/node/24473>

[9] <http://www.cancer.net/node/25369>

[10] <http://www.cancer.net/node/24726>

[11] <http://www.cancer.net/node/24728>

[12] <http://www.cancer.net/node/24717>

[13]

<http://www.cancer.net/navigating-cancer-care/how-cancer-treated/bone-marrowstem-cell-transplantation/what-stem-cellbone-marrow-transplantation>

[14] <http://www.cancer.net/node/25282>

[15] <http://www.cancer.net/node/25241>

[16] <http://www.cancer.net/node/25042>

[17] <http://www.cancer.net/node/25280>

[18] <http://www.cancer.net/node/25113>

[19] <http://www.cancer.net/node/25288>