NATIONAL MARROW DONOR PROGRAM®

Non-Hodgkin's Lymphoma

Non-Hodgkin's Lymphoma (NHL) is a cancer of a type of white blood cell called lymphocytes. Lymphocytes are part of the immune system that protects the body from infection and disease. NHL is a group of 30 or more cancers that begin in the lymphocytes. These cancers are similar in some ways but have many differences in the way they affect people. They are all called non-Hodgkin's lymphoma to distinguish them from another cancer of the lymphocytes called Hodgkin's lymphoma.

Symptoms and Diagnosis

NHL is the fifth most common cancer in the United States, with about 56,000 cases diagnosed each year. Although NHL can occur in people of any age, fewer than 5% of people with NHL are children. The risk of getting NHL increases with age, and the average age at diagnosis is about 65. It occurs somewhat more often in men than women. For most people, the cause of NHL is unknown.

Lymphocytes and Symptoms of NHL

NHL is a cancer of the lymphocytes. Lymphocytes make antibodies, proteins that attach to foreign cells and mark them to be attacked. Lymphocytes also direct the rest of the immune system to attack the foreign cells and help in the attack. Lymphocytes are stored in lymph nodes and travel through the body in a network of small lymph vessels. As fluid carrying the lymphocytes passes through the lymph nodes, the lymph nodes filter out bacteria and viruses that can cause infection. This is why the lymph nodes sometimes become swollen when the body is fighting an infection.

Infection is by far the most common cause of a swollen lymph node, but a swollen lymph node can also be a symptom of NHL. NHL begins when a lymphocyte changes into a cancer cell that divides and grows into more and more cancer cells. These cancer cells join, forming tumors (lymphomas) in the lymph nodes and elsewhere in the body.

Many people with NHL do not notice any symptoms. Their disease may be found during a routine physical exam or a test for another health problem. When people do notice symptoms, a swollen lymph node is the most common. Other symptoms may be caused by the growth of tumors. These symptoms depend on where the tumor is growing. For example, a person may have stomach pain or indigestion if a tumor grows in or near the stomach. Other common symptoms include fever, night sweats, unexplained weight loss (losing more than 10% of the body's weight in 6 months), fatigue or extreme tiredness, loss of appetite, very itchy skin. These symptoms can also be signs of other illnesses. If you have these symptoms, it is important to see your doctor for a diagnosis.

Diagnosis

To diagnose lymphoma, a doctor will look at a sample of cells from an affected lymph node or tumor. Taking a sample of cells is called a biopsy. For a biopsy, a doctor usually removes all of the tumor in surgery, though sometimes only part of it is removed. The cell sample is checked in a laboratory to find out whether a person has lymphoma, the type of lymphoma and other information that can help a doctor plan treatment. The doctor will also do a physical exam, health history and other tests to find out more about the lymphoma.

A doctor will diagnose the type of NHL, the stage (whether the tumor has spread and how far) and how fast the tumor is growing. The doctor will also assess a risk score. The risk score helps predict the chances that a person's disease will return after treatment as well as his or her overall chances of survival (prognosis). All of this information is important to planning the best treatment.

Types, Staging and Risk Scores

Types of NHL

Non-Hodgkin's lymphoma includes more than 30 lymphomas that are different in many ways. These lymphomas can be grouped together based on how quickly they are growing:

- Lymphomas that tend to grow slowly are called indolent or low-grade lymphomas. Some – but not all – indolent lymphomas may need little treatment other than watchful waiting for years.
- Lymphomas that tend to grow quickly are called aggressive lymphomas. They may also be called intermediate-grade or high-grade. Aggressive lymphomas may become life-threatening within months without effective treatment. Over time an indolent lymphoma can sometimes change into an aggressive lymphoma.

Lymphomas are also grouped based on the type of lymphocyte that is affected. There are two kinds of lymphocytes that can develop lymphomas, B cells and T cells. Most NHLs (about 85%) are B-cell lymphomas.

Three of the more common types of NHL – all of which are sometimes treated with a bone marrow or cord blood transplant – are:

- Diffuse large B-cell lymphoma – About 30% of people with NHL have this type. It is an aggressive B-cell lymphoma.
- Follicular lymphoma – About 20% of people with NHL have this type. It is an indolent B-cell lymphoma.
- Mantle cell lymphoma – About 6% of people with NHL have this type. It is an aggressive B-cell lymphoma that is often widespread at diagnosis.

NHL Staging

A doctor will also determine the stage of lymphoma, or how much cancer is in the body. The stage is based on how many groups of lymph nodes and/or organs show cancer and whether the cancer is limited to a small area or widespread. There are four stages. Stage I disease is limited to a small area, while stage IV disease is more widespread. The more widespread the disease, the harder it may be to treat the cancer.

When lymphomas are found early, they are more likely to be at stage I or II. Stages I and II are also called early-stage disease. However, it is more common to find lymphoma in a late stage. Lymphomas that have had more time to grow before they are discovered are likely to be at stage III or IV, also called late-stage disease.

Risk Scores for NHL

When planning treatment, it can also be important to determine a patient's risk score. The risk score predicts the chances that a person's disease will return after treatment as well as his or her overall chances of survival. The risk score for NHL patients is based on a system called the International Prognostic Index (IPI). The IPI risk score is determined by factors including (1) Age and stage of the disease; (2) Performance status, or how well the person can do normal daily activities; (3) Number of areas or organs other than lymphs nodes that show disease; (4) Amount of an enzyme called lactate dehydrogenase (LDH) in the blood – high levels of LDH may be a sign of fast-growing tumors

A person with a low IPI risk score has a low risk of disease returning after treatment. A person with a high IPI risk score has a high risk of disease returning after treatment. For someone with high-risk disease, a doctor may recommend more aggressive treatment or newer treatments being studied in clinical trials.

Planning NHL Treatments

There are several treatment options for people with non-Hodgkin's lymphoma. The most effective treatment for two people with NHL may be very different. If you have NHL, your doctor will plan your treatment based on your specific situation. The best treatment for you depends on the type and stage of NHL you have, your risk score, your own choices and other factors specific to you.

Watch and Wait

For some people with indolent lymphoma who have few or no symptoms, a doctor may recommend a plan of watchful waiting. To watch and wait means not treating the disease right away. Instead, regular doctor visits are used to watch for changes in disease. For some people, the disease may change very little for a long time. With watchful waiting, they can avoid the possible risks and side effects of other treatment during this time. If the disease becomes more active, treatment can begin.

Active Treatments

For patients whose lymphoma is active, the main treatment options include chemotherapy, radiation therapy, immunotherapy and bone marrow or cord blood transplant (also called a BMT).

These treatments may be used alone or used in combination. For some people with relapsed follicular or diffuse large B-cell lymphoma or with mantle cell lymphoma, a transplant may offer the best chance of long-term remission. A transplant is a strong treatment with risks of serious side effects, so it is not used for all patients with NHL. A transplant is used when other treatment options are unlikely to provide a long-term remission.

Whichever treatment you and your doctor decide on, you may choose to be part of a clinical trial. Even standard treatments continue to be studied in clinical trials. These studies help doctors improve treatments so that more patients can have better results.

Bone Marrow or Cord Blood Transplant for NHL

For some patients, a bone marrow or cord blood transplant (also called a BMT) may offer the best chance for a long-term remission. A transplant destroys cancer cells with high-dose chemotherapy and sometimes radiation therapy and/or uses immune cells from a donor to attack the cancer cells. There are two types of transplant that may be used to treat someone with NHL. An autologous transplant uses blood-forming cells collected from the patient. An allogeneic transplant uses blood-forming cells from a family member or unrelated donor or cord blood unit.

A transplant can offer some people with NHL the chance for a long-term remission of disease, but it has serious risks and is not an option for all patients. A transplant may be an option for people with certain types of NHL who:

- Are younger. In general, younger patients tend to do better after a transplant than older patients. However, treatment advances have enabled more older patients to undergo a transplant successfully.
- Are in good overall health, other than their NHL. People with other health problems may be unable to tolerate a transplant.
- Have a suitable donor or cord blood unit, if an allogeneic transplant is an option.

A consultation with a transplant doctor can help a patient determine whether a transplant is a good option, either as a first treatment or as a back up plan.

Autologous Transplant

For an autologous transplant, blood-forming cells are collected from the patient's blood stream or bone marrow. The cells are usually collected after the disease has been brought into remission. The patient is treated with high-dose chemotherapy and sometimes radiation therapy and/or immunotherapy to destroy cancer cells. This treatment also destroys blood-forming cells, so the patient receives his or her own cells back to replace cells that were destroyed. The high-dose treatment is more intense than can be given without a transplant, so it may be able to destroy more cancer cells.

Allogeneic Transplant

An allogeneic transplant provides the patient with healthy blood-forming cells from a family member or unrelated donor or cord blood unit. The cancer cells are destroyed by the transplant preparative regimen of high-dose chemotherapy and sometimes radiation therapy and/or by the immune cells received from the donor. An allogeneic transplant has a higher risk of serious side effects than an autologous transplant. However, the risk of relapse is lower after an allogeneic transplant. One reason for a lower relapse rate may be that the donor's immune cells attack the cancer cells to prevent a relapse. This is called the graft versus lymphoma effect. The graft is the donated cells received in the transplant.

If you have NHL, a transplant doctor can recommend whether either an autologous or an allogeneic transplant is a good treatment option for you.

Reduced-Intensity Allogeneic Transplants

People who are older or have other health problems, such as heart disease or organ damage from previous chemotherapy, may be unable to tolerate the usual high-dose preparative regimen for an allogeneic transplant. However, a transplant using less intense treatment may be an option for some of these patients. This type of transplant is called a reduced-intensity transplant or non-myeloablative transplant. A reduced-intensity transplant uses lower doses of chemotherapy and low-dose or no radiation therapy. It relies on the donor's immune cells to attack cancer cells (the graft versus lymphoma effect). This approach may reduce some of the early complications of allogeneic transplants. As a treatment for NHL, reduced-intensity transplant has been used mostly for patients who have relapsed after an autologous transplant or other previous treatment.

Making Treatment Decisions

If you are diagnosed with NHL, it is important to talk with a doctor who has experience treating NHL. There are many types of NHL, and the course of the disease can be very different for different people. There are also a variety of treatment options available, including newer treatments available in clinical trials. It is important to talk with your doctor about your disease, risk score and treatment options as well as your own treatment goals. The best treatment for you will depend on your NHL type, stage and risk score, age and overall health, as well as your own preferences.

The NMDP's Office of Patient Advocacy (OPA) continually develops resources and materials to help patients, family members and doctors with questions about marrow or cord blood transplantation. In addition to print, audio and visual materials, OPA has bilingual (Spanish/English) case managers and LanguageLine interpreter services available for callers. All OPA materials and services are free and confidential. Call the OPA toll-free at 1 (888) 999-6743. Outside the United States call (612) 627-8140, or visit marrow.org/patient