Index

What You Need To Know About™

Non-Hodgkin's Lymphoma

U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
National Institutes of Health
National Cancer Institute

This booklet is about non-Hodgkin's lymphoma. The Cancer Information Service can help you learn more about this disease. The staff can talk with you in English or Spanish.

The number is 1–800–4–CANCER (1–800–422–6237). The number for callers with TTY equipment is 1–800–332–8615. Your call is free.

Este folleto es acerca del linfoma no Hodgkin. Llame al Servicio de Información sobre el Cáncer para saber más sobre esta enfermedad. Este servicio tiene personal que habla español.

El número a llamar es el 1–800–4–CANCER (1–800–422–6237). Personas con equipo TTY pueden llamar al 1–800–332–8615. Su llamada es gratis.

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U.S. DEPARTMENT OF HEALTH AND
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What You Need To Know About™ Non-Hodgkin's Lymphoma

This National Cancer Institute (NCI) booklet is about *non-Hodgkin's lymphoma*,* cancer that starts in the lymphatic system. You will read about possible causes, symptoms, diagnosis, treatment, and supportive care. You also will find ideas about how to cope with the disease.

This booklet is only about **non-Hodgkin's lymphoma**. It is not about *Hodgkin's lymphoma* (also called Hodgkin's disease). Hodgkin's lymphoma is the subject of another NCI booklet, *What You Need To Know About™ Hodgkin's Disease*. See the "National Cancer Institute Publications" section on page 46 to learn how to get this booklet.

Each year, about 54,000 Americans learn they have non-Hodgkin's lymphoma. Scientists are studying this disease to find out more about what may cause it. And they are looking at better ways to treat it.

The NCI provides information about cancer, including the publications mentioned in this booklet. You can order these materials by telephone or on the Internet. You can also read them on the Internet and print your own copy.

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*Words that may be new to readers appear in *italics*. The "Dictionary" section explains these terms. Some words in the "Dictionary" have a "sounds-like" spelling to show how to pronounce them.

- **Telephone (1–800–4–CANCER)**: Information Specialists at NCI's Cancer Information Service can answer your questions about cancer. They also can send NCI booklets, fact sheets, and other materials.
- **Internet (http://www.cancer.gov)**: You can use NCI's Web site to find a wide range of up-to-date information. For example, you can find many NCI booklets and fact sheets at **http://www.cancer.gov/publications**. People in the United States and its territories may use this Web site to order printed copies. This Web site also explains how people outside the United States can mail or fax their requests for NCI booklets.

  You can ask questions online and get help right away from Information Specialists through ***LiveHelp***. (Click on "Need Help?" at **http://www.cancer.gov**. Then click on "Connect to LiveHelp.")

What Is Non-Hodgkin's Lymphoma?

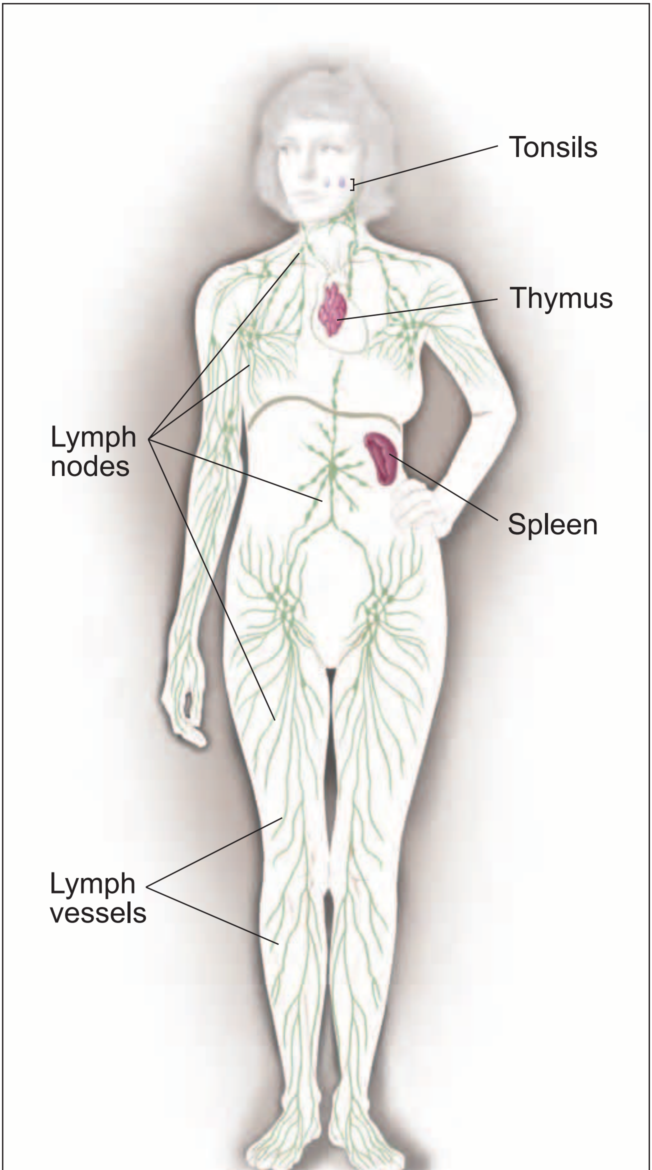
Non-Hodgkin's lymphoma (also called NHL) is *cancer* that begins in the *lymphatic system*. To understand this disease, it is helpful to know about the lymphatic system.

The Lymphatic System

The lymphatic system is part of the body's *immune system*. The immune system fights *infections* and other diseases.

In the lymphatic system, a network of *lymph vessels* carries clear fluid called *lymph*. Lymph vessels lead to small, round organs called *lymph nodes*. Lymph nodes are filled with *lymphocytes* (a type of *white blood cell*). The lymph nodes trap and remove *bacteria* or other harmful substances that may be in the lymph. Groups of lymph nodes are found in the neck, underarms, chest, *abdomen*, and *groin*.

Other parts of the lymphatic system include the *tonsils*, *spleen*, and *thymus*. Lymphatic *tissue* is also found in other parts of the body including the stomach, skin, and *small intestine*.



This picture shows the lymphatic system.

Non-Hodgkin's Lymphoma

There are many types of non-Hodgkin's lymphoma. All types of *lymphoma* begin in *cells* of the lymphatic system. Normally, cells grow and divide to form new cells as the body needs them. When cells grow old, they die, and new cells take their place. Sometimes this process goes wrong. New cells form when the body does not need them, and old cells do not die when they should. These extra cells can form a mass of tissue called a growth or *tumor*.

Non-Hodgkin's lymphoma begins when a lymphocyte (a *B cell* or *T cell*) becomes *abnormal*. Usually, non-Hodgkin's lymphoma starts in a B cell in a lymph node. The abnormal cell divides to make copies of itself. The new cells divide again and again, making more and more abnormal cells. The abnormal cells are cancer cells. They do not die when they should. They do not protect the body from infections or other diseases. Also, the cancer cells can spread to nearly any other part of the body.

Risk Factors

Doctors can seldom explain why one person develops non-Hodgkin's lymphoma and another does not. But research shows that certain *risk factors* increase the chance that a person will develop this disease. In general, the risk factors for non-Hodgkin's lymphoma include the following:

- **Weak immune system**: Having a weak immune system (from an *inherited* condition, HIV infection, or certain drugs) increases the risk of developing non-Hodgkin's lymphoma.

- **Certain infections**: Having certain types of infections increases the risk of developing lymphoma. However, lymphoma is not contagious. You cannot “catch” lymphoma from another person.

  The following are the main types of infection that can increase the risk of lymphoma:

  - *Human immunodeficiency virus* (HIV): HIV is the *virus* that causes *AIDS*. People who have HIV infection are at much greater risk of some types of non-Hodgkin’s lymphoma.
  - *Epstein-Barr virus* (EBV): Infection with EBV has been linked to an increased risk of lymphoma. In Africa, EBV infection is linked to *Burkitt’s lymphoma*.
  - *Helicobacter pylori*: *H. pylori* are bacteria that can cause stomach ulcers. They also increase a person’s risk of lymphoma in the stomach lining.
  - *Human T-cell leukemia/lymphoma virus* (HTLV-1): Infection with HTLV-1 increases a person’s risk of lymphoma and *leukemia*.
  - *Hepatitis C virus*: Some studies have found an increased risk of lymphoma in people with hepatitis C virus. More research is needed to understand the role of hepatitis C virus.
- **Age**: Although non-Hodgkin’s lymphoma can occur in young people, the chance of developing this disease goes up with age. Most people with non-Hodgkin’s lymphoma are older than 60. (For information about this disease in children, call the Cancer Information Service at 1–800–4–CANCER.)

Researchers are studying *obesity* and other possible risk factors for non-Hodgkin’s lymphoma. People who work with *herbicides* or certain other chemicals may be at increased risk of this disease. Researchers are also looking at a possible link between using hair dyes before 1980 and non-Hodgkin's lymphoma. NCI's booklet *Cancer and the Environment* has more information about risk factors.

Most people who have known risk factors do not get non-Hodgkin's lymphoma. On the other hand, people who do get the disease often have no known risk factors. If you think you may be at risk, you should discuss this concern with your doctor.

Symptoms

Non-Hodgkin's lymphoma can cause many symptoms:

- Swollen, painless lymph nodes in the neck, armpits, or groin
- Unexplained weight loss
- Fever
- Soaking night sweats
- Coughing, trouble breathing, or chest pain
- Weakness and tiredness that don't go away
- Pain, swelling, or a feeling of fullness in the abdomen

Most often, these symptoms are not due to cancer. Infections or other health problems may also cause these symptoms. Anyone with symptoms that do not go away within 2 weeks should see a doctor so that problems can be diagnosed and treated.

Diagnosis

If you have swollen lymph nodes or other symptoms that suggest non-Hodgkin's lymphoma, your doctor will help you find out whether they are from cancer or some other cause. Your doctor may ask about your personal and family medical history.

You may have some of the following exams and tests:

- **Physical exam**: Your doctor checks for swollen lymph nodes in your neck, underarms, and groin. Your doctor also checks the spleen and liver to see if they are swollen.
- **Blood tests**: The lab does a *complete blood count* to check the number of blood cells. The lab also checks for other substances, such as *lactate dehydrogenase* (LDH). Lymphoma may cause a high level of LDH.
- **Chest *x-rays***: You may have x-rays to check for swollen lymph nodes or other signs of disease in your chest.
- ***Biopsy***: Your doctor removes tissue to look for lymphoma cells. A biopsy is the only sure way to diagnose lymphoma. Your doctor may remove an entire lymph node (*excisional biopsy*) or only part of a lymph node (*incisional biopsy*). A *pathologist* checks the tissue for lymphoma cells with a microscope.

The doctor does not remove the tissue sample with a needle (*needle biopsy*). A needle cannot remove a large enough sample for the pathologist to diagnose lymphoma.

You may want to ask the doctor these questions before having a biopsy:

- How will the biopsy be done?
- Where will I have my biopsy?
- How long will it take?
- Will I be awake?
- Will the biopsy hurt?
- Are there any risks? What are the chances of infection or bleeding after the biopsy?
- How long will it take me to recover?
- How soon will I know the results? Who will explain them to me?
- If I do have cancer, who will talk to me about the next steps? When?

Types of Lymphoma

When lymphoma is found, the pathologist will report the type. The most common types are *diffuse large B-cell lymphoma* and *follicular lymphoma*.

Lymphomas may be grouped by how quickly they are likely to grow:

- *Indolent* (also called *low-grade*) *lymphomas* grow slowly. They tend to cause few symptoms.
- *Aggressive* (also called *intermediate-grade* and *high-grade*) *lymphomas* grow and spread more quickly. They tend to cause severe symptoms. Over time, many indolent lymphomas become aggressive lymphomas.

Staging

Your doctor needs to know the extent (*stage*) of non-Hodgkin's lymphoma to plan the best treatment. *Staging* may involve some of these tests:

- ***Bone marrow biopsy***: The doctor uses a thick needle to remove a small sample of bone and *bone marrow* from your hipbone or another large bone. *Local anesthesia* can help control pain. A pathologist then looks for lymphoma cells in the sample.
- ***CT scan***: An x-ray machine linked to a computer takes a series of detailed pictures of your chest, abdomen, or *pelvis*. You may receive an *injection* of *contrast material*. Also, you may be asked to drink another type of contrast material. The contrast material makes it easier for the doctor to see swollen lymph nodes and other abnormal areas on the x-ray.

- ***MRI***: A powerful magnet linked to a computer is used to make detailed pictures of your *spinal cord*, bone marrow, or brain. Your doctor can view these pictures on a monitor and can print them on film.
- ***Ultrasound***: An ultrasound device sends out sound waves that people cannot hear. The small hand-held device is held against your body. The waves bounce off nearby tissues, and a computer uses the echoes to create a picture. Tumors may produce echoes that are different from the echoes made by healthy tissues. The picture can show possible tumors.
- ***Spinal tap***: The doctor uses a long, thin needle to remove fluid from the spinal column. Local anesthesia can help control pain. You must lie flat for a few hours afterward so that you will not get a headache. The lab checks the fluid for lymphoma cells or other problems.
- ***PET scan***: You receive an injection of a small amount of *radioactive* sugar. A machine makes computerized pictures of the sugar being used by cells in the body. Cancer cells sometimes show up in the pictures as areas of high activity.

The stage is based on where lymphoma cells are found (in the lymph nodes or in other organs or tissues). The stage also depends on how many areas are affected. The stages of non-Hodgkin's lymphoma are as follows:

- **Stage I**: The lymphoma cells are in a single lymph node group (such as in the neck or underarm). Or, if the abnormal cells are not in the lymph nodes, they are in only one part of a tissue or organ (such as the lung, but not the liver or bone marrow).

- **Stage II**: The lymphoma cells are in at least two lymph node groups on the same side of (either above or below) the *diaphragm*. (See the picture of the diaphragm in the "What Is Non-Hodgkin's Lymphoma?" section on page 4.) Or, the lymphoma cells are in an organ and the lymph nodes near that organ (on the same side of the diaphragm). There may be lymphoma cells in other lymph node groups on the same side of the diaphragm.
- **Stage III**: The lymphoma is in groups of lymph nodes above and below the diaphragm. It also may be found in an organ or tissue near these lymph node groups.
- **Stage IV**: The lymphoma is throughout at least one organ or tissue (in addition to the lymph nodes). Or, it is in the liver, blood, or bone marrow.

Treatment

Many people with non-Hodgkin's lymphoma want to take an active part in making decisions about their medical care. It is natural to want to learn all you can about your disease and your treatment choices. However, shock and stress after the diagnosis can make it hard to think of everything you want to ask the doctor. It often helps to make a list of questions before you visit your doctor.

To help remember what your doctor says, you may take notes or ask whether you may use a tape recorder. You may also want to have a family member or friend with you when you talk to your doctor—to take part in the discussion, to take notes, or just to listen.

You do not need to ask all your questions at once. You will have other chances to ask your doctor to explain things that are not clear and to ask for more information.

Your doctor may refer you to a specialist, or you may ask for a referral. Specialists who treat non-Hodgkin's lymphoma include *hematologists*, *medical oncologists*, and *radiation oncologists*. Your doctor may suggest that you choose an oncologist who specializes in the treatment of lymphoma. Often, such doctors are associated with major academic centers.

Getting a Second Opinion

Before starting treatment, you might want a second opinion about your diagnosis and your treatment plan.

It is a good idea to get a second opinion about the type of lymphoma that you have. The treatment plan varies by the type of lymphoma. A pathologist at a major referral center can review your biopsy.

You also may want a second opinion about your treatment plan. Many insurance companies cover a second opinion if you or your doctor requests it. It may take some time and effort to gather your medical records and arrange to see another doctor. Most of the time, it is not a problem to take several weeks to get a second opinion. The delay in starting treatment usually will not make treatment less effective. To be sure, you should discuss this delay with your doctor. Some people with non-Hodgkin's lymphoma need treatment right away.

There are a number of ways to find a doctor for a second opinion:

- Your doctor may refer you to one or more lymphoma specialists. At cancer centers, many specialists often work together as a team.
- The NCI's Cancer Information Service, at 1–800–4–CANCER, can tell you about nearby treatment centers. Information Specialists also can help you online through ***LiveHelp*** at **http://www.cancer.gov**.
- A local or state medical society, a nearby hospital, or a medical school can usually provide the names of specialists in your area.
- The American Board of Medical Specialties (ABMS) has a list of doctors who have had training and passed exams in their specialty. You can find this list in the *Official ABMS Directory of Board Certified Medical Specialists*. This Directory is in most public libraries. Or you can look up doctors at **http://www.abms.org**. (Click on "Who's Certified.")
- The NCI provides a helpful fact sheet called "How To Find a Doctor or Treatment Facility If You Have Cancer."
- Nonprofit groups with an interest in lymphoma may be of help. Many such groups are listed in the NCI fact sheet "National Organizations That Offer Services to People With Cancer and Their Families."

Preparing for Treatment

The choice of treatment depends on many factors, including:

- Which type of non-Hodgkin's lymphoma you have (for example, follicular lymphoma)
- The stage of your cancer (where the lymphoma is found)
- How quickly the cancer is growing (whether it is indolent or aggressive lymphoma)
- Your age
- Whether you have other health problems

Your doctor can describe your treatment choices and their expected results. You and your doctor can work together to develop a treatment plan that meets your needs.

You may want to ask the doctor these questions before treatment begins:

- What is the stage of my cancer? Where are the tumors?
- What are my treatment choices? Which do you recommend for me?
- What are the expected benefits of each kind of treatment? How will we know the treatment is working? What tests will be used to check its effectiveness? How often will I get these tests?
- What are the risks and possible *side effects* of each treatment? What can we do to control my side effects?
- How long will treatment last?
- Will I have to stay in the hospital?
- How will treatment affect my normal activities?
- What can I do to take care of myself during treatment?
- What is the treatment likely to cost? Will my insurance cover this treatment?
- How often will I need checkups?
- Would a *clinical trial* (research study) be appropriate for me?

Treatment Methods

If you have indolent non-Hodgkin's lymphoma without symptoms, you may not need treatment for the cancer right away. The doctor watches your health closely so that treatment can start when you begin to have symptoms. Not getting cancer treatment right away is called *watchful waiting*.

If you have indolent lymphoma with symptoms, you will probably receive *chemotherapy* and *biological therapy*. *Radiation therapy* may be used for patients with Stage I or Stage II lymphoma.

If you have aggressive lymphoma, the treatment is usually chemotherapy and biological therapy. Radiation therapy also may be used.

If non-Hodgkin's lymphoma comes back after treatment, doctors call this a *relapse* or *recurrence*. People whose lymphoma comes back after treatment may receive *stem cell transplantation*.

Because cancer treatments often harm healthy cells and tissues, side effects are common. Side effects depend mainly on the type and extent of the treatment. Side effects may not be the same for each person, and they may change from one treatment session to the next. The younger a person is, the easier it may be to cope with treatment and its side effects.

Before treatment starts, the health care team will explain possible side effects and suggest ways to help you manage them. The NCI provides booklets about cancer treatments and coping with side effects. These booklets include *Radiation Therapy and You*, *Chemotherapy and You*, *Biological Therapy*, and *Eating Hints for Cancer Patients*.

At any stage of the disease, you can have treatments to control pain and other symptoms, to relieve the side effects of therapy, and to ease emotional and practical problems. This kind of treatment is called *supportive care*. (See the "Supportive Care" section on page 25.)

You may want to talk to your doctor about taking part in a clinical trial, a research study of new treatment methods. "The Promise of Cancer Research" section on page 29 explains clinical trials.

Watchful Waiting

People who choose watchful waiting put off having cancer treatment until they have symptoms. Doctors sometimes suggest watchful waiting for a patient with indolent lymphoma. A person with indolent lymphoma may not have problems that require cancer treatment for a long time. Sometimes the tumor may even shrink for a while without therapy. By putting off treatment, a patient can avoid the side effects of chemotherapy or radiation therapy.

If you and your doctor agree that watchful waiting is a good idea, the doctor will check you regularly (every 3 months). You will receive treatment if symptoms occur or get worse.

Some people do not choose watchful waiting because they don’t want to worry about having cancer that is not treated. Those who choose watchful waiting but later become worried should discuss their feelings with the doctor.

You may want to ask the doctor these questions before choosing watchful waiting:

- If I choose watchful waiting, can I change my mind later on?
- Will the disease be harder to treat later?
- How often will I have checkups?
- Between checkups, what problems should I report?

Chemotherapy

Chemotherapy uses drugs to kill cancer cells. It is called *systemic therapy* because the drugs travel through the bloodstream. The drugs can reach cancer cells in almost all parts of the body.

You may receive chemotherapy by mouth, through a vein, or in the space around the spinal cord. Treatment is usually in an outpatient part of the hospital, at the doctor's office, or at home. Some patients need to stay in the hospital during treatment.

If a patient has lymphoma in the stomach caused by *H. pylori* infection, the doctor may treat this lymphoma with *antibiotics*. After the drug cures the infection, the cancer may also go away.

The side effects of chemotherapy depend mainly on the specific drugs and the dose. The drugs affect cancer cells and other cells that divide rapidly:

- **Blood cells**: When drugs affect your healthy blood cells, you are more likely to get infections, bruise or bleed easily, and feel very weak and tired.
- **Cells in hair roots**: Chemotherapy can cause you to lose your hair. Your hair will grow back, but sometimes the new hair is somewhat different in color and texture.
- **Cells that line the mouth, stomach, and other parts of the** ***digestive tract***: Chemotherapy can cause poor appetite, nausea and vomiting, diarrhea, trouble swallowing, or mouth and lip sores.

The drugs used for non-Hodgkin's lymphoma also may cause skin rashes or blisters, and headaches or other aches. Your skin may become darker. Your nails may develop ridges or dark bands.

Your doctor can suggest ways to control many of these side effects.

You may want to ask the doctor these questions before starting chemotherapy:

- Which drug or drugs will I have?
- How do the drugs work?
- What are the expected benefits of the treatment?
- What are the risks and possible side effects of treatment? What can we do about them?
- Are there any long-term effects from the drugs?
- When will treatment start? When will it end?
- How will treatment affect my normal activities?

Biological Therapy

People with certain types of non-Hodgkin's lymphoma may have biological therapy. This type of treatment helps the immune system fight cancer.

Monoclonal antibodies are the type of biological therapy used for lymphoma. They are proteins made in the lab that can bind to cancer cells. They help the immune system kill lymphoma cells. Patients receive this treatment through a vein at the doctor's office, clinic, or hospital.

Flu-like symptoms such as fever, chills, headache, weakness, and nausea may occur. Most side effects are easy to treat. Rarely, a patient may have more serious side effects, such as breathing problems, low blood pressure, or severe skin rashes. Your doctor or nurse can tell you about the side effects that you can expect and how to manage them.

You may want to ask the doctor these questions before having biological therapy:

- What will the treatment do?
- Will I have to stay in the hospital?
- How will we know if the treatment is working?
- How long will I be on biological therapy?
- Will I have side effects during treatment? How long will they last? What can we do about them?

Radiation Therapy

Radiation therapy (also called radiotherapy) uses high-energy rays to kill non-Hodgkin's lymphoma cells. It can shrink tumors and help control pain.

Two types of radiation therapy are used for people with lymphoma:

- ***External radiation***: A large machine aims the rays at the part of the body where lymphoma cells have collected. This is *local therapy* because it affects cells in the treated area only. Most people go to a hospital or clinic for treatment 5 days a week for several weeks.
- ***Systemic radiation***: Some people with lymphoma receive an injection of radioactive material that travels throughout the body. The radioactive material is bound to antibodies that seek out lymphoma cells. The radiation destroys the lymphoma cells.

The side effects of radiation therapy depend mainly on the type of radiation therapy, the dose of radiation, and the part of the body that is treated. For example, external radiation to your abdomen can cause nausea, vomiting, and diarrhea. Radiation to the lung can cause coughing or shortness of breath. In addition, your skin in the treated area may become red, dry, and tender. You also may lose your hair in the treated area.

You are likely to become very tired during external radiation therapy, especially in the later weeks of treatment. Resting is important, but doctors usually advise patients to try to stay as active as they can.

People who get systemic radiation also may feel very tired. They may be more likely to get infections.

If you have radiation therapy and chemotherapy at the same time, your side effects may be worse. The side effects can be distressing. You can talk with your doctor about ways to relieve them.

You may want to ask the doctor these questions before starting radiation therapy:

- Why do I need this treatment?
- What are the expected benefits of radiation therapy?
- What are the risks and side effects of this treatment? What can we do about them?
- Are there any long-term effects?
- When will the treatments begin? When will they end?
- How will I feel during therapy?
- How will treatment affect my normal activities?

Stem Cell Transplantation

A person with lymphoma who has relapsed may receive stem cell transplantation. A transplant of blood-forming *stem cells* allows a person to receive high doses of chemotherapy, radiation therapy, or both. The high doses destroy both lymphoma cells and healthy blood cells in the bone marrow. Later, the patient receives healthy blood-forming stem cells through a flexible tube placed in a large vein in the neck or chest area. New blood cells develop from the transplanted stem cells.

Stem cell transplants take place in the hospital. The stem cells may come from the patient or from a donor:

- ***Autologous stem cell transplantation***: This type of transplant uses the patient’s own stem cells. The stem cells are removed from the patient, and the cells may be treated to kill lymphoma cells that may be present. The stem cells are frozen and stored. After the patient receives high-dose treatment, the stored stem cells are thawed and returned to the patient.

- ***Allogeneic stem cell transplantation***: Sometimes healthy stem cells from a donor are available. The patient's brother, sister, or parent may be the donor. Or the stem cells may come from an unrelated donor. Doctors use blood tests to be sure the donor's cells match the patient's cells.
- ***Syngeneic stem cell transplantation***: This type of transplant uses stem cells from the patient's healthy identical twin.

You may want to ask the doctor these questions before having a stem cell transplant:

- What are the possible benefits and risks of different types of transplants?
- What kind of stem cell transplant will I have? If I need a donor, how will we find one?
- How long will I need to be in the hospital? Will I need special care?
- How will we know if the treatment is working?
- What can we do about side effects?
- How will treatment affect my normal activities?
- What is my chance of a full recovery?

Supportive Care

Non-Hodgkin's lymphoma and its treatment can lead to other health problems. You may receive supportive care to prevent or control these problems and to improve your comfort and *quality of life* during treatment.

You may receive antibiotics and other drugs to help protect you from infections. Your health care team may advise you to stay away from crowds and from people with colds and other contagious diseases. If an infection develops, it can be serious, and you will need treatment right away.

Non-Hodgkin's lymphoma and its treatment also can lead to *anemia*, which may make you feel very tired. Drugs or *blood transfusions* can help with this problem.

You can get information about supportive care on NCI's Web site at **http://www.cancer.gov/cancerinfo/coping** and from NCI's Cancer Information Service at 1–800–4–CANCER.

Complementary and Alternative Medicine

Some people with cancer use *complementary and alternative medicine* (CAM):

- An approach is generally called complementary medicine when it is used along with standard treatment.
- An approach is called alternative medicine when it is used instead of standard treatment.

Acupuncture, massage therapy, herbal products, vitamins or special diets, visualization, meditation, and spiritual healing are types of CAM. Some people report that such approaches help them feel better.

However, some types of CAM can create health problems. An alternative medicine may not work as well as standard treatment. Patients with aggressive lymphoma who use alternative medicine instead of standard treatment may reduce the chance to control or cure their disease.

It is important to keep in mind that some complementary medicines may interfere with standard treatment. Combining CAM with standard treatment may even be harmful. Before trying any type of CAM, you should discuss its possible benefits and risks with your doctor.

Some types of CAM are expensive. Health insurance may not cover the cost.

The NCI offers a fact sheet called “Complementary and Alternative Medicine in Cancer Treatment: Questions and Answers.”

You may want to ask the doctor these questions before you choose CAM:

- What benefits can I expect from this therapy?
- What are its risks?
- Do the expected benefits outweigh the risks?
- What side effects should I watch for?
- Will the therapy change the way my cancer treatment works? Could this be harmful?
- Is this therapy under study in a clinical trial? If so, who sponsors the trial?
- Will my health insurance pay for this therapy?

Nutrition

It is important for you to eat well. Eating well means getting enough calories to maintain a good weight and enough protein to keep up your strength. Good nutrition may help people with cancer feel better and have more energy.

But eating well can be hard. You may not feel like eating if you are tired or in pain. Also, the side effects of treatment (such as nausea, vomiting, or mouth sores) can be a problem. Some people find that foods do not taste as good during cancer treatment.

The doctor, *dietitian*, or other health care provider can suggest ways to maintain a healthy diet. Also, the NCI booklet *Eating Hints for Cancer Patients* has many useful ideas and recipes.

Follow-up Care

Follow-up care for non-Hodgkin's lymphoma is important. Your doctor will watch your recovery closely and check for recurrence of the lymphoma. Checkups help make sure that any changes in your health are noted and treated as needed. Checkups may include a physical exam, lab tests, chest x-rays, and other procedures. Between scheduled visits, you should contact the doctor right away if you have any health problems.

You may find it helpful to read the NCI's fact sheet "Follow-up Care: Questions and Answers." The NCI also has a booklet for people who have completed their treatment. *Facing Forward Series: Life After Cancer Treatment* provides tips for making the best use of medical visits. It describes how to talk with the doctor about creating a plan of action for recovery and future health.

Sources of Support

Living with non-Hodgkin's lymphoma is not easy. You may worry about caring for your family, keeping your job, or continuing daily activities. Concerns about treatments and managing side effects, hospital stays, and medical bills are also common. Doctors, nurses, and other members of the health care team can answer questions about treatment, working, or other activities. Meeting with a social worker, counselor, or member of the clergy can be helpful if you want to talk about your feelings or concerns. Often, a social worker can suggest resources for financial aid, transportation, home care, or emotional support.

Support groups also can help. In these groups, patients or their family members meet with other patients or their families to share what they have learned about coping with the disease and the effects of treatment. Groups may offer support in person, over the telephone, or on the Internet. You may want to talk with a member of your health care team about finding a support group.

Information Specialists at 1–800–4–CANCER and at ***LiveHelp*** (**http://www.cancer.gov**) can provide information to help you locate programs, services, and publications. Also, you may want to see the NCI fact sheets called "Cancer Support Groups: Questions and Answers" and "National Organizations That Offer Services to People With Cancer and Their Families."

The Promise of Cancer Research

Scientists are searching for causes of non-Hodgkin's lymphoma. Also, doctors all over the country are studying new ways to treat lymphoma. Clinical trials (research studies in which people volunteer to take part) find out whether promising approaches to treatment are safe and effective. Research already has led to advances.

Researchers are studying many types of treatments for lymphoma:

- **Chemotherapy**: Doctors are testing new drugs that kill cancer cells. They are working with many drugs and drug combinations. They also are looking at ways of combining drugs with other treatments, such as biological therapy.
- **Radiation therapy**: Doctors are testing radiation treatment alone and with chemotherapy.

- **Biological therapy**: New types of biological therapy are under study. For example, researchers are making cancer *vaccines* that may help the immune system kill lymphoma cells. Also, doctors are studying a type of biological therapy that delivers radiation directly to cancer cells.
- **Stem cell transplantation**: Doctors are studying stem cell transplantation in people with newly diagnosed lymphoma and those who have already been treated.

People who join clinical trials may be among the first to benefit if a new approach is effective. And even if participants do not benefit directly, they still help doctors learn more about the disease and how to control it. Although clinical trials may pose some risks, researchers do all they can to protect their patients.

If you are interested in being part of a clinical trial, you should talk with your doctor. You may want to read the NCI booklet *Taking Part in Clinical Trials: What Cancer Patients Need To Know*. The NCI also offers an easy-to-read brochure called *If You Have Cancer…What You Should Know About Clinical Trials*. These NCI publications describe how clinical trials are carried out and explain their possible benefits and risks.

NCI's Web site includes a section on clinical trials at **http://www.cancer.gov/clinical_trials**. It has general information about clinical trials as well as detailed information about specific ongoing studies of new treatments for non-Hodgkin's lymphoma. Information Specialists at 1–800–4–CANCER or at ***LiveHelp*** can answer questions and provide information about clinical trials.

Dictionary

Abdomen (AB-do-men): The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

Abnormal: Not normal. An abnormal lesion or growth may be cancerous, premalignant (likely to become cancer), or benign.

Acupuncture (AK-yoo-PUNK-cher): The technique of inserting thin needles through the skin at specific points on the body to control pain and other symptoms. It is a type of complementary and alternative medicine.

Aggressive lymphoma: A type of lymphoma that grows and spreads quickly, and has severe symptoms. It is seen frequently in patients who are HIV-positive (AIDS-related lymphoma). Also called intermediate-grade or high-grade lymphoma.

AIDS: Acquired immunodeficiency syndrome (ah-KWY-erd im-YOON-o-de-FISH-en-see SIN-drome). A disease caused by human immunodeficiency virus (HIV). People with AIDS are at an increased risk for developing certain cancers and for infections that occur rarely except in individuals with a weak immune system.

Allogeneic stem cell transplantation (AL-o-jen-AY-ik): A procedure in which a person receives blood-forming stem cells (cells from which all blood cells develop) from a genetically similar, but not identical, donor. This is often a sister or brother, but could be someone the person does not know (an unrelated donor).

Anemia (a-NEE-mee-a): A condition in which the number of red blood cells is below normal.

Antibiotic (an-tih-by-AH-tik): A drug used to treat infections caused by bacteria and other microorganisms.

Autologous stem cell transplantation (aw-TAHL-o-gus): A procedure in which blood-forming stem cells (cells from which all blood cells develop) are removed, stored, and later given back to the same person.

B cell: A white blood cell that comes from bone marrow. As part of the immune system, B cells help protect the body from harmful substances. Also called B lymphocyte.

Bacteria (bak-TEER-ee-uh): A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium.

Biological therapy (by-o-LAHJ-i-kul): Treatment to stimulate or restore the ability of the immune system to fight infections and other diseases. Also used to lessen certain side effects that may be caused by cancer treatment. Also known as immunotherapy, biotherapy, or biological response modifier (BRM) therapy.

Biopsy (BY-op-see): The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests. When only a sample of tissue is removed, the procedure is called an incisional biopsy. When an entire lump or suspicious area is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy, core biopsy, or fine-needle aspiration.

Blood transfusion: The administration of blood or blood products into a blood vessel.

Bone marrow: The soft, sponge-like tissue in the center of most large bones. It produces white blood cells, red blood cells, and platelets.

Bone marrow biopsy (BY-op-see): The removal of a sample of tissue from the bone marrow with a needle for examination under a microscope.

Burkitt's leukemia: A rare, fast-growing cancer of the blood. Also called B-cell acute lymphocytic leukemia or B-cell acute lymphoblastic leukemia.

Cancer: A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body. There are several main types of cancer. Carcinoma is cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is cancer that starts in blood-forming tissue such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the bloodstream. Lymphoma is cancer that begins in the lymphatic system.

Cell: The individual unit that makes up the tissues of the body. All living things are made up of one or more cells.

Chemotherapy (kee-mo-THER-a-pee): Treatment with drugs that kill cancer.

Clinical trial: A type of research study that tests how well new medical interventions work in people. Such studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Studies may be carried out in a clinic or other medical facility. Also called a clinical study.

Complementary and alternative medicine: CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices generally are not considered standard medical approaches. Standard treatments have gone through a long and careful research process to prove they are safe and effective, but less is known about CAM. CAM may include dietary supplements, megadose vitamins, herbal preparations, special teas, acupuncture, massage therapy, magnet therapy, spiritual healing, and meditation.

Complete blood count: CBC. A test to check the number of red blood cells, white blood cells, and platelets in a sample of blood. Also called blood cell count.

Contiguous lymphoma (con-TIG-yew-us lim-FO-ma): Lymphoma in which the lymph nodes containing cancer are next to each other.

Contrast material: Dye or other substance that helps to show abnormal areas inside the body. It is given by injection into a vein, by enema, or by mouth. Contrast material may be used with x-rays, CT scans, MRI, or other imaging tests.

CT scan: Computed tomography scan. A series of detailed pictures of areas inside the body taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called computerized tomography and computerized axial tomography (CAT) scan.

Diaphragm (DYE-a-fram): The thin muscle below the lungs and heart that separates the chest from the abdomen.

Dietitian: A health professional with special training in nutrition who can help with dietary choices. Also called a nutritionist.

Diffuse large B-cell lymphoma (lim-FO-ma): A type of non-Hodgkin's lymphoma (cancer of the lymphatic system). It is an aggressive (fast-growing) type of lymphoma.

Digestive tract (dye-JES-tiv): The organs through which food and liquids pass when they are swallowed, digested, and eliminated. These organs are the mouth, esophagus, stomach, small and large intestines, and rectum.

Epstein-Barr virus: EBV. A common virus that remains dormant in most people. It has been associated with certain cancers, including Burkitt's lymphoma, immunoblastic lymphoma, and nasopharyngeal carcinoma.

Excisional biopsy (ek-SI-zhun-al BY-op-see): A surgical procedure in which an entire lump or suspicious area is removed for diagnosis. The tissue is then examined under a microscope.

External radiation (ray-dee-AY-shun): Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external-beam radiation.

Follicular lymphoma (fo-LIK-yu-ler lim-FO-ma): A type of non-Hodgkin's lymphoma (cancer of the lymphatic system). It is an indolent (slow-growing) type of lymphoma.

Groin: The area where the thigh meets the abdomen.

Helicobacter pylori (HEEL-ih-ko-BAK-ter pye-LOR-ee): *H. pylori*. Bacteria that cause inflammation and ulcers in the stomach and small intestine.

Hematologist (hee-ma-TOL-o-jist): A doctor who specializes in treating blood disorders.

Hepatitis C virus: A virus that causes hepatitis (inflammation of the liver). It is carried and passed to others through blood or sexual contact. Also, infants born to infected mothers may become infected with the virus.

Herbicide: A chemical that kills plants.

High-grade lymphoma: A type of lymphoma that grows and spreads quickly, and has severe symptoms. It is seen frequently in patients who are HIV-positive (AIDS-related lymphoma). Also called aggressive or intermediate-grade lymphoma.

Hodgkin's lymphoma (HOJ-kins lim-FO-ma): A cancer of the lymphatic system that is characterized by painless enlargement of lymph nodes, the spleen, or other lymphatic tissue. Other symptoms may include fever, weight loss, fatigue, or night sweats. Also called Hodgkin's disease.

Human immunodeficiency virus: HIV. The cause of acquired immunodeficiency syndrome (AIDS).

Human T-cell leukemia virus type 1: A retrovirus that infects T cells (a type of white blood cell) and can cause leukemia and lymphoma. HTLV-1 is spread by sharing syringes or needles used to inject drugs, through sexual contact, and from mother to child at birth or through breast-feeding.

Immune system (im-YOON): The complex group of organs and cells that defends the body against infections and other diseases.

Incisional biopsy (in-SIH-zhun-al BY-op-see): A surgical procedure in which a portion of a lump or suspicious area is removed for diagnosis. The tissue is then examined under a microscope.

Indolent lymphoma: A type of lymphoma that tends to grow and spread slowly, and has few symptoms. Also called low-grade lymphoma.

Infection: Invasion and multiplication of germs in the body. Infections can occur in any part of the body, and can be localized or systemic (spread throughout the body). The germs may be bacteria, viruses, yeast, or fungi. They can cause a fever and other problems, depending on where the infection occurs. When the body's natural defense system is strong, it can often fight the germs and prevent infection. Some cancer treatments can weaken the natural defense system.

Inherited: Transmitted through genes that have been passed from parents to their offspring (children).

Injection: Use of a syringe and needle to push fluids or drugs into the body; often called a "shot."

Intermediate-grade lymphoma: A type of lymphoma that grows and spreads quickly, and has severe symptoms. It is seen frequently in patients who are HIV-positive (AIDS-related lymphoma). Also called aggressive or high-grade lymphoma.

Lactate dehydrogenase (LAK-tayt dee-hi-DRAH-juh-naze): LDH. One of a group of enzymes found in the blood and other body tissues, and involved in energy production in cells. An increased amount of LDH in the blood may be a sign of tissue damage and some types of cancer or other diseases. Also called lactic acid dehydrogenase.

Leukemia (loo-KEE-mee-a): Cancer that starts in blood-forming tissue such as the bone marrow, and causes large numbers of blood cells to be produced and enter the bloodstream.

Local anesthesia (an-es-THEE-zha): Drugs that cause a temporary loss of feeling in one part of the body. The patient remains awake but has no feeling in the part of the body treated with the anesthetic.

Local therapy: Treatment that affects cells in the tumor and the area close to it.

Low-grade lymphoma: A type of lymphoma that tends to grow and spread slowly, and has few symptoms. Also called indolent lymphoma.

Lymph (limf): The clear fluid that travels through the lymphatic system and carries cells that help fight infections and other diseases. Also called lymphatic fluid.

Lymph node (limf node): A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Lymph nodes filter lymph (lymphatic fluid), and they store lymphocytes (white blood cells). They are located along lymphatic vessels. Also called a lymph gland.

Lymph vessel (limf): A thin tube that carries lymph (lymphatic fluid) and white blood cells through the lymphatic system. Also called lymphatic vessel.

Lymphatic system (lim-FAT-ik SIS-tem): The tissues and organs that produce, store, and carry white blood cells that fight infections and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes, and lymphatic vessels (a network of thin tubes that carry lymph and white blood cells). Lymphatic vessels branch, like blood vessels, into all the tissues of the body.

Lymphocyte (LIM-fo-site): A type of white blood cell. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infection and diseases.

Lymphoma (lim-FO-ma): Cancer that begins in cells of the immune system. There are two basic categories of lymphomas. One kind is Hodgkin's lymphoma, which is marked by the presence of a type of cell called the Reed-Sternberg cell. The other category is non-Hodgkin's lymphomas, which includes a large, diverse group of cancers of immune system cells. Non-Hodgkin's lymphomas can be further divided into cancers that have an indolent (slowly progressing) course and those that have an aggressive (rapidly progressing) course. These subtypes behave and respond to treatment differently. Both Hodgkin's and non-Hodgkin's lymphomas can occur in children and adults, and prognosis and treatment depend on the stage and the type of cancer.

Medical oncologist (MED-i-kul on-KOL-o-jist): A doctor who specializes in diagnosing and treating cancer using chemotherapy, hormonal therapy, and biological therapy. A medical oncologist often is the main health care provider for someone who has cancer. A medical oncologist also provides supportive care and may coordinate treatment provided by other specialists.

Monoclonal antibody (MAH-no-KLO-nul AN-tih-BAH-dee): A laboratory-produced substance that can locate and bind to cancer cells wherever they are in the body. Many monoclonal antibodies are used in cancer detection or therapy; each one recognizes a different protein on certain cancer cells. Monoclonal antibodies can be used alone, or they can be used to deliver drugs, toxins, or radioactive material directly to a tumor.

MRI: Magnetic resonance imaging (mag-NET-ik REZ-o-nans IM-a-jing). A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as CT or x-ray. MRI is especially useful for imaging the brain, spine, the soft tissue of joints, and the inside of bones. Also called nuclear magnetic resonance imaging.

Needle biopsy: The removal of tissue or fluid with a needle for examination under a microscope. Also called fine-needle aspiration.

Noncontiguous lymphoma (non-con-TIG-yew-us lim-FO-ma): Lymphoma in which the lymph nodes containing cancer are not next to each other, but are on the same side of the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen).

Non-Hodgkin's lymphoma (non-HOJ-kens lim-FO-ma): A group of cancers of the lymphoid system, including acute lymphoblastic leukemia, B-cell lymphoma, Burkitt's lymphoma, diffuse cell lymphoma, follicular lymphoma, immunoblastic large cell lymphoma, lymphoblastic lymphoma, mantle cell lymphoma, mycosis fungoides, post-transplantation lymphoproliferative disorder, small non-cleaved cell lymphoma, and T-cell lymphoma.

Obesity: An abnormally high, unhealthy amount of body fat.

Pathologist (pa-THOL-o-jist): A doctor who identifies diseases by studying cells and tissues under a microscope.

Pelvis: The lower part of the abdomen, located between the hip bones.

PET scan: Positron emission tomography scan. A procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is used. Because cancer cells often use more glucose than normal cells, the pictures can be used to find cancer cells in the body.

Quality of life: The overall enjoyment of life. Many clinical trials assess the effects of cancer and its treatment on the quality of life. These studies measure aspects of an individual's sense of well-being and ability to carry out various activities.

Radiation oncologist (ray-dee-AY-shun on-KOL-o-jist): A doctor who specializes in using radiation to treat cancer.

Radiation therapy (ray-dee-AY-shun THER-ah-pee): The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy.

Radioactive (RAY-dee-o-AK-tiv): Giving off radiation.

Radioimmunotherapy: Treatment with a radioactive substance that is linked to an antibody that will attach to the tumor when injected into the body.

Recurrence: The return of cancer, at the same place as the original (primary) tumor or in another location, after the tumor had disappeared.

Relapse: The return of signs and symptoms of cancer after a period of improvement.

Risk factor: Something that may increase the chance of developing a disease. Some examples of risk factors for cancer include age, a family history of certain cancers, use of tobacco products, certain eating habits, obesity, exposure to radiation or other cancer-causing agents, and certain genetic changes.

Side effect: A problem that occurs when treatment affects healthy tissues or organs. Some common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

Small intestine (in-TES-tin): The part of the digestive tract that is located between the stomach and the large intestine.

Spinal cord: A column of nerve tissue that runs from the base of the skull down the back. It is surrounded by three protective membranes, and is enclosed within the vertebrae (back bones). The spinal cord and the brain make up the central nervous system, and spinal cord nerves carry most messages between the brain and the rest of the body.

Spinal tap: A procedure in which a needle is put into the lower part of the spinal column to collect cerebrospinal fluid or to give drugs. Also called a lumbar puncture.

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach.

Stage: The extent of a cancer within the body. If the cancer has spread, the stage describes how far it has spread from the original site to other parts of the body.

Staging (STAY-jing): Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. It is important to know the stage of the disease in order to plan the best treatment.

Stem cell: A cell from which other types of cells can develop. Blood cells develop from blood-forming stem cells.

Stem cell transplantation: A method of replacing immature blood-forming cells that were destroyed by cancer treatment. The stem cells are given to the person after treatment to help the bone marrow recover and continue producing healthy blood cells.

Supportive care: Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of supportive care is to prevent or treat as early as possible the symptoms of the disease, side effects caused by treatment of the disease, and psychological, social, and spiritual problems related to the disease or its treatment. Also called palliative care, comfort care, and symptom management.

Syngeneic stem cell transplantation (SIN-juh-NAY-ik): A procedure in which a patient receives blood-forming stem cells (cells from which all blood cells develop) donated by his or her healthy identical twin.

Systemic radiation (sis-TEM-ik ray-dee-AY-shun): Treatment using a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body.

Systemic therapy (sis-TEM-ik THER-a-pee): Treatment using substances that travel through the bloodstream, reaching and affecting cells all over the body.

T cell: One type of white blood cell that attacks virus-infected cells, foreign cells, and cancer cells. T cells also produce a number of substances that regulate the immune response.

Thymus: An organ that is part of the lymphatic system, in which T lymphocytes grow and multiply. The thymus is in the chest behind the breastbone.

Tissue (TIH-shoo): A group or layer of cells that are alike and that work together to perform a specific function.

Tonsil: One of two small masses of lymphoid tissue on either side of the throat.

Tumor (TOO-mer): A mass of excess tissue that results from abnormal cell division. Tumors perform no useful body function. They may be benign (not cancerous) or malignant (cancerous).

Ultrasound: A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echo patterns are shown on the screen of an ultrasound machine, forming a picture of body tissues called a sonogram. Also called ultrasonography.

Vaccine: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. A vaccine can help the body recognize and destroy cancer cells or microorganisms.

Virus (VYE-rus): A microorganism that can infect cells and cause disease.

Watchful waiting: Closely monitoring a patient's condition but withholding treatment until symptoms appear or change. Also called observation.

White blood cell: WBC. Refers to a blood cell that does not contain hemoglobin. White blood cells include lymphocytes, neutrophils, eosinophils, macrophages, and mast cells. These cells are made by bone marrow and help the body fight infection and other diseases.

X-ray: A type of high-energy radiation. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.

National Cancer Institute Information Resources

You may want more information for yourself, your family, and your doctor. The following National Cancer Institute (NCI) services are available to help you.

Telephone

The NCI's Cancer Information Service (CIS) provides accurate, up-to-date information on cancer to patients and their families, health professionals, and the general public. Information Specialists translate the latest scientific information into understandable language and respond in English, Spanish, or on TTY equipment. Calls to the CIS are free.

Telephone: 1–800–4–CANCER (1–800–422–6237)

TTY: 1–800–332–8615

Internet

The NCI's Web site (**http://www.cancer.gov**) provides information from numerous NCI sources. It offers current information on cancer prevention, screening, diagnosis, treatment, genetics, supportive care, and ongoing clinical trials. It has information about NCI's research programs and funding opportunities, cancer statistics, and the Institute itself. Information Specialists provide live, online assistance through ***LiveHelp***. (Click on "Need Help?" Then click on "Connect to LiveHelp.")

National Cancer Institute Publications

National Cancer Institute (NCI) publications can be ordered by writing to the address below:

Publications Ordering Service
National Cancer Institute
Suite 3035A
6116 Executive Boulevard, MSC 8322
Bethesda, MD 20892–8322

Many NCI publications can be viewed, downloaded, and ordered from **http://www.cancer.gov/publications** on the Internet. In addition, people in the United States and its territories may order these and other NCI publications by calling the Cancer Information Service at 1–800–4–CANCER.

Publications About Cancer Treatment

- *Radiation Therapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish*: La radioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)
- *Chemotherapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish*: La quimioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)
- *Helping Yourself During Chemotherapy: 4 Steps for Patients*
- *Biological Therapy: Treatments That Use Your Immune System to Fight Cancer*
- *Eating Hints for Cancer Patients: Before, During & After Treatment* (also available in Spanish: *Consejos de alimentación para pacientes con cáncer: antes, durante y después del tratamiento*)

- *Understanding Cancer Pain* (also available in Spanish: *El dolor relacionado con el cáncer*)
- *Pain Control: A Guide for People with Cancer and Their Families* (also available in Spanish: *Control del dolor: guía para las personas con cáncer y sus familias*
- *Get Relief from Cancer Pain*
- *Taking Part in Clinical Trials: What Cancer Patients Need To Know* (also available in Spanish: *La participación en los estudios clínicos: lo que los pacientes de cáncer deben saber*)
- *If You Have Cancer…What You Should Know About Clinical Trials* (also available in Spanish: *Si tiene cáncer...lo que debería saber sobre estudios clínicos*)
- “Complementary and Alternative Medicine in Cancer Treatment: Questions and Answers” (also available in Spanish: “La medicina complementaria y alternativa en el tratamiento del cáncer: preguntas y respuestas”)
- “Biological Therapies for Cancer: Questions and Answers” (also available in Spanish: “Terapias biológicas del cáncer: preguntas y respuestas”)
- “Bone Marrow Transplantation and Peripheral Blood Stem Cell Transplantation: Questions and Answers”

Publications About Living With Cancer

- *Advanced Cancer: Living Each Day*
- *Facing Forward Series: Life After Cancer Treatment* (also available in Spanish: *Siga adelante: la vida después del tratamiento del cáncer*)
- *Facing Forward Series: Ways You Can Make a Difference in Cancer*
- *Taking Time: Support for People with Cancer and the People Who Care About Them*
- *When Cancer Recurs: Meeting the Challenge*
- "How To Find a Doctor or Treatment Facility If You Have Cancer" (also available in Spanish: "Cómo encontrar a un doctor o un establecimiento de tratamiento si usted tiene cáncer")
- "Follow-up Care: Questions and Answers"
- "Understanding Prognosis and Cancer Statistics" (also available in Spanish: "La interpretación de los pronósticos y las estadísticas del cáncer")
- "Cancer Support Groups: Questions and Answers"
- "National Organizations That Offer Services to People With Cancer and Their Families" (also available in Spanish: "Organizaciones nacionales que brindan servicios a las personas con cáncer y a sus familias")
- "How To Find Resources in Your Own Community If You Have Cancer" (also available in Spanish: "Cómo encontrar recursos en su comunidad si usted tiene cáncer")

The National Cancer Institute (NCI) is part of the National Institutes of Health. NCI conducts and supports basic and clinical research in the search for better ways to prevent, diagnose, and treat cancer. NCI also supports the training of scientists and is responsible for communicating its research findings to the medical community and the public.

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What You Need To Know About Index

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NIH Publication No. 05–1567
Revised January 2005
Printed April 2005

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