

## **Lung Cancer Treatment Information From the National Cancer Institute**

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*The information presented in this document is not intended as a substitute for medical care.  
Please talk with your doctor about your individual needs.*

## Introduction

The information in this document was adapted from the National Cancer Institute (NCI) booklet ***What You Need to Know about Lung Cancer*** [NIH Publication No. 07-1553]. It is written for patients and provides an overview of lung cancer treatments. Learning about medical care for people with lung cancer can help you take an active part in making choices about your own care.

Additionally, this document contains a list of questions that you may want to ask your doctor. Many people find it helpful to take a list of questions to a doctor visit. To help remember what your doctor says, you can 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 with the doctor - to take part in the discussion, to take notes, or just to listen.

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## Treatment

The choice of treatment depends mainly on the type of lung cancer and its stage -- how far the cancer has spread in the body. People with lung cancer may have surgery, chemotherapy, radiation therapy, targeted therapy, or a combination of treatments. Since various cancer treatments may have potential benefits as well as risks, patients should talk to their doctors about the advantages and disadvantages of treatment options for their particular case. For information about complementary and alternative medicine, you may find it helpful to read NCI's booklet ***Thinking about Complementary & Alternative Medicine: A Guide for People with Cancer***. Page 9 of this document tells you how to get NCI booklets.

People with limited stage small cell lung cancer usually have radiation therapy and chemotherapy. For a very small lung tumor, a person may have surgery and chemotherapy. Most people with extensive stage small cell lung cancer are treated with chemotherapy only.

People with non-small cell lung cancer may have surgery, chemotherapy, radiation therapy, or a combination of treatments. The treatment choices are different for each stage. Some people with advanced cancer receive targeted therapy.

Cancer treatment is either local therapy or systemic therapy.

- **Local therapy:** Surgery and radiation therapy are local therapies. They remove or destroy cancer in the chest. When lung cancer has spread to other parts of the body, local therapy may be used to control the disease in those specific areas. For example, lung cancer that spreads to the brain may be controlled with radiation therapy to the head.
- **Systemic therapy:** Chemotherapy and targeted therapy are systemic therapies. The drugs enter the bloodstream and destroy or control cancer throughout the body.

Your doctor can describe your treatment choices and the expected results. You may want to know about side effects and how treatment may change your normal activities. Because cancer treatments often damage 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. Before treatment starts, your health care team will explain possible side effects and suggest ways to help you manage them.

You and your doctor can work together to develop a treatment plan that meets your medical and personal needs.

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

- What type of lung cancer do I have?
- What is the stage of my disease? Has the cancer spread from the lung? If so, to where?
- What are my treatment choices? Which do you recommend for me? Why?
- Will I have more than one kind of treatment?
- What are the expected benefits of each kind of treatment?
- What are the risks and possible side effects of each treatment? What can we do control the side effects?
- What can I do to prepare for treatment?
- Will I need to stay in the hospital? If so, for how long?
- What is the treatment likely to cost? Will my insurance cover the cost?
- How will treatment affect my normal activities?
- Would a clinical trial be right for me?
- How often should I have checkups after treatment?

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**Surgery**

Surgery for lung cancer removes the tissue that contains the tumor. The surgeon also removes nearby lymph nodes.

The surgeon removes part or all of the lung:

- A small part of the lung (*wedge resection* or *segmental resection*): The surgeon removes the tumor and a small part of the lung.
- A lobe of the lung (*lobectomy*): The surgeon removes a lobe of the lung. This is the most common surgery for lung cancer.
- Part or all of a lobe and part of the bronchus, or airway (*sleeve resection* or *sleeve lobectomy*): The surgeon removes the tumor in a lobe and part of the bronchus. The bronchus and remaining lobes are then reattached.
- All of the lung (*pneumonectomy*): The surgeon removes the entire lung.

After lung surgery, air and fluid collect in the chest. A chest tube allows the fluid to drain. A nurse or respiratory therapist will teach you coughing and breathing exercises to help clear your lungs. You'll need to do the exercises several times a day.

The time it takes to heal after surgery is different for everyone. Your hospital stay may be a week or longer. It may be several weeks before you return to normal activities.

Medicine can help control your pain after surgery. Before surgery, you should discuss the plan for pain relief with your doctor or nurse. After surgery, your doctor can adjust the plan if you need more pain relief.

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## Radiation Therapy

Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. It affects cells only in the treated area.

You may receive external radiation. This is the most common type of radiation therapy for lung cancer. The radiation comes from a large machine outside your body. Most people go to a hospital or clinic for treatment. Treatments are usually 5 days a week for several weeks.

Another type of radiation therapy is internal radiation (*brachytherapy*). Internal radiation is seldom used for people with lung cancer. The radiation comes from a seed, wire, or another device put inside your body.

The side effects depend mainly on the type of radiation therapy, the dose of radiation, and the part of your body that is treated. External radiation therapy to the chest may harm the esophagus, causing problems with swallowing. You may also feel very tired. In addition, your skin in the treated area may become red, dry, and tender. After internal radiation therapy, a person may cough up small amounts of blood.

Your doctor can suggest ways to ease these problems. You may find it helpful to read NCI's booklet ***Radiation Therapy and You***. Page 9 tells you how to get NCI booklets.

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## Chemotherapy

Chemotherapy uses anticancer drugs to kill cancer cells. The drugs enter the bloodstream and can affect cancer cells all over the body.

Usually, more than one drug is given. Anticancer drugs for lung cancer are usually given through a vein (*intravenous*). Some anticancer drugs can be taken by mouth.

Chemotherapy is given in cycles. You have a rest period after each treatment period. The length of the rest period and the number of cycles depend on the anticancer drugs used.

You may have your treatment in a clinic, at the doctor's office, or at home. Some people may need to stay in the hospital for treatment.

The side effects depend mainly on which drugs are given and how much. The drugs can harm normal cells that divide rapidly:

- **Blood cells:** When chemotherapy lowers your levels of healthy blood cells, you're more likely to get infections, bruise or bleed easily, and feel very weak and tired. Your health care team gives you blood tests to check for low levels of blood cells. If the levels are low, there are medicines that can help your body make new blood cells.
- **Cells in hair roots:** Chemotherapy may cause hair loss. Your hair will grow back after treatment ends, but it may be somewhat different in color and texture.
- **Cells that line the digestive tract:** Chemotherapy can cause poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores. Ask your health care team about treatments that help with these problems.

Some drugs for lung cancer can cause hearing loss, joint pain, and tingling or numbness in your hands and feet. These side effects usually go away after treatment ends.

When radiation therapy and chemotherapy are given at the same time, the side effects may be worse.

You may find it helpful to read NCI's booklet ***Chemotherapy and You***. Page 9 of this document tells you how to get NCI booklets.

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## Targeted Therapy

Targeted therapy uses drugs to block the growth and spread of cancer cells. The drugs enter the bloodstream and can affect cancer cells all over the body. Some people with non-small cell lung cancer that has spread receive targeted therapy. Targeted therapy can be delivered through a vein (intravenously) at the same time as chemotherapy. Side effects may include bleeding, coughing up blood, a rash, high blood pressure, abdominal pain, vomiting, and/or diarrhea. Targeted therapy may also be given by mouth (orally). It is not given with chemotherapy. The side effects may include rash, diarrhea, and/or shortness of breath. There are two main types of targeted therapy:

- **Monoclonal antibody therapy:** Antibodies created in a lab from a single type of immune system cell can attach to cancer cells and kill them, block their growth, or keep them from spreading to other parts of the body. They can act alone or be used to carry drugs and other treatment substances directly to the cancer cells.
- **Small-molecule tyrosine kinase inhibitors:** These drugs work inside of cancer cells to block the signals they need to grow. They may be used in combination with other anticancer drugs.

During treatment, your health care team will watch for signs of problems. Side effects usually go away after treatment ends.

You may find it helpful to read the NCI fact sheet ***Targeted Cancer Therapies***. It tells about the types of targeted therapies and how they work. Page 9 of this document tells you how to get NCI fact sheets.

## Other Treatment Options

Other treatments for lung cancer include:

- **Laser therapy:** A laser beam (a narrow beam of intense light) is used to cut and destroy cancerous tissue.
  - **Photodynamic therapy:** Anticancer drugs and a special laser are used to destroy cancer cells. An inactive anticancer drug is injected into a vein (intravenously) and is taken up by the cancer cells. A fiberoptic tube is used to direct the laser to the cancerous tissue. The light from the laser activates the drug, killing the cancer cells.
  - **Cryosurgery:** Abnormal tissue is frozen and destroyed. Cryosurgery is also known as *cryotherapy*.
  - **Electrocautery:** A needle or probe is inserted into the tumor and then heated by an electric current. This destroys the abnormal tissue.
  - **Watchful waiting:** Healthcare providers closely monitor a patient's condition without prescribing treatment until signs or symptoms appear or change.
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## Complementary and Alternative Medicine (CAM)

CAM is any medical system, practice, or product that is not thought of as standard care. Standard medical care is care that is based on scientific evidence. For cancer, it includes chemotherapy, radiation, biological therapy, and surgery.

### Complementary Medicine

- Complementary medicine is used along with standard medical treatments.
- One example is using acupuncture to help with side effects of cancer treatment.

### Alternative Medicine

- Alternative medicine is used in place of standard medical treatments.
- One example is using a special diet to treat cancer instead of a method that a cancer specialist (an oncologist) suggests.

### Integrative Medicine

- Integrative medicine is a total approach to care that involves the patient's mind, body, and spirit. It combines standard medicine with the CAM practices that have shown the most promise.
- For example, some people learn to use relaxation as a way to reduce stress during chemotherapy.

For more information about CAM, you may find it helpful to read NCI's booklet ***Thinking about Complementary & Alternative Medicine: A Guide for People with Cancer***. Page 9 of this document tells you how to get NCI booklets.

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## What You Should Know About Treating Cancer Pain

### You don't have to accept pain.

People who have cancer don't always have pain. Everyone is different. But if you do have cancer pain, you should know that you don't have to accept it. Cancer pain can almost always be relieved. To order the NCI booklet ***Pain Control: Support for People with Cancer***, please turn to page 9. The booklet's key points include:

- Your pain can be managed.
- Controlling pain is part of your cancer treatment.
- Talking openly with your doctor and health care team will help them manage your pain.
- The best way to control pain is to stop it from starting or keep it from getting worse.
- There are many different medicines to control pain. Everyone's pain control plan is different.
- Keeping a record of your pain will help create the best pain control plan for you.
- People who take cancer pain medicines as prescribed rarely become addicted to them.
- Your body does not become immune to pain medicine. Stronger medicines should not be saved for "later."

### Pain specialists can help.

Cancer pain can be reduced so that you can enjoy your normal routines and sleep better. It may help to talk with a pain specialist. These may be oncologists, anesthesiologists, neurologists, surgeons, other doctors, nurses, or pharmacists. If you have a pain control team, it may also include psychologists and social workers.

Pain and *palliative* care specialists are experts in pain control. Palliative care specialists treat the symptoms, side effects, and emotional problems of both cancer and its treatment. They will work with you to find the best way to manage your pain. Ask your doctor or nurse to suggest someone. Or contact one of the following for help finding a pain specialist in your area:

- Cancer center
- Your local hospital or medical center
- Your primary care provider
- People who belong to pain support groups in your area
- The Center to Advance Palliative Care, [www.getpalliativecare.org](http://www.getpalliativecare.org) (for lists of providers in each state)

## Free Help to Quit Smoking

### National Cancer Institute's Smoking Quit Line

**1-877-44U-QUIT (1-877-448-7848); and 1-800-QUIT-NOW; TTY: 1-800-332-8615**

Talk with an NCI smoking cessation counselor for help quitting and answers to smoking-related questions in English or Spanish - call toll free within the United States, Monday through Friday 9:00 a.m. to 4:30 p.m. Eastern time.

### American Cancer Society's Quit Line (Texas only)

**1-877-YES QUIT (1-877-937-7848)**

Support for those in need of assistance with cessation of tobacco use, smoking and nicotine addiction. 24 hours a day/7days a week. Services are available in English and Spanish. Nicotine Replacement Therapy is available statewide with a physician's fax referral form (available at [www.dshs.state.tx.us/tobacco](http://www.dshs.state.tx.us/tobacco)) and in selected communities without a fax referral form. Additional information is available at [www.yesquit.org](http://www.yesquit.org).

Updated: August 8, 2014

**Smokefree.gov**

This website offers tools, information, and support that have been proven effective in helping smokers quit. <http://smokefree.gov/>.

**Medicaid Clients:** You can now receive cessation medications in addition to the three prescriptions allowed under Medicaid benefits. Please contact your doctor for information on which medication would be right for you.

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## Tobacco Facts

Tobacco use is the leading cause of preventable illness and death in the United States. It causes many different cancers as well as chronic lung diseases, such as emphysema and bronchitis, and heart disease.

- Cigarette smoking causes an estimated 443,000 deaths each year, including approximately 49,000 deaths due to exposure to secondhand smoke.
- Lung cancer is the leading cause of cancer death among both men and women in the United States, and 90 percent of lung cancer deaths among men and approximately 80 percent of lung cancer deaths among women are due to smoking.
- Smoking causes many other types of cancer, including cancers of the throat, mouth, nasal cavity, esophagus, stomach, pancreas, kidney, bladder, and cervix, and acute myeloid leukemia.
- People who smoke are up to six times more likely to suffer a heart attack than nonsmokers, and the risk increases with the number of cigarettes smoked. Smoking also causes most cases of chronic obstructive lung disease.
- In 2011, approximately 19 percent of U.S. adults were cigarette smokers.
- Nearly 16 percent of high school students smoke cigarettes.
- An estimated 7.3 percent of high school students use smokeless tobacco.

(See [Tobacco Statistics Snapshot](#) for references for this information)

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## For More Information from the National Cancer Institute

NCI provides publications about cancer, including the booklets and fact sheets mentioned in this document free of charge for newly diagnosed cancer patients. Many are available in both English and Spanish.

You can order them by telephone, fax, email, on the Internet, or by mail. You can also read them online and print your own copy.

- **By telephone:** People in the United States and its territories may order these and other NCI publications by calling the NCI's Cancer Information Service at **1-800-4-CANCER** (1-800-422-6237).

*Updated: August 8, 2014*

- **By fax:** Orders can be placed by fax at 1-410-646-3117.
- **By email:** Orders can be submitted by email to [ncioceocs@mail.nih.gov](mailto:ncioceocs@mail.nih.gov)
- **On the Internet:** Many NCI publications can be viewed, downloaded, and ordered from <http://www.cancer.gov/publications> on the Internet. People in the United States and its territories may use this website to order printed copies. This website also explains how people outside the United States can mail or fax their requests for NCI booklets.
- **By mail:** NCI publications can be ordered by writing to the address below:

National Cancer Institute, NIH, DHHS  
Publications Ordering Service  
P.O. Box 24128  
Baltimore, MD 21227

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## Related Publications from the National Cancer Institute

### Cancer Treatment

- *Chemotherapy and You* (also available in Spanish: *La quimioterapia y usted*)
- *Radiation Therapy and You* (also available in Spanish: *La radioterapia y usted*)
- *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*)
- *Targeted Cancer Therapies*
- *Photodynamic Therapy for Cancer* (also available in Spanish: *Terapia fotodinámica para el cáncer*)

### Living with Cancer

- *Pain Control* (also available in Spanish: *Control del dolor*)
- *Coping With Advanced Cancer*
- *Facing Forward Series: Life After Cancer Treatment* (also available in Spanish: *Siga adelante: la vida después del tratamiento del cáncer*)
- *Taking Time: Support for People with Cancer* (also available in Spanish: *Tómese su tiempo: Apoyo para personas con cancer*)
- *When Cancer Returns*

### Clinical Trials

- *Taking Part in Cancer Treatment Research Studies*

### Complementary Medicine

- *Thinking about Complementary & Alternative Medicine: A guide for people with cancer*

### Risk Factors

- *Secondhand Smoke and Cancer* (also available in Spanish: *El humo de tabaco en el ambiente y el cáncer*)
- *Radon and Cancer* (also available in Spanish: *Radón y cáncer*)

### Quitting Smoking

- *Clearing the Air: Quit Smoking Today*
- *"Light" Cigarettes and Cancer Risk* (also available in Spanish: *Los cigarrillos "light" y el riesgo de cáncer*)

### Caregivers

- *When Someone You Love Is Being Treated for Cancer: Support for Caregivers*

- *When Someone You Love Has Advanced Cancer: Support for Caregivers*
  - *Facing Forward: When Someone You Love Has Completed Cancer Treatment*
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## Lung Cancer- Related Resources

### **American Cancer Society**

Learn about different types of cancer, risk factors, prevention, treatment, and more. You can also read stories of hope from people whose lives have been touched by cancer and get the latest news. [www.cancer.org](http://www.cancer.org) or 1-800-ACS-2345 (1-800-227-2345).

### **American Lung Association**

Use interactive decision support tools to learn about the pros and cons of lung treatment options. [www.lungusa.org](http://www.lungusa.org).

### **Lung Cancer Alliance**

Lung Cancer Alliance is the only national non-profit organization dedicated solely to providing patient support and advocacy for people living with or at risk for the disease. <http://www.lungcanceralliance.org/>.

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## Survivorship/Support

### **CancerCare**

CancerCare is a national non-profit organization that provides free professional support services to anyone affected by cancer: people with cancer, caregivers, children, loved ones, and the bereaved. [www.cancercares.org](http://www.cancercares.org).

### **LIVESTRONG**

**LIVESTRONG** helps anyone affected by cancer. Whether you have cancer or are a caregiver, family member or friend of someone diagnosed, **LIVESTRONG** will help you understand what to expect, teach you what questions to ask, learn about treatment options and give you one-on-one support along the way. [www.livestrong.org](http://www.livestrong.org).

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