



Doctor-Approved Patient Information from ASCO®

GUIDE TO LUNG CANCER



Comprehensive, oncologist-approved cancer information from the American Society of Clinical Oncology (ASCO)

www.cancer.net

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The American Society of Clinical Oncology (ASCO) is the world's leading professional organization representing physicians of all oncology subspecialties who care for people with cancer.

ABOUT THE CANCER.NET GUIDES TO CANCER

The Cancer.Net Guides to Cancer provide patients with comprehensive, peer-reviewed information based on content from Cancer.Net (www.cancer.net), ASCO's patient information website. All the information and content on Cancer.Net was developed and approved by the cancer doctors who are members of ASCO, making Cancer.Net an up-to-date and trusted resource for cancer information.

The best cancer care starts with the best cancer information. Well-informed patients are their own best advocates and invaluable partners for physicians. ASCO's patient education materials are available both in print and online to provide trusted, authoritative information for people living with cancer and those who care for and about them.

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OVERVIEW

Lung cancer affects more than 200,000 Americans each year. Although cigarette smoking is the main cause, anyone can develop lung cancer. Lung cancer is always treatable, no matter the size, location, whether it has spread, and how far it has spread.

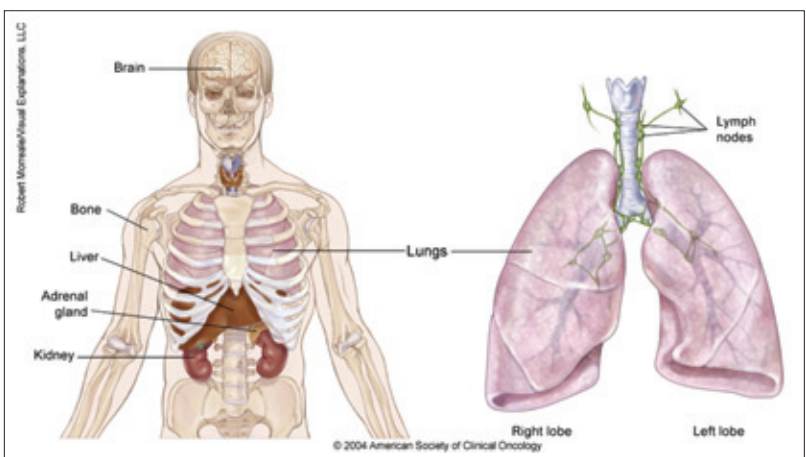
About the lungs

When a person inhales, the lungs absorb oxygen from the air and bring the oxygen into the bloodstream for delivery to the rest of the body. As the body's cells use oxygen, they release carbon dioxide. The bloodstream carries carbon dioxide back to the lungs, and the carbon dioxide leaves the body when a person exhales. The lungs contain many different types of cells. Most cells in the lung are epithelial cells. Epithelial cells line the airways and produce mucus, which lubricates and protects the lung. The lung also contains nerve cells, hormone-producing cells, blood cells, and structural or supporting cells.

About lung cancer

There are two major types of lung cancer: non-small cell and small cell. Non-small cell lung cancer (NSCLC) comes from epithelial cells and is the most common type. Small cell lung cancer begins in the nerve cells or hormone-producing cells of the lung. The term "small cell" refers to the size and shape of the cancer cells as seen under a microscope. It is important for doctors to distinguish NSCLC from small cell lung cancer because the two types of cancer are usually treated in different ways.

Lung cancer begins when cells in the lung change and grow uncontrollably to form a mass called a tumor (or a lesion or nodule). A tumor can be benign (noncancerous) or malignant (cancerous). A cancerous tumor is a collection of a large number of cancer cells that have the ability to spread to other parts of the body. A lung tumor can begin anywhere in the lung.



Anatomical and staging illustrations for many types of cancer are available at www.cancer.net.

Once a cancerous lung tumor grows, it may or may not shed cancer cells. These cells can be carried away in blood or float away in the natural fluid, called lymph, that surrounds lung tissue. Lymph flows through tubes called lymphatic vessels that drain into collecting stations called lymph nodes, the tiny, bean-shaped organs that help fight infection. Lymph nodes are located in the lungs, the center of the chest, and elsewhere in the body. The natural flow of lymph out of the lungs is toward the center of the chest, which explains why lung cancer often spreads there. When a cancer cell leaves its site of origin and moves into a lymph node or to a faraway part of the body through the bloodstream, it is called metastasis.

The stage of lung cancer is determined by the location and size of the initial lung tumor and whether it has spread to lymph nodes or more distant sites. The type of lung cancer (NSCLC versus small cell) and stage of the disease (discussed later in the Staging section) determine what type of treatment is needed.

Find out more about basic cancer terms used in this section at www.cancer.net/dictionaryresources.

STATISTICS

Lung cancer is the second most common cancer and the leading cause of cancer deaths for men and women.

Lung cancer represents 15% of all cancer diagnoses and 28% of all cancer deaths. For men, death rates have declined consistently since 1994 at a rate of about 2% each year. The death rates for women with lung cancer have stabilized since 2003 after increasing for several decades. For unclear reasons, black men have the highest incidence and the lowest survival rates of lung cancer.

These statistics should not be taken as a death sentence. It is important to remember that statistics do not apply to an individual person. No doctor can tell a person how long he or she will live with lung cancer. Some people who are told that their lung cancer can be cured do not live as long as patients who are told that their lung cancer is not curable. The important thing to remember is that lung cancer is treatable at any stage, and these treatments have been proven to help people live longer and better, despite a diagnosis of lung cancer.

Furthermore, these estimates are based on data from thousands of people with this type of cancer in the United States each year, but the actual risk for a particular individual may differ. Because survival statistics are often measured in multi-year intervals, they may not represent advances made in the treatment or diagnosis of this cancer.

Statistics adapted from the American Cancer Society.

RISK FACTORS AND PREVENTION

A risk factor is anything that increases a person's chance of developing cancer. Although risk factors can influence the development of cancer, most do not directly cause cancer. Some people with several risk factors never develop cancer, while others with no known risk factors do. However, knowing your risk factors and talking about them with your doctor may help you make more informed lifestyle and health care choices.

The following factors may raise a person's risk of developing lung cancer:



Tobacco. Most lung cancer occurs in people who smoke or in those who have smoked in the past. Tobacco smoke damages cells in the lungs, causing the cells to grow abnormally. The risk that smoking will lead to cancer is higher for people who smoke heavily and/or for a long time. Regular exposure to smoke from someone else's cigarettes, cigars, or pipes (called environmental or "secondhand" tobacco smoke) can increase a person's risk of lung cancer, even if that person does not smoke.

Asbestos. These are hair-like crystals found in many types of rock and are often used as fireproof insulation in buildings. When asbestos fibers are inhaled, they can irritate the lung. Many studies show that the combination of smoking and asbestos exposure is particularly hazardous. People who work with asbestos in a job (such as shipbuilding, asbestos mining, insulation, or automotive brake repair) and smoke have a higher risk of developing lung cancer. Using protective breathing equipment reduces this risk.

Radon. This is an invisible, odorless gas naturally released by some soil and rocks. Exposure to radon has been associated with an increased risk of some types of cancer, including lung cancer. Most hardware stores have kits that test home radon levels, and basements can be ventilated to reduce radon exposure.

Prevention

The most important way to prevent lung cancer is to avoid tobacco smoke. People who never smoke have the lowest risk of lung cancer. People who smoke can reduce their risk of lung cancer by stopping smoking, but their risk of lung cancer will still be higher than people who never smoked. Attempts to prevent lung cancer with vitamins or other treatments have not worked. For instance, beta-carotene, a drug related to vitamin A, has been tested for the prevention of lung cancer. It did not

reduce the risk of cancer. In people who continued to smoke, beta-carotene actually increased the risk of lung cancer.

SCREENING

Recently, a large study called the National Lung Screening Trial showed that, in patients who are current or former heavy smokers, the use of a screening test called a low-dose helical (or spiral) computed tomography (CT or CAT) scan decreases the risk of death from lung cancer by 20%. A CT scan creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors.

CT scanning is not recommended for every smoker. Doctors still need to prove that screening everyone at risk for lung cancer reduces rates of death from lung cancer in the general population.

SYMPTOMS AND SIGNS

People with lung cancer may experience the following symptoms or signs. Sometimes people with lung cancer do not show any of these symptoms. Or, these symptoms may be caused by a medical condition that is not cancer. If you are concerned about a symptom or sign on this list, please talk with your doctor.

- Fatigue
- Cough
- Shortness of breath
- Chest pain, if a tumor invades a structure within the chest or involves the lining of the lung
- Loss of appetite
- Coughing up phlegm or mucus
- Hemoptysis (coughing up blood)

Your doctor will ask you questions about the symptoms you are experiencing to help find out the cause of the problem, called a diagnosis. This may include how long you've been experiencing the symptom(s) and how often.

For people with lung cancer who have no symptoms, their lung cancer may be discovered on a chest x-ray or CT scan performed for some other reason, such as checking for heart disease. Most people with lung cancer are diagnosed when the tumor grows, takes up space, or begins to interfere with nearby structures. A lung tumor may also make fluid that can collect in the lung or the space around the lung or push the air out of the lungs and cause the lung to collapse. This prevents the exchange of oxygen and carbon dioxide by blocking the flow of air into the lungs or by using up the space normally required for oxygen to come in and carbon dioxide to go out of the lung.

Although lung cancer can metastasize (spread) anywhere in the body, the most common sites of spread are the lymph nodes, lungs, bones, brain, liver, and structures near the kidneys called the adrenal glands. Metastases (spread to more than one area) from lung cancer can cause further breathing difficulties, bone pain, abdominal or back pain, headache, weakness, seizures, and/or speech difficulties. Rarely, a lung tumor can release hormones that result in chemical imbalances, such as low blood sodium levels or high blood calcium levels.

Symptoms such as fatigue, malaise (feeling out-of-sorts or unwell), and loss of appetite are not necessarily due to metastases. The presence of cancer anywhere in the body can cause a person to feel unwell in a general way. Loss of appetite can result in weight loss. Fatigue and weakness can further worsen breathing difficulties.

If cancer is diagnosed, relieving symptoms and side effects remains an important part of cancer care and treatment. This may also be called symptom management, palliative care, or supportive care. Be sure to talk with your health care team about symptoms you experience, including any new symptoms or a change in symptoms.

DIAGNOSIS

Doctors use many tests to diagnose cancer and find out if it has spread from the lung. Some tests may also determine which treatments may be the most effective. For most types of cancer, a biopsy is the only way to make a definitive diagnosis of cancer. If a biopsy is not possible or more information is needed, the doctor may suggest other tests that will help make a diagnosis. Imaging tests may be used to find out whether the cancer has metastasized, but they can never be used to diagnose lung cancer. Only a biopsy can do that. Your doctor may consider these factors when choosing a diagnostic test:

- Size, location, and type of cancer suspected
- Age and medical condition
- Severity of symptoms
- Previous test results

In addition to a physical examination, the following tests may be used to diagnose lung cancer:

Biopsy. A biopsy is the only way to make a diagnosis of lung cancer. A biopsy is the removal of a small amount of tissue for examination under a microscope. The sample removed from the biopsy is analyzed by a pathologist (a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease). If cancer cells are present, the pathologist will determine if it is small cell lung cancer or NSCLC, based on its appearance under the microscope.

Common procedures doctors use to obtain tissue for the diagnosis and staging of lung cancer are listed below:

Sputum cytology. If there is reason to suspect lung cancer, the doctor may ask a person to cough up some phlegm so it can be examined under the microscope. A pathologist can find cancer cells mixed in with the mucus.

Bronchoscopy. In this procedure, the doctor passes a thin, flexible tube with a light on the end into the mouth or nose, down through the main windpipe, and into the breathing passages of the lungs. A surgeon or a pulmonologist (a medical doctor who specializes in the diagnosis and treatment of lung disease) may perform this procedure. The tube lets the doctor see inside the lungs. Tiny tools inside the tube can take samples of fluid or tissue so the pathologist can examine them. Patients are given mild anesthesia (medication to block the awareness of pain) during a bronchoscopy.

Needle aspiration/core biopsy. After numbing the skin, a special type of radiologist, called an interventional radiologist, removes a sample of the lung tumor for testing. This can be done with a smaller needle (to take a smaller sample) or a larger needle (to take a larger sample, called a core biopsy). The doctor uses the needle to aspirate (suck out) a small sample of tissue for testing. Often, the radiologist uses a chest CT scan or special x-ray machine called a fluoroscope to guide the needle.

Thoracentesis. After numbing the area, a needle is inserted through the chest wall and into the space between the lung and the wall of the chest where fluid can collect. The fluid is removed and checked for cancer cells by the pathologist.

Thoracotomy. This procedure is performed in an operating room, and the patient receives general anesthesia. A surgeon then makes an incision in the chest, examines the lung directly, and takes tissue samples for testing. A thoracotomy is the procedure surgeons most often perform to completely remove a lung tumor.

Thoracoscopy. Through a small cut in the skin of the chest wall, a surgeon can insert a special instrument and a small video camera to assist in the examination of the inside of the chest. Patients require general anesthesia, but recovery time may be shorter with a thoracoscopy, given the smaller incisions. This procedure may be referred to as “VATS” (video-assisted thoracoscopic surgery).

Mediastinoscopy. A surgeon examines and takes a sample of the lymph glands in the center of the chest (underneath the breastbone) by making a small incision at the top of the breastbone. This procedure also requires general anesthesia and is done in an operating room.

Bone marrow biopsy. This is a test used occasionally for lung cancer. For some patients with small cell lung cancer, a doctor may remove a tiny piece of bone (typically from the hip bone) to determine whether small cell cancer is present within the bones. The patient receives a local anesthetic (to numb the area), and the doctor uses a special needle to obtain the sample.

Imaging tests

In addition to biopsies and surgical procedures, imaging scans are vital to the care of people with lung cancer. However, no test is perfect, and no scan can diagnose lung cancer. Only a biopsy can do that. Chest x-ray and scan results must be combined with a person's medical history, a physical examination, blood tests, and biopsy information to form a complete story about where the cancer began and whether or where it has spread.



Computed tomography scan. This test produces images that allow doctors to see the size and location of a lung tumor and/or lung cancer metastases.

Magnetic resonance imaging (MRI) scan. This test also produces images that allow doctors to see the size and location of a lung tumor and/or lung cancer metastases. An MRI uses magnetic fields, not x-rays, to produce detailed images of the body. A contrast medium (a special dye) may be injected into a patient's vein to provide better detail. MRI scanning is imprecise when used to take a picture of structures that are moving, like your lungs, which move with each breath you take. For that reason, the MRI scan is rarely used to study the lungs themselves.

Scans are also available that use radioactive molecules, called tracers, injected into the blood to show where cancer is possibly located:

Positron emission tomography (PET) scan. A PET scan is a way to create pictures of organs and tissues inside the body.

A small amount of a radioactive substance is injected into a patient's body. This substance is absorbed mainly by organs and tissues that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body.

Bone scan. A bone scan uses a radioactive tracer to look at the inside of the bones. The tracer is injected into a patient's vein. It collects in areas of the bone and is detected by a special camera. Healthy bone appears gray to the camera, and areas of injury, such as those caused by cancer, appear dark.

Bone scans and PET scans are often used in combination with information gathered from a CT scan, an MRI, an x-ray, and a physical examination.

Learn more about what to expect when having common tests, procedures, and scans at www.cancer.net/tests.

After these diagnostic tests are done, your doctor will review all of the results with you. If the diagnosis is cancer, these results also help the doctor describe the cancer; this is called staging. Learn more about the first steps to take after a diagnosis of cancer at www.cancer.net/firststeps.

Finding out where the cancer started

Lung cancer starts in the lungs. Many other types of cancer start elsewhere in the body and spread to the lungs when they metastasize. For example, breast cancer that has spread to the lungs is still called breast cancer. Therefore, it is important for doctors to know if the cancer started in the lungs or elsewhere.

To find where the cancer started, the doctor takes into account the patient's symptoms and medical history, physical examination, the appearance of the tumor on x-rays and scans, and risk factors for cancer. A pathologist can perform tests on the biopsy sample to help identify the origin of a cancer, and the doctor may order other tests for the patient to rule out specific types of cancer. If, after these considerations, the doctor is still not sure where the cancer started, the doctor may give a diagnosis of metastatic cancer "of unknown primary." Most treatments for metastatic cancer of unknown primary that are first discovered in the chest are the same as those for metastatic lung cancer.

Stopping smoking

Even after lung cancer is diagnosed, it is still not too late to benefit from stopping cigarette smoking. People who stop smoking have an easier time with all treatments, feel better, live longer, and have a lower risk of developing a second lung cancer. Stopping smoking is never easy and is even harder when facing the diagnosis of lung cancer and treatment. People who smoke should seek help from family, friends, smoking cessation programs, and health care professionals. None of

the smoking cessation aids available interfere with cancer treatment. Learn more about tobacco and quitting smoking at www.cancer.net/tobacco.

STAGING

Staging is a way of describing a cancer, such as where it is located, if or where it has spread, and whether it is affecting the functions of other organs in the body. Doctors use diagnostic tests to determine the cancer's stage, so staging may not be complete until all of the tests are finished. Knowing the stage helps the doctor to decide what kind of treatment is best and can help predict a patient's prognosis (chance of recovery). There are different stage descriptions for different types of cancer.

In general, a lower number stage of lung cancer is associated with a better outcome. However, no doctor can predict how long a patient will live with lung cancer based only on the stage of disease because lung cancer is different in each person and tumors respond to treatment differently.

Cancer stage grouping

The stage of both small cell and non-small cell lung cancer is described by a number, zero (0) through four (Roman numerals I through IV). One way to determine the staging of lung cancer is to find out whether the cancer can be completely removed by a surgeon. To completely remove the lung cancer, the surgeon must remove the cancer, along with the surrounding, normal lung tissue.

Stage 0: This is called in situ disease, meaning the cancer is “in place” and has not invaded nearby tissues and spread outside the lung.

Stage I: A stage one (I) lung cancer is a small tumor that has not spread to any lymph nodes, making it possible for a surgeon to completely remove it. Stage I is divided into two substages—stage IA and stage IB—based on the size of the tumor. Smaller tumors are stage IA, and slightly larger ones are stage IB.

Stage II: Stage two (II) lung cancer is divided into two substages: stage IIA and IIB. A stage IIA cancer describes a slightly larger tumor that has not spread to the nearby lymph nodes or a small tumor that has spread to the nearby lymph nodes.

Stage IIB lung cancer describes a slightly larger tumor that has spread to the lymph nodes or a larger tumor that may or may not have invaded nearby structures in the lung but has not spread to the lymph nodes.

Sometimes, stage II tumors can be removed with surgery, and other times, other treatments are needed.

Stage III: Stage three (III) lung cancers are classified as stage IIIA and IIIB. For many stage IIIA cancers and nearly all stage IIIB cancers, the tumor is difficult, and sometimes impossible, to remove. For example, the lung cancer may have spread to the lymph nodes located in the center of the chest, which is outside the lung. Or, the tumor may have invaded nearby structures in the lung. In either situation, it is less likely that the surgeon can completely remove the cancer because removal of the cancer must be performed bit by bit.

Stage IV: Stage four (IV) means the lung cancer has spread to multiple sites in the other lung, the fluid surrounding the lung or the heart, or distant sites within the body by way of the bloodstream. Once released in the blood, cancer can spread anywhere in the body, but it has a tendency to spread to the brain, bones, liver, and adrenal glands.

In general, surgery is not successful for any stage III or IV lung cancer. Lung cancer can also be impossible to remove if it has spread to the lymph nodes above the collarbone or if the cancer has grown into vital structures within the chest, such as the heart, large blood vessels, or the main breathing tubes leading to the lungs.

Recurrent: Recurrent cancer is cancer that comes back after treatment. If there is a recurrence, the cancer may need to be staged again (re-staging) using the system above.

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Prognosis

The stage of lung cancer and the characteristics of a patient influence prognosis. Although lung cancer is treatable at any stage, only certain stages of lung cancer can be cured.

Doctors measure a patient's general strength and vigor using an index known as performance status.

Patients who are strong enough to go about their daily activities without assistance and even work outside the home can safely receive chemotherapy, radiation therapy, and/or surgery. Treatment may not be as effective for patients with bone or liver metastases from lung cancer, excessive weight loss, ongoing cigarette use, or pre-existing medical conditions, such as heart disease or emphysema.



It is important to note that a patient's age has never been useful in predicting whether that patient will benefit from treatment. The average age of patients with lung cancer in the United States is 71. A patient's age should never be used as the only reason for deciding what treatment is best, especially for older patients who are otherwise physically fit and have no other medical problems besides lung cancer.

TREATMENT

This section outlines treatments that are the standard of care (the best proven treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new treatment to evaluate whether it is safe, effective, and possibly better than standard treatment. Your doctor can help you review all treatment options. For more information, read the Clinical Trials and Current Research sections.

There are four basic ways to treat lung cancer: surgery, radiation therapy, chemotherapy, and targeted therapy. Each treatment option is described below, followed by an outline of common treatment plans by the type and stage of cancer. Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, and the patient's preferences and overall health. Learn more about making treatment decisions at www.cancer.net/treatmentdecisions.

Surgery

Surgery is the removal of the tumor and surrounding tissue during an operation. A surgical oncologist is a doctor who specializes in treating cancer using surgery. For lung cancer, a thoracic surgeon is specially trained to perform lung cancer surgery. The goal of surgery is the complete removal of the lung tumor and the nearby lymph nodes in the chest. The tumor must be removed with a surrounding border of normal lung tissue (called the margin). A "negative margin" means that, when the pathologist examines the lung or piece of lung that has been removed by the surgeon, no traces of cancer were found in the healthy tissue surrounding the tumor.

The lungs have five lobes, three in the right lung and two in the left lung. For NSCLC, a lobectomy (removal of an entire lobe of the lung) has been shown to be the most effective type of surgery, even when the lung tumor is very small. If, for whatever reason, the surgeon cannot remove an entire lobe of the lung, the surgeon can remove the tumor and a surrounding margin of normal lung in a procedure called a wedge. If the tumor is close to the center of the chest, the surgeon may have to perform a pneumonectomy (surgery to remove the entire lung). The time it takes to recover from lung surgery depends

on how much of the lung is removed and the health of the patient before surgery.

Learn more about cancer surgery at www.cancer.net/features.

Adjuvant therapy

Adjuvant therapy is treatment that is given after surgery to lower the risk of the lung cancer returning. Adjuvant therapy includes radiation therapy and chemotherapy (and, in the future, may include targeted therapy). Each therapy is described below. Adjuvant therapy is intended to eliminate any lung cancer cells that may be lingering in the body. It may decrease the risk of recurrence, though some risk will remain.

Along with staging, other sophisticated tools can help determine prognosis and help you and your doctor make decisions about whether adjuvant therapy would be helpful in your treatment. The website Adjuvant! Online (www.adjuvantonline.com) is one such tool that your doctor can access to interpret a variety of factors that are important for making the treatment decision. This website should only be used with the interpretation of your doctor.

Read more about ASCO's recommendations for adjuvant treatment for lung cancer at www.cancer.net/whattoknow.

Radiation therapy

Radiation therapy is the use of high energy x-rays or other particles to kill cancer cells. If you need radiation therapy, you will be asked to see a specialist called a radiation oncologist, a doctor who specializes in giving radiation therapy to treat cancer. Like surgery, radiation therapy cannot be used to treat widespread cancer. Radiation only kills cancer cells directly in the path of the radiation beam. It also damages the normal cells caught in its path; for this reason, it cannot be used to treat large areas of the body. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

Patients with lung cancer treated with radiation therapy often experience fatigue and loss of appetite. If radiation therapy is given to the neck or center of the chest, patients may also develop a sore throat and have difficulty swallowing. Skin irritation, like sunburn, may occur at the treatment site. Most side effects go away soon after treatment is finished.

If the radiation therapy irritates or inflames the lung, patients may develop a cough, fever, or shortness of breath months and sometimes years after the radiation therapy ends. This condition occurs in about 15% of patients and is called radiation pneumonitis. If it is mild, radiation pneumonitis does not require treatment and resolves on its own. If it is severe, radiation pneumonitis may require treatment with steroid medications, such as prednisone. Radiation therapy may also

cause permanent scarring of the lung tissue near the site of the original tumor. Typically, the scarring does not lead to symptoms. Widespread scarring can lead to permanent cough and shortness of breath. For this reason, radiation oncologists carefully plan the treatments using CT scans of the chest to minimize the amount of normal lung tissue exposed to the radiation beam.

Learn more about radiation therapy at www.cancer.net/features.

Chemotherapy

Chemotherapy is the use of drugs to kill cancer cells, usually by stopping the cancer cells' ability to grow and divide. Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body. Chemotherapy is given by a medical oncologist, a doctor who specializes in treating cancer with medication. Most chemotherapy used for lung cancer is injected into a vein (called intravenous, or IV, injection). A chemotherapy regimen usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.

ASCO provides treatment recommendations for chemotherapy for lung cancer. Learn more about adjuvant chemotherapy and chemotherapy for stage IV lung cancer at www.cancer.net/whattoknow.

The side effects of chemotherapy depend on the individual and the dose used, but they can include fatigue, risk of infection, nausea and vomiting, loss of appetite, diarrhea, and hair loss. These side effects usually go away once treatment is finished. Nausea and vomiting are often avoidable; learn more about preventing nausea and vomiting caused by cancer treatment at www.cancer.net/whattoknow.



Chemotherapy may also damage normal cells in the body, including blood cells, skin cells, and nerve cells. This may result in low blood counts, an increased risk of infection, hair loss, mouth sores, and/or numbness or tingling in the hands and feet. Your medical oncologist can often prescribe drugs to help provide relief from many side effects. Hormone injections are also used to prevent white and red blood cell counts from becoming too low.

Newer chemotherapy treatment plans cause fewer side effects and are as effective as older treatments. Chemotherapy has been shown to improve both the length and quality of life for people with lung cancer of all stages.

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

Targeted therapy

Targeted therapy is a treatment that targets the cancer's specific genes, proteins, or the tissue environment that contributes to cancer growth and survival. Abnormal proteins are present in unusually large amounts in some lung cancer cells. This type of treatment blocks the growth and spread of cancer cells while limiting damage to normal cells, usually leading to fewer side effects than other cancer medications.

Recent studies show that not all tumors have the same targets. To find the most effective treatment, your doctor may run tests to identify the genes, proteins, and other factors in your tumor. As a result, doctors can better match each patient with the most effective treatment whenever possible. In addition, many research studies are taking place now to find out more about specific molecular targets and new treatments directed at them. Learn more about targeted treatments at www.cancer.net/features.

Anti-angiogenesis therapy. Bevacizumab (Avastin) is a specialized drug given in combination with chemotherapy for lung cancer. Drugs like bevacizumab block the formation of new blood vessels (called angiogenesis), which is necessary for a tumor to grow and spread. The risk of serious bleeding for patients taking bevacizumab is about 2%.

Epidermal growth factor receptor (EGFR) inhibitors. An EGFR inhibitor is a type of targeted therapy. Researchers have found that drugs that block EGFR may be effective in stopping or slowing the growth of lung cancer.

Cetuximab (Erbix) is a specialized drug given along with chemotherapy to treat lung cancer, especially when treatment with bevacizumab is not recommended. It is given intravenously. The side effects of cetuximab include rash and allergic reactions.

Erlotinib (Tarceva) is another drug that blocks the EGFR. This drug has been shown to work better than chemotherapy if the lung cancer has a mutation in the EGFR gene. It is approved by the U.S. Food and Drug Administration for patients with locally advanced and metastatic NSCLC and as a maintenance therapy for patients with NSCLC whose cancer has not grown or spread after receiving at least four cycles of chemotherapy. This medication is a pill that can be taken by mouth. The side effects of erlotinib include a rash that looks like acne and diarrhea.

Gefitinib (Iressa) is another drug that blocks the EGFR. In the United States, it is available only to people who were already taking it and people who have taken it in the past and had a good effect, or as part of a clinical trial.

Combining treatments

Most people with lung cancer are treated by more than one specialist with more than one type of treatment. This is called a multidisciplinary team approach. For example, chemotherapy can be prescribed before or after surgery or before, during, or after radiation therapy. Patients should have a sense that their doctors have a coordinated plan of care and are communicating effectively with one another. If patients do not feel that the surgeon, radiation oncologist, or medical oncologist is communicating effectively with them or each other about the goals of treatment and the plan of care, patients should discuss this with their doctors or seek additional opinions before treatment.

Treatment of NSCLC

Stage I and II. In general, stage I and II NSCLC are treated with surgery. Surgeons cure many patients with an operation. Before or after surgery, a patient may be referred to a medical oncologist. Some patients with large tumors or evidence of spread to lymph nodes may benefit from neoadjuvant chemotherapy (chemotherapy before the surgery, also called induction chemotherapy) or adjuvant chemotherapy to reduce the chance the cancer will return. Radiation therapy is recommended to treat and cure a lung tumor in people for whom surgery is not advisable.

Stage III. Stage III NSCLC has spread to the point that surgery or radiation therapy alone is usually not enough to cure the disease for most people. Patients with stage III disease also have a high risk of the cancer returning, either in the same place or at a distant location, even after successful surgery or radiation therapy. For this reason, doctors generally do not recommend immediate surgery and sometimes suggest chemotherapy before surgery.

After chemotherapy, patients with stage III NSCLC may still undergo surgery, especially if the chemotherapy is effective in eliminating or shrinking the cancer. However, some patients with stage III NSCLC are not treated with surgery. Instead,

they may be treated with a combination of chemotherapy and radiation therapy with the intent to cure. The chemotherapy may be given either before or at the same time as the radiation therapy. This method has shown to improve the ability of radiation therapy to shrink the cancer and to lower the risk of the cancer returning.

Chemotherapy given at the same time as radiation therapy is more effective than chemotherapy given before radiation therapy, but it results in more side effects. Patients who have received both chemotherapy and radiation therapy for stage III disease may still go on to have surgery. However, there is debate among doctors about whether surgery is necessary for patients effectively treated with radiation therapy and whether radiation therapy is needed in patients whose tumors are completely removed after chemotherapy.

For most patients with stage III NSCLC, the tumor is unresectable (cannot be removed by surgery). This may be because the surgeon feels that an operation would be too risky or because the tumor cannot be removed completely. For patients with unresectable NSCLC, with no signs of spread of cancer to distant sites or to the fluid around the lung, a combination of chemotherapy and radiation therapy can still be used to try to cure the patient.

Stage IV NSCLC. Patients with stage IV NSCLC are typically not treated with surgery or radiation therapy. Occasionally, doctors may recommend that a brain or adrenal metastasis be removed surgically if that is the only place to which the cancer has spread. Radiation therapy can also be used to treat a single site of metastasis, such as the brain. However, patients with stage IV disease are at very high risk for the cancer spreading or growing in another location. Most patients at this stage of NSCLC are treated with chemotherapy alone.

The goals of chemotherapy are to shrink the cancer, relieve discomfort caused by the cancer, prevent further spread, and lengthen life. Chemotherapy can rarely make metastatic lung cancer disappear. Doctors know from experience that the cancer will return. Therefore, patients with stage IV disease are never considered “cured” of their cancer, no matter how well the chemotherapy works. These patients must be followed closely by their doctors and require lifelong chemotherapy to control their disease. Chemotherapy has been proven to improve both length and quality of life for patients with stage IV NSCLC.

Treatment of small cell lung cancer

As with NSCLC, the treatment of small cell lung cancer depends on the stage. Small cell lung cancer spreads quickly, so chemotherapy is the primary treatment for all patients. You may hear your doctor refer to limited stage (no signs that the cancer has spread) or extensive stage (cancer that has spread) to describe your small cell lung cancer.

The most commonly used chemotherapy regimen is etoposide (VePesid, Lastet, Etopophos) plus cisplatin (Platinol) or carboplatin (Paraplatin). Patients with limited stage small cell lung cancer are best treated with simultaneous chemotherapy plus radiation therapy to the chest, given twice a day. Radiation therapy is best when given during the first or second month of chemotherapy.

Patients with extensive stage cancer are treated with chemotherapy only. Chemotherapy is given for three to six months.

Surgery is rarely appropriate for patients with small cell lung cancer and is only considered for patients with very early-stage disease, such as cancer in a small lung nodule. In those cases, chemotherapy, with or without radiation therapy, is given afterwards.

In patients whose tumors have diminished after chemotherapy, radiation therapy to the head cuts the risk that the cancer will spread to the brain. This preventative radiation to the head is called prophylactic cranial irradiation (PCI) and has been shown to extend the lives of these patients.

Like patients with later-stage NSCLC, patients with small cell lung cancer of any stage face the risk that their cancer can return, even when it is initially controlled. All patients with small cell lung cancer must be followed closely by their doctors with x-rays, scans, and check-ups.

Recurrent lung cancer

Once your treatment is complete and there is a remission (absence of cancer symptoms; also called “no evidence of disease” or NED), talk with your doctor about the possibility of the cancer returning. Many survivors feel worried or anxious that the cancer will come back.

If the cancer does return after the original treatment, it is called recurrent cancer. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

When this occurs, a cycle of testing will begin again to learn as much as possible about the recurrence. After testing is done, you and your doctor will talk about your treatment options. Often the treatment plan will include the therapies described above (such as surgery, chemotherapy, and radiation therapy) but may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their

health care team about these feelings and ask about support services to help them cope.

Metastatic lung cancer

If cancer has spread to another location in the body, it is called metastatic cancer.

Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer because there can be different opinions about the best treatment plan. Seek a second opinion before starting treatment so you are comfortable with the treatment plan chosen. This discussion may include clinical trials.

Chemotherapy is not as effective as radiation therapy or surgery to treat lung cancer that has spread to the brain. For this reason, lung cancer that has spread to the brain is treated instead with radiation therapy, surgery, or both. Most patients with brain metastases from lung cancer are treated with radiation therapy to the entire brain. This can cause side effects such as hair loss, fatigue, and redness of the scalp. With a small tumor, a type of radiation therapy called stereotactic radiosurgery can focus radiation only on the tumor in the brain and minimize side effects.

In addition to treatment to slow, stop, or eliminate the cancer (also called disease-directed treatment), an important part of cancer care is relieving a person's symptoms and side effects. It includes supporting the patient with his or her physical, emotional, and social needs, an approach called palliative or supportive care. People often receive disease-directed therapy and treatment to ease symptoms at the same time.

Radiation therapy or surgery may also be used to treat metastases that are causing pain or other symptoms.

- A tumor in the chest that is bleeding or blocking the lung passages can be shrunk with radiation therapy.
- During a bronchoscopy (see the Diagnosis section), lung passages blocked by cancer can be opened to improve breathing.
- A surgeon can use a laser to burn away a tumor or place a mechanical stent (support) to prop open an airway passage.
- Bone metastases that weaken important bones can be treated with surgery, and the bones can be reinforced using metal implants. Bone metastases can also be treated with radiation therapy.

Medications also help treat the symptoms of lung cancer.

- Medications are used to treat cancer pain. Most hospitals and cancer centers have pain control specialists who provide pain relief, even for very severe cancer pain. Many drugs used to treat cancer pain, especially morphine, can also relieve shortness of breath caused by cancer. Learn more about managing cancer pain at www.cancer.net/features.

- Medications can be used to suppress cough, open closed airways, or reduce bronchial secretions.
- Prednisone or methylprednisolone (multiple brand names) can reduce inflammation caused by lung cancer or radiation therapy and improve breathing.
- Extra oxygen from small, portable tanks can help make up for the lung's reduced ability to extract oxygen from the air.
- Medications called bisphosphonates strengthen bones, lessen bone pain, and help prevent future bone metastases.
- Appetite stimulants and nutritional supplements can improve appetite and reduce weight loss.

If disease-directed treatment is not successful, this may also be called advanced cancer. This diagnosis is stressful, and it may be difficult to discuss. However, it is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Learn more about advanced cancer care planning at www.cancer.net/advancedcancer.

Find out more about common terms used during cancer treatment at www.cancer.net/dictionaryresources.

ABOUT CLINICAL TRIALS

Doctors and scientists are always looking for better ways to treat patients with lung cancer. To make scientific advances, doctors create research studies involving people, called clinical trials.



Many clinical trials are focused on new treatments, evaluating whether a new treatment is safe, effective, and possibly better than the current (standard) treatment. These studies evaluate new drugs and methods of treatment, new approaches to existing treatments, and new prevention methods. Patients who participate in clinical trials

are often among the first to receive new treatments before they are widely available. However, there is no guarantee that the new treatment will be safe, effective, or better than a standard treatment.

There are also clinical trials that study new ways to ease symptoms and side effects during treatment and manage the late effects that may occur after treatment. Talk with your doctor about clinical trials regarding side effects. In addition, there are ongoing studies about ways to prevent the disease.

Patients decide to participate in clinical trials for many reasons. For some patients, a clinical trial is the best treatment option available. Because standard treatments are not perfect, patients are willing to face the added uncertainty of a clinical trial in the hope of a better result. Other patients volunteer for clinical trials because they know that these studies are the only way to make progress in treating lung cancer. Even if they do not benefit directly from the clinical trial, their participation may benefit future patients with lung cancer.

Sometimes people have concerns that, by participating in a clinical trial, they may receive no treatment by being given a placebo or a “sugar pill.” The use of placebos in cancer clinical trials is rare. When a placebo is used in a study, it is done with the full knowledge of the participants.

To join a clinical trial, patients must participate in a process known as informed consent. During informed consent, the doctor will list all of the patient’s options so that the person understands how the new treatment differs from the standard treatment. The doctor must also explain all of the risks of the new treatment, which may or may not be different from the risks of standard treatment. Finally, the doctor must detail what will be required of each patient in order to participate in the clinical trial, including the number of doctor visits, tests, and the schedule of treatment.

Learn more about clinical trials at www.cancer.net/clinicaltrials. For specific topics being studied for lung cancer, learn more in the Current Research section.

Patients who participate in a clinical trial may stop participating at any time for any personal or medical reason. This may include that the new treatment is not working or there are serious side effects. It is important that patients participating in a clinical trial talk with their doctor and researchers about who will be providing their treatment and care during the clinical trial, after the clinical trials ends, and/or if the patient chooses to leave the clinical trial before it ends.

SIDE EFFECTS

Cancer and its treatment can cause a variety of side effects. However, doctors have made major strides in recent years in reducing pain, nausea and vomiting, and other physical side effects of cancer treatments. Many treatments used today are less intensive but as effective as treatments used in the past. Doctors also have many ways to provide relief to patients when such side effects occur.

Fear of treatment side effects is common after a diagnosis of cancer, but it may be helpful to know that preventing and controlling side effects is a major focus of your health care team. Before treatment begins, talk with your doctor about

possible side effects of the specific treatments you will be receiving. The specific side effects that can occur depend on a variety of factors, including the type of cancer, its location, the individual treatment plan (including the length and dosage of treatment), and your overall health. Common side effects for each treatment option are described in detail within the Treatment section.

Ask your doctor which side effects are most likely to happen (and which are not), when side effects are likely to occur, and how they will be addressed by the health care team. Also, be sure to communicate with your doctor about side effects you experience during and after treatment. Care of a patient's symptoms and side effects is an important part of a person's overall treatment plan; this is called palliative or supportive care. It helps people with cancer at any stage of illness be as comfortable as possible. Learn more about the most common side effects of cancer and different treatments, along with ways to prevent or control them at www.cancer.net/sideeffects.

Be sure to talk with your doctor about the level of caregiving you may need during treatment and recovery, as family members and friends often play an important role in the care of a person with lung cancer. Learn more about caregiving at www.cancer.net/caregiving.

In addition to physical side effects, there may be psychosocial (emotional and social) effects as well. For many patients, a diagnosis of lung cancer is stressful and can bring difficult emotions. Patients and their families are encouraged to share their feelings with a member of their health care team, who can help with coping strategies. Learn more about the importance of addressing such needs, including concerns about managing the cost of your cancer care, at www.cancer.net/patientcare and www.cancer.net/managingcostofcare.

A side effect that occurs more than five years after treatment is called a late effect. Treatment of late effects is an important part of survivorship care. Learn more about late effects or long-term side effects by reading the After Treatment section or talking with your doctor.

LIVING WITH LUNG CANCER

Because lung cancer is associated with smoking, patients may feel that they will not receive as much support or help from people around them because they believe that others will think that their behavior caused the disease. The truth is that most smokers do not develop lung cancer, and not all patients with lung cancer smoke. Lung cancer is a disease that can affect anyone. In fact, most people who get lung cancer today have either stopped smoking years earlier or never smoked.

For many patients, a diagnosis of lung cancer can be very stressful and, at times, difficult to bear. Some patients with lung cancer develop anxiety and, less commonly, depression. Patients and their families should not be afraid to express the way they are feeling to doctors, nurses, and social workers. The health care team is there to help, and many team members have special skills and experience that can make things easier for patients and their families.

In addition to emotional support and education, the doctor may prescribe anti-anxiety medications and, occasionally, antidepressants. He or she may refer the patient to a counselor, psychologist, social worker, or psychiatrist. Furthermore, patients and their families should be aware that there are resources available in the community to help people living with cancer. Some patients feel comfortable discussing their disease and experiences throughout treatment with their doctor, nurse, family, friends, or other patients. These patients may also join support groups or advocacy groups in order to increase awareness about lung cancer and to help fellow patients who are living with this disease.

A lung cancer diagnosis is serious. However, patients can be hopeful that their doctors can offer them effective treatment. They can take comfort knowing that the advances being made in the diagnosis and treatment of lung cancer will provide more and more patients with a chance for cure.

AFTER TREATMENT

Each year, tens of thousands of people are cured of lung cancer in the United States. After treatment for lung cancer ends, your doctor will outline a program of tests and visits to monitor your recovery and to check that the cancer has not returned. This plan may include regular physical examinations and/or medical tests. In addition, ASCO offers cancer treatment summaries and survivorship care plans at www.cancer.net/treatmentsummaries for both small cell lung cancer and NSCLC to help keep track of the treatment you received and create a plan once treatment ends. During this period, any new problem that lasts for more than two weeks should be brought to the attention of your doctor or nurse.

People treated for lung cancer may continue to have side effects, even after treatment ends. Common post-treatment problems include pain, fatigue, and shortness of breath. Feelings of depression and anxiety may also persist after treatment, and fear of the cancer returning is very common. Often people feel that they have less support once the treatment has ended and that there is less assistance available from their doctors, nurses, and other programs, such as support groups. Your doctor, nurse, and social worker can help you develop a plan to manage any problems that persist after treatment.

Nothing helps people recovering from lung cancer more than stopping smoking. There are many tools and approaches available. Enlist the support of your family, friends, nurses, and doctors; it is difficult to stop on your own.

People who develop lung cancer are at higher risk for developing a second lung cancer. Your doctor will recommend scans to monitor you so that any new cancers can be detected as early as possible.



People recovering from lung cancer are encouraged to follow established guidelines for good health, such as maintaining a healthy weight, not smoking, eating a balanced diet, and having recommended cancer screening tests. Because many survivors of lung cancer have smoked cigarettes in the past, they are at very high risk for heart disease, stroke, emphysema, and chronic bronchitis. Certain cancer treatments can further increase these risks.

Even for those who are nonsmokers, returning to usual health routines after cancer is important for overall well-being. Talk with your doctor to develop a plan that is best for your needs.

Moderate physical activity can help rebuild your strength and energy level. Recovering patients, even those using oxygen, are encouraged to walk for 15 to 30 minutes each day to improve their heart and lung functioning. Your doctor can help you create an appropriate exercise plan based upon your needs, physical abilities, and fitness level.

Learn more about the next steps to take in survivorship, including making positive lifestyle changes, at www.cancer.net/features. Find out more about common terms used after cancer treatment is complete at www.cancer.net/dictionaryresources.

CURRENT RESEARCH

Doctors are working to learn more about lung cancer, ways to prevent it, how to best treat it, and how to provide the best care to people diagnosed with this disease. The following areas of research may include new options for patients through clinical trials. Always talk with your doctor about the diagnostic and treatment options best for you.

Personalized therapy. Researchers are identifying characteristics of patients and their tumors that can predict whether specific chemotherapy or targeted therapy may be effective. To collect this information, patients will increasingly be asked to have additional analyses of the tumor samples

obtained at the time of diagnosis. In most patients for whom chemotherapy is recommended, the amount of tumor tissue removed during the biopsy to diagnose their cancer is not enough for these additional studies. These patients will be asked to undergo additional biopsies to help plan therapy and, if part of a clinical trial, to aid the research to discover better ways to treat lung cancer.

Better techniques for surgery and radiation therapy.

Doctors are finding ways to improve the effectiveness of surgical and radiologic procedures while reducing the side effects of these procedures. Advances in all types of treatment will improve doctors' ability to combine chemotherapy, radiation therapy, and surgery for the treatment of patients with all stages of lung cancer.

Improved screening. Lung cancer is more successfully treated in its early stages, which has raised interest in screening patients for lung cancer before it grows to the point that it causes symptoms. There are currently no proven screening tests for lung cancer. Advances in imaging techniques, such as low-dose, helical CT scanning, are currently under investigation and may result in better methods to find lung cancer early. In the future, molecules detected in the blood or sputum may suggest the presence of lung cancer before it shows up on a CT scan.

Stopping tobacco use. Even with the best methods for the early detection and treatment of lung cancer, the best way to save lives from lung cancer is through programs to quit cigarette smoking. For most people, lung cancer is a highly preventable disease. Even for people with lung cancer, stopping smoking lets people live longer, lowers side effects, and lessens the chance of getting a second lung cancer. Quitting smoking is hard at any time, and even more so during cancer treatment. The health care team can help make it easier to quit smoking with nicotine replacement and other techniques.

Supportive care. Clinical trials are underway to find better ways of reducing symptoms and side effects of current lung cancer treatments in order to improve patients' comfort and quality of life.

Learn more about common statistical terms used in cancer research at www.cancer.net/dictionaryresources.

QUESTIONS TO ASK THE DOCTOR

Talking often with the doctor is important to make informed decisions about your health care. These suggested questions are a starting point to help you learn more about your cancer care and treatment. You are also encouraged to ask additional questions that are important to you.

For all patients with lung cancer:

- What type of lung cancer do I have?
- What is the stage of my lung cancer? What does this mean?
- Should I see another doctor to assist in my care, such as a thoracic surgeon, radiation oncologist, medical oncologist, and/or pulmonologist? What is the role of each doctor in my care?
- Can you explain my pathology report (laboratory test results) to me?
- What treatment options do I have?
- What clinical trials are open to me?
- Who will be part of my health care team, and what does each member do?
- Who will be coordinating my overall treatment and follow-up care?
- What treatment plan do you recommend? Why?
- Do I need additional scans or biopsies in order to plan my treatment?
- What is the goal of my treatment?
- What are the possible side effects of this treatment, both in the short term and the long term?
- In addition to treating my cancer, what can be done to treat my symptoms?
- How will this treatment affect my daily life? Will I be able to work, exercise, and perform my usual activities?
- If I'm worried about managing the costs related to my cancer care, who can help me with these concerns?
- What support services are available to me? To my family?

For patients who will have surgery:

- What type of surgery will I have? Will lymph nodes be removed?
- How long will the operation take?
- How long will I be in the hospital?
- Can you describe what my recovery from surgery will be like?

For patients who will receive chemotherapy and targeted therapy:

- What are the names of the drugs, and how are they given?
- What are the side effects of each medication? What side effects or problems should I watch for?
- What can be done to lessen these side effects?
- How often will I need to visit the doctor to receive the therapy, and how long will each visit take?
- Will I be able to go to and return from this treatment on my own, or should I arrange to have assistance?

- What are the recommendations for people who take their medication at home?

For patients who will receive radiation therapy:

- How will my treatment be planned? What types of scans will be used?
- Where will I receive radiation therapy?
- How often will I receive radiation therapy?
- How much time will each treatment take?
- How much of the normal lung will be included in the radiation field?
- Is it possible for me to receive chemotherapy with my radiation therapy? If so, what are the added side effects of giving the chemotherapy at the same time, compared with one after another?
- Will I be able to go to and return from this treatment on my own, or should I arrange to have assistance?

For patients considering a clinical trial:

- What are my options for standard treatment?
- What other treatments through clinical trials are available to me?
- How will my experience differ if I enroll in this clinical trial, as opposed to standard treatment (different risks, extra tests or time commitment, schedule)?
- What is the goal of this clinical trial? Is this a phase I, II, or III clinical trial? What does this mean?
- Where will I receive the clinical trial treatment?

For patients who have completed their treatment:

- What are the chances that my cancer will return?
- Is there anything more I can do to reduce the chance that my cancer will return?
- What follow-up tests will I need and how often will I need them?
- What tests will I have during my follow-up visit?

For patients who smoke:

- How can you help me to quit smoking?

Patient Information Resources

Find organizations that offer information for lung cancer at www.cancer.net/support.

Dear Friend,

From the instant that the word *cancer* is spoken, life's major and minor chords are played differently.

At the Conquer Cancer Foundation of the American Society of Clinical Oncology (formerly known as The ASCO Cancer Foundation), we are well acquainted with the human cost of cancer. We feel great responsibility to be there for all who have been touched by cancer. We're working toward conquering this disease, and we're doing all we can to ensure that high-quality information and treatment are accessible to all.

One way we're doing this is by supporting education and information for patients and physicians worldwide through Cancer.Net, ASCO's award-winning patient information website. We also support patient information materials found in physicians' offices nationwide. And we hold public forums that distill scientific findings from ASCO's Annual Meeting for patients, families, and others from a non-clinical background.

As part of our mission, we will also continue to support breakthrough research in every aspect of patients' lives—from prevention through diagnosis, treatment, survivorship, and end-of-life care.

And we will continue to support work toward ensuring that more people have access to high-quality cancer care by working to eliminate health disparities in the United States and by offering professional development opportunities for physicians internationally.

We are committed to strengthening our partnerships with visionary organizations dedicated to working on behalf of all people with cancer and with generous individuals who contribute their time, talent, and resources to fuel our shared passions.

If you are a current supporter of the Conquer Cancer Foundation, ***thank you!***

If you have not partnered with the Conquer Cancer Foundation before, join us today in building ***a world free from the fear of cancer.***

Warmest Regards,

Nancy R. Daly, MS, MPH
Executive Director
Conquer Cancer Foundation of the American Society of
Clinical Oncology

P.S. To make a gift online and be part of our ambitious future, visit **ConquerCancerFoundation.org**.



American Society of Clinical Oncology

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www.asco.org | www.cancer.net

For more information about ASCO's patient information resources,
call toll-free 888-651-3038 or e-mail contactus@cancer.net.

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