

Lung Cancer

What is lung cancer?

The lungs, a pair of sponge-like, cone-shaped organs, are part of the respiratory system. The right lung has three sections, called lobes; it is a little larger than the left lung, which has two lobes. Cancers that begin in the lungs are divided into two major types, non-small cell lung cancer and small cell lung cancer, depending on how the cells look under the microscope. Each type of lung cancer grows and spread in different ways and is treated differently. Non-small cell lung cancer is more common than small cell lung cancer, and it generally grows and spreads more slowly. There are three main types of non-small cell lung cancer. They are named for the type of cells in which the cancer develops (squamous cell carcinoma, adenocarcinoma, and large cell carcinoma). Small cell lung cancer, sometimes call oat cell cancer, is less common than non-small cell lung cancer. This type of lung cancer grows more quickly and is more likely to spread to other parts of the body.

Who is at risk for lung cancer?

Research has shown that there are many causes of lung cancer – most are related to the use of tobacco.

- **Cigarettes:** Cigarette smoking causes lung cancer. Tobacco damages the cells in the lungs. Over time, the damaged cells may become cancerous. The likelihood that a person will develop lung cancer depends on the age at which smoking began, how long the person has smoked, the number of cigarettes smoked per day, and how deeply the smoker inhales.
- **Cigars and Pipes:** Cigar and pipe smokers are at higher risk for developing lung cancer than nonsmokers. The number of years a person smokes, the number of pipes or cigars smoked per day, and how deeply the person inhales all affect the risk of developing lung cancer. Even cigar and pipe smokers who do not inhale are at increased risk for lung, mouth, and other types of cancer.
- **Environmental Tobacco Smoke:** The chance of developing lung cancer is increased by exposure to environmental tobacco smoke (ETS)—the smoke in the air when someone else smokes. Exposure to ETS, or secondhand smoke, is called involuntary or passive smoking.
- **Radon:** Radon is an invisible, odorless, and tasteless radioactive gas that occurs naturally in soil and rock. It can cause damage to the lungs that may lead to lung cancer. People who work in mines may be exposed to radon and, in some parts of the country, radon is found in houses. The home radon test is relatively easy to use and inexpensive and can be found at most hardware stores. Once a radon problem is corrected, the hazard is gone for good.
- **Asbestos:** Asbestos is the name of a group of minerals that occur naturally as fibers and are used in certain industries (i.e., shipbuilding, asbestos mining and manufacturing, insulation work, and brake repair). Asbestos fibers tend to break easily into particles that can float in the air and stick to clothes. When the particles are inhaled, they can lodge in the lungs, damaging cells and increasing the risk for lung cancer. Workers who have been exposed to large

amounts of asbestos have a risk of developing lung cancer that is 3 to 4 times greater than that for workers who have not been exposed to asbestos. Asbestos workers should use the protective equipment provided by their employers and follow recommended work practices and safety procedures.

- **Pollution:** Researchers have found a link between lung cancer and exposure to certain air pollutants, such as by-products of diesel and other fossil fuels. However, this relationship has not been clearly defined.
- **Lung Diseases:** Certain lung diseases, such as tuberculosis (TB), increase a person's chance of developing lung cancer. Lung cancer tends to develop in areas of the lung that are scarred from TB.
- **Personal History:** A person who has had lung cancer once is more likely to develop a second lung cancer compared with a person who has never had lung cancer. Quitting smoking after lung cancer is diagnosed may prevent the development of a second lung cancer.

Researchers continue to study the causes of lung cancer and to search for ways to prevent it. We already know that the best way to prevent lung cancer is to quit (or never start) smoking. The sooner a person quits smoking the better. Even if you have been smoking for many years, it's never too late to benefit from quitting.

What are the symptoms of lung cancer?

Common signs and symptoms of lung cancer include:

- A cough that doesn't go away and gets worse over time
- Constant chest pain
- Coughing up blood
- Shortness of breath, wheezing, or hoarseness
- Repeated problems with pneumonia or bronchitis
- Swelling of the neck and face
- Loss of appetite or weight loss
- Fatigue

These symptoms may be caused by esophageal cancer or by other conditions. It is important to talk with your doctor if any of these symptoms occur.

How is lung cancer diagnosed?

If any of the above symptoms do occur, your doctor will evaluate your medical history, smoking history, exposure to environmental and occupational hazards, and family history of cancer. The doctor will also perform a physical exam and may order a chest x-ray and other diagnostic tests. If lung cancer is thought to be present, a sputum cytology test will be ordered to examine your mucous cells under a microscope. To confirm the presence of lung cancer, the doctor will perform a biopsy—the removal of a small sample of tissue from the lung for examination under a

microscope. A number of procedures may be used to obtain this tissue such as a bronchoscope, needle aspiration, thoracentesis, or thoracotomy.

What is staging?

If the diagnosis is lung cancer, your doctor will need to know the stage (or extent) of the disease. Staging is a way to find how far the cancer has spread and to which parts of the body. Lung cancer often spreads to the brain and bones. Once your doctor knows what stage your cancer is, he or she can plan your treatment. Some tests used to determine if the cancer has spread include CAT (or CT) scan (computerized tomography), MRI (magnetic resonance imaging), radionuclide scanning, bone scan, and/or mediastinoscopy/mediastinotomy.

How is lung cancer treated?

The treatment of lung cancer depends on a number of factors, including the type of lung cancer (non-small cell or small cell lung cancer); the size, location, extent of the tumor; and the general health of the patient. Many different treatments and combinations of treatments may be used to control lung cancer, and/or to improve quality of life by reducing symptoms. Treatments for lung cancer include surgery, radiation therapy, chemotherapy, and photodynamic therapy.

Clinical trials are also a treatment option. Patients can learn more about clinical trials from the NCI publication “Taking Part in Clinical Trials: What Cancer Patients Need to Know.” They can also visit <http://www.cancer.gov/clinicaltrials> for more information.

How is non–small cell lung cancer treated?

Patients with non-small cell lung cancer may be treated in several ways. The choice of treatment depends mainly on the size, location, and extent of the tumor. Surgery is the most common way to treat this type of lung cancer. Cryosurgery, a treatment that freezes and destroys cancer tissue, may be used to control symptoms in the later stages of non-small cell lung cancer. Radiation therapy and chemotherapy may also be used to slow the progress of the disease and to manage symptoms.

How is small cell lung cancer treated?

Small cell lung cancer spreads quickly. In many cases, cancer cells have already spread to other parts of the body when the disease is diagnosed. In order to reach cancer cells throughout the body, doctors almost always use chemotherapy. Treatment may also include radiation therapy aimed at the tumor in the lung or tumors in other parts of the body (such as in the brain). Some patients have radiation therapy to the brain even though no cancer is found there. This treatment, called prophylactic cranial irradiation (PCI), is given to prevent tumors from forming in the brain. Surgery is part of the treatment plan for a small number of patients with small cell lung cancer.

What side effects will I have from my treatment?

The side effects of cancer treatment depend on the type of treatment and may be different for each person. Side effects are often only temporary. Your doctor or nurse can explain the possible side effects of treatment, and he or she can suggest ways to help relieve the symptoms that may occur during and after treatment.

What kind of follow-up care should I expect?

Follow-up care after treatment is important for making sure that any changes are found. If your cancer returns or spreads or if a new cancer develops, it can be treated as soon as possible. Follow-up visits may include physical exams, chest x-rays, or lab tests. It is important that you tell your doctor or nurse about any health problems as soon as they occur.

Are there other resources that can help me learn about lung cancer?

Ask your nurse for a copy of “A Resource Guide for Persons with Thoracic Cancer”.

Cancer Prevention Center

The Cancer Prevention Center offers a wide range of screening and early detection services.
(713) 745-8040/ (800) 438-6434

Place...of wellness

Place...of wellness offers more than 75 programs, such as yoga, tai chi, meditation, lectures on complementary and integrative therapies, daily counseling, support groups and family discussion groups. Place...of wellness is open to anyone touched by cancer, their family members and caregivers, whether or not they were treated at M. D. Anderson.
(713) 794-4700

The Learning Center

The Learning Center is a consumer health library with the latest information on cancer care, support, prevention and general health and wellness issues.

(713) 745-8063, Main Building

(713) 563-8010, Mays Clinic

(713) 745-0007, Jesse H. Jones Rotary House International hotel

American Cancer Society

The American Cancer Society (ACS) is a voluntary national health organization with local offices around the country. The ACS supports research, provides information about cancer, and offers many programs and services to patients and their families.

(800) ACS-2345 (1-800-227-2345)

www.cancer.org

American Lung Association (ALA)

A voluntary organization concerned with the prevention and treatment of lung diseases. ALA services include smoking cessation programs and free printed material about smoking and lung cancer.

(212) 315-8700

Cancer Information Service

The Cancer Information Service (CIS) is a program of the National Cancer Institute (NCI). People who call the CIS speak with highly trained and caring information specialists who can answer questions about cancer screening tests, risks, symptoms, how cancer is diagnosed, the latest treatments and support organizations.

(800) 4-CANCER (1-800-422-6237)