cancer that originates in the tissues of the lungs. Lung cancer is the leading cause of cancer death in the United States in both men and women. Like other cancers, lung cancer occurs after repeated insults to the genetic material of the cell. By far the most common source of these insults is tobacco smoke, which is responsible for about 85% of U.S. lung cancer deaths (see smoking). The incidence of lung cancer in other countries follows their smoking patterns. Some other carcinogens known to cause lung cancer are found in the workplace. These include bischloromethyl ether and chloromethyl ether in chemical workers, arsenic in copper smelting, and asbestos in shipbuilders and other asbestos workers. Radon poses a risk to uranium and fluorspar miners and may pose a risk in some private residences as well. African Americans have a higher incidence of lung cancer than European Americans, even after adjusting for smoking.

Types of Lung Cancer
Lung cancers are classified according to the type of cell present in the tumor. The majority are referred to as non–small cell carcinomas. These include squamous cell or epidermoid carcinomas (the most common type worldwide), adenocarcinomas, and large cell carcinomas. Small cell carcinoma (which includes the subtypes oat cell and intermediate) comprises approximately 20% to 25% of lung cancers; it often has metastasized by the time it is detected. Lung cancer most commonly spreads to the brain, bone, liver, or bone marrow.

Symptoms
The primary symptoms of lung cancer are cough, shortness of breath, hoarseness, blood in the sputum, and pain. In some types, the cancer cells themselves produce hormones or other substances that can create an imbalance and result in various symptoms. Metastatic lung cancer also can cause symptoms that result from its effect on the organ to which the cancer has spread.

Diagnosis and Treatment
Diagnosis of lung cancer may be made by physical examination, chest X rays, bronchoscopy (see bronchoscope), or percutaneous needle biopsy (insertion of a fine needle through the skin and into the lung to obtain tissue for study). In many cases definitive diagnosis is made after surgical specimens have been evaluated. Evaluation of suspected sites of metastasis may involve CAT scans or magnetic resonance imaging (MRI). A special CAT-scanning technique (helical low-dose CAT-scanning) has also been used for initial diagnosis because it can detect small tumors before they have spread.

Lung cancer is staged according to its location, size, cell type, and spread. This staging plus the state of health of the patient are used to determine treatment.

Treatment typically consists of surgical excision of the tumor alone or in combination with either external-beam radiation therapy or chemotherapy using one or more anticancer drugs. Photodynamic therapy is sometimes used if the cancer is still localized. In this therapy a substance that makes cells...
more sensitive to light is injected into the body. When it has passed out of most of the tissues, but remains in the cancer cells, the cancer is destroyed by a beam of laser light.

**Prevention**

Not starting to smoke or ceasing to smoke is by far the most effective lung cancer preventive. The risk of lung cancer in ex-smokers begins to decline about five years after quitting, and after 15 to 20 years their risk is 80% less than that of smokers. The reduction in cigarette smoking since the 1964 report of the Surgeon General's Advisory Committee on Health began to be translated into a decrease in the incidence of lung cancer in the 1990s; this decrease averaged more than 1% per year from 1990 to 1995. The preventive role of dietary antioxidants is under study.

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