



# Lung Cancer

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## Epidemiology

- A. Leading cause of cancer death in the United States and the world
- B. An estimated 171,900 new cases will be diagnosed in the United States in 2003.
  - 1. 13% of all cancers
  - 2. Average age at diagnosis is 60 years.
  - 3. Uncommon before age 40
- C. 157,200 estimated deaths from lung cancer in the United States in 2003
  - 1. 28% of all cancer deaths
  - 2. Leading cause of cancer death in men and women
    - a) Accounts for about 31% of cancer deaths in men
    - b) Accounts for about 25% of cancer deaths in women
  - 3. More deaths are attributed to lung cancer than colon, breast, and prostate cancers combined.

## Risk Factors

- A. Cigarette smoking
  - 1. Number one risk factor
    - a) 80%–90% of all cases are related to smoking.
    - b) Risk is related to
      - (1) Number of cigarettes smoked daily
      - (2) Number of years smoking
      - (3) Age that smoking began
      - (4) Inhalation patterns
      - (5) Tar content of cigarettes smoked.
  - 2. Smoke contains more than 3,500 chemical compounds.
    - a) More than 40 of these chemicals are known carcinogens.
  - 3. Smoking cessation
    - a) Risk of developing lung cancer begins to decrease five years after quitting and steadily continues to decrease over time.
    - b) The risk of developing lung cancer always is higher for former smokers than for those who never smoked.
  - 4. Cigar and pipe smoking are not associated with a rate of lung cancer as

high as cigarette smoking, but they are considered significant risk factors.

- B. Environmental tobacco smoke (second-hand smoke)
  - 1. Accounts for about a third of all lung cancers
    - a) Causes about 3,000 deaths a year
  - 2. Particles are breathed in easily because of their small size and accumulate in the lungs.
  - 3. Contains more than 100 chemicals, many of them toxic
- C. Radon gas
  - 1. Second-leading cause of lung cancer after tobacco smoke
    - a) Accounts for about 10% of lung cancers in the United States
    - b) Causes about 15,000 lung cancer deaths annually
    - c) Acts synergistically with tobacco smoke to increase risk of developing lung cancer
  - 2. Colorless and odorless gas that is a by-product of radium decay
  - 3. Naturally contained in rock and soil
  - 4. Enters buildings through pipes and cracks in foundations and walls
  - 5. Estimated that 1 of every 15 American homes may contain excessive amounts
  - 6. Radon test kits are available at most hardware stores.
- D. Asbestos
  - 1. Synergistic effect with smoking that greatly increases risk of developing lung cancer
  - 2. Most common occupational cause of lung cancer
  - 3. Associated with development of pleural mesothelioma
- E. Occupational exposure to chemicals
  - 1. Arsenic
  - 2. Chromium
  - 3. Copper
  - 4. Diesel exhaust
  - 5. Ionizing radiation
  - 6. Nickel
  - 7. Polycyclic hydrocarbons
  - 8. Silica
  - 9. Uranium

## Pathology of Primary Lung Cancer

- A. Squamous cell (epidermoid)
  - 1. 20%–30% of all cases
  - 2. Differentiation
    - a) Well differentiated
    - b) Poorly differentiated
- B. Adenocarcinoma
  - 1. 30%–40% of all cases
  - 2. Differentiation
    - a) Well differentiated
    - b) Poorly differentiated
- C. Large cell carcinoma
  - 1. 10% of all cases
- D. Small cell lung cancer (SCLC)
  - 1. 20% of all cases
- E. For treatment purposes, all lung cancers are categorized as either SCLC or non-small cell lung cancer (NSCLC).

## Tumor-Node-Metastasis Classification and Staging of Non-Small Cell Lung Cancer

- A. Tumor-node-metastasis (TNM) system reflects the anatomic extent of the disease.
- B. Proper classification and staging allow physicians to select the most appropriate treatment, provide prognostic information, and permit the comparison of results from a variety of clinical reports and trials.
- C. *T* describes the extent of the primary tumor.
  - 1. Assesses the size and location of the primary tumor and presence or absence of invasion of adjacent structures such as the chest wall, carina, or pleural effusion
  - 2. Ranges from TX to T4
    - a) TX = Tumor cells are present in sputum or bronchial washing, but

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**Key Words:** lung neoplasms; carcinoma, small cell; carcinoma, non-small cell lung

Digital Object Identifier: 10.1188/03.CJON.699-702