

BRONCHITIS

DEFINITION

- Bronchitis is **an inflammation of the bronchial tubes** (or bronchi), which are the air passages that extend from the trachea into the small airways and alveoli. Triggers may be infectious agents, such as viruses or bacteria, or noninfectious agents, such as smoking or inhalation of chemical pollutants or dust.



Normal bronchi

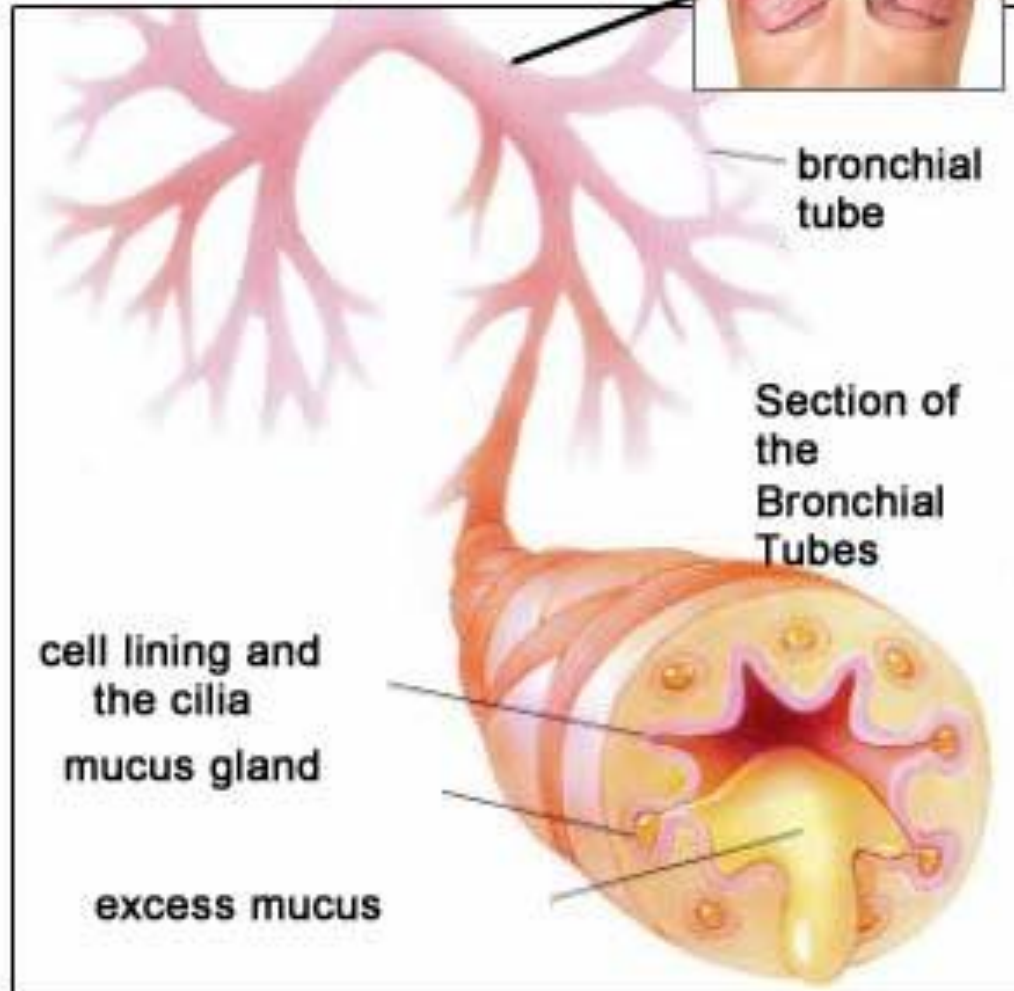
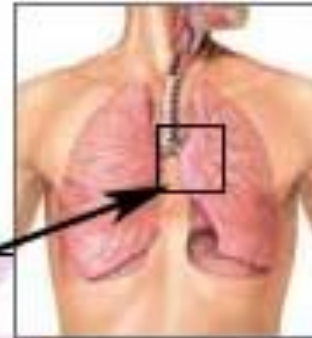


Bronchitis



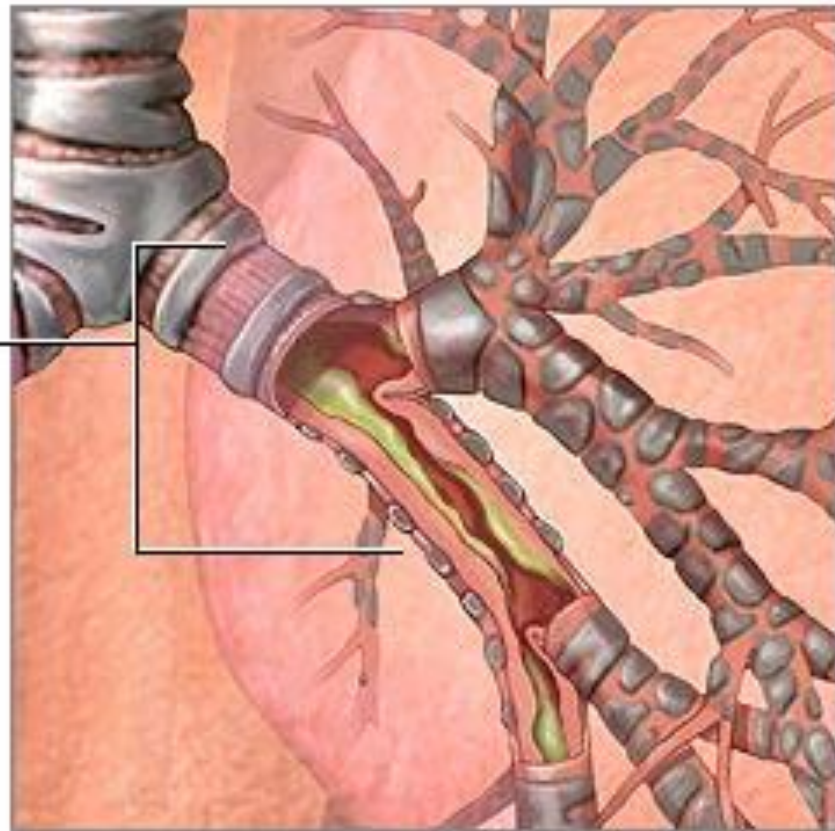
Bronchitis

Visual Explanation





Inflamed
primary and
secondary
bronchi



Acute bronchitis usually results from
an infection such as a cold or flu



BRONCHITIS

- **Acute bronchitis** is manifested by cough and, occasionally, sputum production that last for **no more than 3 weeks**.
- **Chronic bronchitis** is defined clinically as cough with sputum expectoration for **at least 3 months during a period of 2 consecutive years**.



- **Chronic bronchitis** is associated with hypertrophy of the mucus-producing glands found in the mucosa of large cartilaginous airways. As the disease advances, progressive airflow limitation occurs, usually in association with pathologic changes of **emphysema**. This condition is called **chronic obstructive pulmonary disease (COPD)**.



- When a stable patient experiences sudden clinical deterioration with increased sputum volume, sputum purulence, and/or worsening of shortness of breath, this is referred to as an **acute exacerbation of chronic bronchitis** as long as conditions other than acute tracheobronchitis are ruled out.



- According to estimates from national interviews taken by the National Center for Health Statistics **in 2006, approximately 9.5 million people, or 4% of the population, were diagnosed with chronic bronchitis.**



BRONCHITIS OVERVIEW

- The thin mucous lining of these airways can become irritated and swollen.
- The cells that make up this lining may leak fluids in response to the inflammation.
- Coughing is a reflex that works to clear secretions from the lungs. Often the discomfort of a severe cough leads you to seek medical treatment.
- Both adults and children can get bronchitis. Symptoms are similar for both.
- **Infants** usually get **bronchiolitis**, which involves the smaller airways and causes symptoms similar to asthma.



SYMPTOMS

- For either acute bronchitis or chronic bronchitis, signs and symptoms may include:
- **Cough**
- **Production of mucus (sputum), either clear or white or yellowish-gray or green in color**
- **Shortness of breath, made worse by mild exertion**
- **Wheezing**
- **Fatigue**
- **Slight fever and chills**
- **Chest discomfort**



PATHOPHYSIOLOGY

- **Respiratory viruses** are the most common causes of acute bronchitis. The most common viruses include influenza A and B, parainfluenza, respiratory syncytial virus, and coronavirus, although an etiologic agent is identified only in a minority of cases.



- Acute bronchitis is usually caused by infections, such as those caused by *Mycoplasma* species, *Chlamydia pneumoniae*, *Streptococcus pneumoniae*, *Moraxella catarrhalis*, and *Haemophilus influenzae*, and by viruses, such as influenza, parainfluenza, adenovirus, rhinovirus, and respiratory syncytial virus. Exposure to irritants, such as pollution, chemicals, and tobacco smoke, may also cause acute bronchial irritation.



- Chronic bronchitis can be categorized as:
- **simple chronic bronchitis,**
- **chronic mucopurulent bronchitis, or**
- **chronic bronchitis with obstruction.**



- Chronic bronchitis may result from a series of attacks of acute bronchitis, or it may evolve gradually because of heavy smoking or inhalation of air contaminated with other pollutants in the environment.



- **Internationally**, Acute bronchitis is common throughout the world and is **one of the top 5 reasons for seeking medical care** in countries that collect such data.



- Although found in all age groups, acute bronchitis is most frequently diagnosed in children younger than 5 years, whereas chronic bronchitis is more prevalent in people older than 50 years. In the United States, up to two thirds of men and one fourth of women have emphysema at death.



- **Cigarette smoking** is indisputably the predominant cause of chronic bronchitis.
- Estimates suggest that cigarette smoking accounts for 85-90% of chronic bronchitis and COPD.
- Smoking impairs ciliary movement, inhibits the function of alveolar macrophages, and leads to hypertrophy and hyperplasia of mucus-secreting glands.
- Smoking can also increase airway resistance via vagally mediated smooth muscle constriction.



- The majority (70-80%) of acute exacerbations of chronic bronchitis are estimated to be due to respiratory infections.



LABORATORY STUDIES

- Obtain cultures of respiratory secretions for influenza virus, *M pneumoniae*, and *Bordetella pertussis* when these organisms are suspected.
- Culture and Gram stain of sputum is often performed; however, these tests usually show no growth or only normal respiratory flora.
- Obtain a CBC count with differential.
- Blood culture may sometimes be helpful if bacterial superinfection is suspected.
- Sputum cytology may be helpful if the cough is persistent.



IMAGING STUDIES

- Chest radiography should be performed in those patients whose physical examination findings suggest pneumonia. Elderly patients may have no signs of pneumonia; therefore, chest radiography may be warranted in these patients, even without other clinical signs of infection.
- Bronchoscopy may be needed to exclude foreign body aspiration, tuberculosis, tumors, and other chronic diseases of the tracheobronchial tree and lungs.





DIFFERENTIAL DIAGNOSES

- Asthma
- Influenza
- Bronchiectasis
- Pharyngitis, Bacterial
- Bronchiolitis
- Pharyngitis, Viral
- Pneumonia
- Chronic Obstructive Pulmonary Disease
- Sinusitis, Acute
- Sinusitis, Chronic



