

CHRONIC BRONCHITIS

Bronchitis

- **Bronchitis** is inflammation of the bronchi (large and medium-sized airways) in the lungs.
- Symptoms include coughing up mucus, wheezing, shortness of breath, and chest discomfort.
- Bronchitis is divided into two types: acute and chronic. Acute bronchitis is also known as a chest cold.

Acute bronchitis

- Acute bronchitis usually has a cough that lasts around three weeks. In more than 90% of cases the cause is a viral infection.
- These viruses may be spread through the air when people cough or by direct contact. Risk factors include exposure to tobacco smoke, dust, and other air pollution. A small number of cases are due to high levels of air pollution or bacteria such as *Mycoplasma pneumoniae* or *Bordetella pertussis*.
- Treatment of acute bronchitis typically involves rest, paracetamol(acetaminophen), and NSAIDs to help with the fever

Chronic bronchitis

- Chronic bronchitis is defined as a productive cough that lasts for three months or more per year for at least two years.
- Most people with chronic bronchitis have chronic obstructive pulmonary disease (COPD). Tobacco smoking is the most common cause, with a number of other factors such as air pollution and genetics playing a smaller role.
- Treatments include quitting smoking, vaccinations, rehabilitation, and often inhaled bronchodilators and steroids. Some people may benefit from long-term oxygen therapy or lung transplantation.

Chronic bronchitis

- Chronic bronchitis is defined as a productive cough that lasts for three months or more per year for at least two years. Most people with chronic bronchitis have chronic obstructive pulmonary disease (COPD). Protracted bacterial bronchitis is defined as a chronic productive cough with a positive bronchoalveolar lavage that resolves with antibiotics.
- Symptoms of chronic bronchitis may include wheezing and shortness of breath, especially upon exertion and low oxygen saturations. The cough is often worse soon after awakening and the sputum produced may have a yellow or green color and may be streaked with specks of blood.

Symptoms

For either acute bronchitis or chronic bronchitis, signs and symptoms may include:

- Cough
- Production of mucus (sputum), which can be clear, white, yellowish-gray or green in color — rarely, it may be streaked with blood
- Fatigue
- Shortness of breath
- Slight fever and chills
- Chest discomfort

Normal bronchi



Bronchitis



CAUSES

- Chronic bronchitis is caused by smoking,
- inhaling irritating fumes or dust,
- viruses such as the flu, and
- bacteria.

Cause

- Most cases of chronic bronchitis are caused by smoking cigarettes or other forms of tobacco.
- chronic inhalation of air pollution or irritating fumes or dust from hazardous exposures in occupations such as coal mining, grain handling, textile manufacturing, livestock farming, and metal moulding may also be a risk factor for the development of chronic bronchitis.
- Protracted bacterial bronchitis is usually caused by *Streptococcus pneumoniae*, *Non-typable Haemophilus influenzae*, or *Moraxella catarrhalis*

Causes of Chronic Bronchitis

- Chronic bronchitis can occur any time during the year, but it occurs most often during the cold and flu season, usually coupled with an upper respiratory infection.
- Smoking is one of the leading causes of chronic bronchitis.
- Inhaled irritants from the workplace, pollution, or secondhand smoke are another common cause of chronic bronchitis.
- Inhaling irritating fumes or dust can also cause a worsening of chronic bronchitis. Chemical solvents have been linked to worsening chronic bronchitis.
- Several viruses can cause chronic bronchitis, including influenza A and B, commonly referred to as "the flu."

Chronic Bronchitis

Pathophysiology

- Narrowing of airway

- Starting w/ bronchi & smaller airways

- ↑airflow resistance
- ↑work of breathing
- Hypoventilation & CO₂ retention → hypoxemia & hypercapnea



RISK FACTORS

- Risk factors for chronic bronchitis include advanced age,
- a weakened immune system,
- smoking,
- chronic obstructive pulmonary disease (COPD), and
- repeated exposure to lung irritants.

Chronic Bronchitis Diagnosis

- Physical examination
- Usually no blood tests are necessary.
- If pneumonia is suspected, a chest X-ray may be ordered.
- Oxygen saturation (how well oxygen is reaching the blood cells) may be measured by placing a sensor on the finger. This is referred to as pulse oximetry.
- Pulmonary function testing by a pulmonologist may be helpful in diagnosing chronic bronchitis.
- A microscopic examination and/or culture of a sample of phlegm may be obtained to look for a bacterial infection.



Treatment

- Chronic bronchitis is treated symptomatically and may be treated in a nonpharmacologic manner or with pharmacologic therapeutic agents. Typical nonpharmacologic approaches to the management of COPD including bronchitis may include: pulmonary rehabilitation, lung volume reduction surgery, and lung transplantation.

- Inflammation and edema of the respiratory epithelium may be reduced with inhaled corticosteroids.
- Wheezing and shortness of breath can be treated by reducing bronchospasm (reversible narrowing of smaller bronchi due to constriction of the smooth muscle) with bronchodilators such as inhaled long acting β_2 -adrenergic receptor agonists (e.g., salmeterol) and inhaled anticholinergics such as ipratropium bromide or tiotropium bromide.

- Mucolytics may have a small therapeutic effect on acute exacerbations of chronic bronchitis.
- Supplemental oxygen is used to treat hypoxemia (too little oxygen in the blood) and has been shown to reduce mortality in chronic bronchitis patients.
- Oxygen supplementation can result in decreased respiratory drive, leading to increased blood levels of carbon dioxide (hypercapnia) and subsequent respiratory acidosis.

- Treatment of chronic bronchitis depends on the cause. There is no cure, and treatment is aimed at reducing symptoms. Medications may be prescribed including
 - cough suppressants or expectorants,
 - bronchodilator inhalers,
 - nebulizer treatments,
 - corticosteroids (inhaled and oral), and
 - in some cases antibiotics.

Chronic Bronchitis Self-Care and Home Remedies

- Adequate fluid intake is important because fever causes the body to lose fluid faster. Lung secretions will be thinner and easier to clear when the patient is well hydrated.
- A cool mist vaporizer or humidifier can help decrease bronchial irritation.
- An over-the-counter (OTC) cough suppressant may be helpful. Preparations with guaifenesin (Robitussin, Breonesin, Mucinex) will loosen secretions; formulations with dextromethorphan (Benylin DM, Mucinex DM, Robitussin DM, Vicks 44) suppress cough.

- Natural treatments and home remedies for chronic bronchitis include foods that have properties that reportedly reduce bronchitis symptoms. These foods include:honey,
- lemon,
- ginger,
- bay leaf, and
- almonds.

Chronic Bronchitis Prevention

- Stop smoking.
- The dangers of secondhand smoke are well documented. Children should never be exposed to secondhand smoke.
- Avoid exposure to irritants. Proper protection in the workplace is vital to preventing exposure.
- Avoiding long exposure to air pollution from heavy traffic may help prevent bronchitis.
- Stay away from others you know have a cold or the flu.
- Wash the hands frequently to prevent the spread of infection.