Medical Terminology

Chapter 6: The Respiratory System
CHAPTER OBJECTIVES

This chapter covers the Respiratory System, which is the body’s breathing, or respiration system, and the combining forms, terms, and abbreviations used in building words that relate to it. Upon completion of this chapter, you should be able to:

- Name the parts of the respiratory system and discuss their function
- Define combining forms used in building words that relate to the respiratory system
- Identify the meaning of related abbreviations
- Name the common diagnoses, laboratory tests, and clinical procedures used in treating the respiratory system
- Define the major pathological conditions, surgical terms and pharmacological agents relating to the respiratory system
INTRODUCTION

When the respiratory system is mentioned, people generally think of breathing, but breathing is only one of the activities of the respiratory system. The body cells need a continuous supply of oxygen for the metabolic processes that are necessary to maintain life. The respiratory system works with the circulatory system to provide this oxygen and to remove the waste products of metabolism. It also helps to regulate the pH of the blood.

Respiration is the sequence of events that results in the exchange of oxygen and carbon dioxide between the atmosphere and the body cells. Every 3 to 5 seconds, nerve impulses stimulate the breathing process, or ventilation, which moves air through a series of passages into and out of the lungs. After this, there is an exchange of gases.
between the lungs and the blood. This is called **external respiration**. The blood transports the gases to and from the tissue cells. The exchange of gases between the blood and tissue cells is **internal respiration**. Finally, the cells utilize the oxygen for their specific activities: this is called cellular metabolism, or **cellular respiration**. Together, these activities constitute respiration.

The respiratory system is made up of organs and tissues that help you breathe. The main parts of this system are the airways, the lungs and linked blood vessels, and the muscles that enable breathing.

**MECHANICS OF VENTILATION**

Ventilation, or breathing, is the movement of air through the conducting passages between the atmosphere and the lungs. The air moves through the passages because of pressure gradients that are produced by contraction of the diaphragm and thoracic muscles.

**Pulmonary ventilation**

Pulmonary ventilation is commonly referred to as breathing. It is the process of air flowing into the lungs during inspiration (inhalation) and out of the lungs during expiration (exhalation). Air flows because of pressure differences between the atmosphere and the gases inside the lungs.
Air, like other gases, flows from a region with higher pressure to a region with lower pressure. Muscular breathing movements and recoil of elastic tissues create the changes in pressure that result in ventilation. Pulmonary ventilation involves three different pressures:

- Atmospheric pressure
- Intraalveolar (intrapulmonary) pressure
- Intrapleural pressure

**Atmospheric pressure** is the pressure of the air outside the body. **Intraalveolar pressure** is the pressure inside the alveoli of the lungs. **Intrapleural pressure** is the pressure within the pleural cavity. These three pressures are responsible for pulmonary ventilation.

**Inspiration**
Inspiration (inhalation) is the process of taking air into the lungs. It is the active phase of ventilation because it is the result of muscle contraction. During inspiration, the diaphragm contracts and the thoracic cavity increases in volume. This decreases the intraalveolar pressure so that air flows into the lungs. Inspiration draws air into the lungs.

**Expiration**
Expiration (exhalation) is the process of letting air out of the lungs during the breathing cycle. During
expiration, the relaxation of the diaphragm and elastic recoil of tissue decrease the thoracic volume and increase the intra-alveolar pressure. Expiration pushes air out of the lungs.


CONDUCTING PASSAGES

The respiratory conducting passages are divided into the upper respiratory tract and the lower respiratory tract. The upper respiratory tract includes the nose, pharynx, and larynx. The lower respiratory tract consists of the trachea, bronchial tree, and lungs. These tracts open to the outside and are lined with mucous membranes. In some regions, the membrane has hairs that help filter the air. Other regions may have cilia to propel mucus.

NOSE AND NASAL CAVITIES

The major entrance and exit for the respiratory system is through the nose. The nose has three functions: to filter, moisten and warm the incoming air.

The external nose consists of the surface and skeletal structures that result in the outward appearance of the nose and contribute to its numerous functions. After air enters the nose, it passes into the nasal cavity
and the **paranasal sinuses**, where it is warmed by blood in the mucous membrane that lines these areas. Nose hairs at the entrance to the nose, trap large inhaled particles such as dirt from travelling through the nasal cavity.

**PHARYNX**

The pharynx, commonly called the throat, is a passageway that extends from the base of the skull to the level of the sixth cervical vertebra. It serves both the respiratory and digestive systems by receiving air from the nasal cavity and air, food, and water from the oral cavity. Inferiorly, it opens into the larynx and esophagus.

The pharynx is divided into three regions according to location: the **nasopharynx**, the **oropharynx**, and the **laryngopharynx** (hypopharynx).
**LARYNX**

The **larynx** is a cartilaginous structure inferior to the laryngopharynx that connects the pharynx to the trachea and helps regulate the volume of air that enters and leaves the lungs. The structure of the larynx is formed by several pieces of cartilage. Three large cartilage pieces—the thyroid cartilage (anterior), epiglottis (superior), and cricoid cartilage (inferior)—form the major structure of the larynx. The thyroid cartilage is the Adam's apple (**laryngeal prominence**).

The larynx plays an essential role in human speech. During sound production, the vocal cords close together and vibrate as air expelled from the lungs passes between them. The false vocal cords (**vestibular folds**) have no role in sound production, but help close off the larynx when food is swallowed.

A **true vocal cord** is one of the white, membranous folds attached by muscle to the thyroid and arytenoid cartilages of the larynx on their outer edges. The inner edges of the true vocal cords are free, allowing oscillation to produce sound. The size of the membranous folds of the true vocal cords differs between individuals, producing voices with different pitch ranges. Folds in males tend to be larger than those in females, which create a deeper voice.

Food is prevented from entering the larynx by the **epiglottis**, a very flexible piece of elastic cartilage that covers the opening of the larynx (called **glottis**). The act of swallowing causes the pharynx and larynx to lift upward, allowing the pharynx to expand and the epiglottis of the larynx to swing downward, closing the opening to the trachea. These movements produce a larger area for food to pass through, while preventing food and beverages from entering the trachea.
TRACHEA

The trachea, commonly called the windpipe, is the main airway to the lungs. It divides into the right and left bronchi at the level of the fifth thoracic vertebra, channeling air to the right or left lung.

The hyaline cartilage in the tracheal wall provides support and keeps the trachea from collapsing. The posterior soft tissue allows for expansion of the esophagus, which is immediately posterior to the trachea.

The mucous membrane that lines the trachea is ciliated pseudostratified columnar epithelium similar to that in the nasal cavity and nasopharynx. Goblet cells produce mucus that traps airborne particles and microorganisms, and the cilia propel the mucus upward, where it is either swallowed or expelled.

BRONCHI AND BRONCHIAL TREE

In the **mediastinum** (a general term for a median area), at the level of the fifth thoracic vertebra, the trachea divides into the right and left primary bronchi. The bronchi branch into smaller and smaller passageways until they terminate in tiny air sacs called **alveoli**.

The cartilage and mucous membrane of the primary bronchi are similar to that in the trachea. As the branching continues through the **bronchial tree**, the amount of hyaline cartilage in the walls decreases until it is absent in the smallest bronchioles. As the cartilage decreases, the amount of smooth muscle increases.

The alveolar ducts and alveoli consist primarily of simple squamous epithelium, which permits rapid diffusion of oxygen and carbon dioxide. Exchange of gases between the air in the lungs and the blood in the capillaries occurs across the walls of the alveolar ducts and alveoli. The main function of the bronchi, like other conducting zone structures, is to provide a passageway for air to move into and out of each lung. In addition, the mucous membrane traps debris and pathogens.
LUNGS

The two lungs, which contain all the components of the bronchial tree beyond the primary bronchi, occupy most of the space in the thoracic cavity. The lungs are soft and spongy because they are mostly air spaces surrounded by the alveolar cells and elastic connective tissue. They are separated from each other by the mediastinum, which contains the heart. The only point of attachment for each lung is at the hilum, or root, on the medial side. This is where the bronchi, blood vessels, lymphatics, and nerves enter the lungs.

The right lung is shorter, broader, and has a greater volume than the left lung. It is divided into three lobes (the superior, middle, and inferior lobes) and each lobe is supplied by one of the secondary bronchi. The left lung is longer and narrower than the right lung. It has an indentation, called the cardiac notch, on its medial surface which allows space for the heart. The left lung has two lobes (the superior and inferior).
Each lung is enclosed by a double-layered serous membrane, called the **pleura**. The pleurae consist of two layers. The **visceral pleura** is the layer that is superficial to the lungs, and extends into and lines the lung fissures.

In contrast, the **parietal pleura** is the outer layer that connects to the thoracic wall, the mediastinum, and the diaphragm. The visceral and parietal pleurae connect to each other at the hilum. The **pleural cavity** is the space between the visceral and parietal layers.

The main function of the lungs is to perform the exchange of oxygen and carbon dioxide with air from the atmosphere.

**Link to Learning:** Please read: The lung Association: [Breathing](#) and Merck Manual: [Control of Breathing](#).

**MUSCLES FOR BREATHING**

Inspiration and expiration occur due to the expansion and contraction of the thoracic cavity, respectively. In general, two muscle groups are used during normal inspiration: the diaphragm and the external intercostal muscles. Additional muscles can be used if a bigger breath is required. When the diaphragm contracts, it moves inferiorly toward the abdominal cavity, creating a larger thoracic cavity and more space for the lungs. Contraction of the external intercostal muscles moves the ribs upward and outward, causing the rib cage to
expand, which increases the volume of the thoracic cavity. Due to the adhesive force of the pleural fluid, the expansion of the thoracic cavity forces the lungs to stretch and expand as well. This increase in volume leads to a decrease in intra-alveolar pressure, creating a pressure lower than atmospheric pressure. As a result, a pressure gradient is created that drives air into the lungs.

**Link to Learning:** Please read: National Heart, Lung, and Blood Institute: What Happens when you Breath, and watch the interactive video.
**Link to Learning:** Please read: The Lung Association: *Respiratory System* for an overview of what you have learned and then test what you have learned so far with this interactive labeling activity, *Respiratory System*.

![Image of respiratory system](image_url)

*Click image to enlarge.*

### Combining Forms Relating to the Respiratory System

<table>
<thead>
<tr>
<th>Combining Form</th>
<th>Definition</th>
<th>Example Combining Form</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>adenoid/o</td>
<td>adenoid, gland</td>
<td>pharyng/o</td>
<td>pharynx (throat)</td>
</tr>
<tr>
<td>alveol/o</td>
<td>alveolus (air sac)</td>
<td>phon/o</td>
<td>voice</td>
</tr>
<tr>
<td>bronch/o, bronchi/o</td>
<td>bronchus (airway)</td>
<td>phren/o</td>
<td>diaphragm</td>
</tr>
<tr>
<td>bronchiol/o</td>
<td>bronchiole</td>
<td>pleur/o</td>
<td>pleura (lining of the lung)</td>
</tr>
<tr>
<td>capn/o, carb/o</td>
<td>carbon dioxide</td>
<td>pneum/o, pneumon/o</td>
<td>air or lung</td>
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<tr>
<td>epiglott/o</td>
<td>epiglottis</td>
<td>pulmon/o</td>
<td>lung</td>
</tr>
<tr>
<td>laryng/o</td>
<td>larynx (voice box)</td>
<td>sinus/o</td>
<td>sinus (cavity)</td>
</tr>
<tr>
<td>lob/o</td>
<td>lobe (a portion) of the lung</td>
<td>spir/o, -pnea</td>
<td>breathing</td>
</tr>
<tr>
<td>mediastin/o</td>
<td>mediastinum</td>
<td>thorac/o, pector/o, steth/o</td>
<td>chest</td>
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<tr>
<td>nas/o, rhin/o</td>
<td>nose</td>
<td>tonsill/o</td>
<td>tonsil</td>
</tr>
<tr>
<td>or/o</td>
<td>mouth</td>
<td>trache/o</td>
<td>trachea (windpipe)</td>
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<tr>
<td>ox/o</td>
<td>oxygen</td>
<td>uvul/o</td>
<td>uvula</td>
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<tr>
<td>palat/o</td>
<td>palate</td>
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<tr>
<td>Abbreviation</td>
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<tr>
<td>ABG</td>
<td>arterial blood gases</td>
<td>FEV</td>
<td>force expiratory volume</td>
</tr>
<tr>
<td>AFB</td>
<td>acid-fast bacillus</td>
<td>FVC</td>
<td>forced vital capacity</td>
</tr>
<tr>
<td>A&amp;P</td>
<td>auscultation and percussion</td>
<td>IMV</td>
<td>intermittent mandatory ventilation</td>
</tr>
<tr>
<td>ARD</td>
<td>acute respiratory disease</td>
<td>IPPB</td>
<td>intermittent positive pressure breathing</td>
</tr>
<tr>
<td>ARDS</td>
<td>acute respiratory distress syndrome</td>
<td>IRDS</td>
<td>infant respiratory distress syndrome</td>
</tr>
<tr>
<td>BS</td>
<td>breath sounds</td>
<td>IRV</td>
<td>inspiratory reserve volume</td>
</tr>
<tr>
<td>COLD</td>
<td>chronic obstructive lung disease</td>
<td>LLL</td>
<td>left lower lobe(of lung)</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
<td>LUL</td>
<td>left upper lobe(of lung)</td>
</tr>
<tr>
<td>CPR</td>
<td>cardiopulmonary resuscitation</td>
<td>MBC</td>
<td>maximum breathing capacity</td>
</tr>
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<td></td>
<td></td>
<td>SARS</td>
<td>severe acute respiratory syndrome</td>
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<tr>
<td></td>
<td></td>
<td>SOB</td>
<td>shortness of breath</td>
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<tr>
<td></td>
<td></td>
<td>TB</td>
<td>tuberculosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TLC</td>
<td>total lung capacity</td>
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</tbody>
</table>
A doctor will diagnose respiratory failure based on a person’s medical history, a physical exam, and test results. Once respiratory failure is diagnosed, a doctor will look for its underlying cause.

- **Arterial blood gas (ABG):** analysis of arterial blood to determine the adequacy of lung function in the exchange of gases.
• **Auscultation**: to listen; a physical examination method of listening to the sounds within the body with the aid of a stethoscope, such as auscultation of the chest for heart and lung sounds.

• **Bronchoscopy**: use of a flexible endoscope, called a bronchoscope, to examine the airways.

• **Bronchial brushing** is a procedure in which cells are taken from the inside of the airway mucosa or bronchial lesions through catheter-based brushing under direct visualization or fluoroscopic guidance.

• **Bronchoalveolar lavage** (BAL; informally, "bronchoalveolar washing") is a medical procedure in which a bronchoscope is passed through the mouth or nose into the lungs and fluid is squirted into a small part of the lung and then collected for examination.

• **Lung biopsy (Bx)**: removal of a small piece of lung tissue for pathologic examination.

• **Nasopharyngoscopy**: use of a flexible endoscope to examine the nasal passages and the pharynx to diagnose structural abnormalities, such as obstructions, growths, and cancers.

• **Peak flow meter**: measures the flow of air as it's expelled from the lungs.

• **Percussion**: a physical examination method of tapping the body to elicit vibrations and sounds to estimate the size, border, or fluid content of a cavity, such as the chest.

• **Pulmonary function testing (PFT)**: direct and indirect measurements of lung volumes and capacities.

• **Spirometry**: direct measurement of lung volume and capacity.
Using the knowledge you have learned so far, answer the following question. Laryng(o)- is a word root meaning larynx. Select the term below that refers to paralysis of the larynx.

1. Laryngitis
2. Laryngocele
3. Laryngoplegia

Answer:
C. laryngoplegia

Means paralysis of the larynx.

The suffix -plegia means stroke, blow, paralysis.
Diseases and conditions that impair breathing can cause respiratory failure. These disorders may affect the muscles, nerves, bones, or tissues that support breathing, or they may affect the lungs directly.

When breathing is impaired, your lungs can't easily move oxygen into your blood and remove carbon dioxide from your blood (gas exchange). This can cause a low oxygen level or high carbon dioxide level, or both, in your blood.

Respiratory diseases can arise from a number of causes, including inhalation of toxic agents, accidents, and harmful lifestyles, such as smoking. Infections, genetic factors, and anything else that affects lung development, either directly or indirectly, can cause respiratory symptoms.

Respiratory failure can occur as a result of:

- Conditions that affect the nerves and muscles that control breathing. Examples include muscular dystrophy, amyotrophic lateral sclerosis (ALS), spinal cord injuries, and stroke.
- Damage to the tissues and ribs around the lungs. An injury to the chest can cause this damage.
• Problems with the spine, such as **scoliosis** (a curve in the spine). This condition can affect the bones and muscles used for breathing.

• Drug or alcohol overdose. An overdose affects the area of the brain that controls breathing. During an overdose, breathing becomes slow and shallow.

• Lung diseases and conditions, such as COPD (chronic obstructive pulmonary disease), pneumonia, ARDS (acute respiratory distress syndrome), pulmonary embolism, and cystic fibrosis. These diseases and conditions can affect the flow of air and blood into and out of your lungs. ARDS and pneumonia affect gas exchange in the air sacs.

• Acute lung injuries. For example, inhaling harmful fumes or smoke can injure your lungs.

  **Link to Learning:** Please read: Breath Sounds: [Breathing Patterns](#).

• **Acute bronchitis** is a form of lower respiratory tract inflammation affecting the air tubes (bronchi) of the lungs.

• **Acute respiratory distress syndrome (ARDS)** is a rapidly progressive disease occurring in critically ill patients. The main complication in ARDS is that fluid leaks into the lungs making breathing difficult or impossible.
• **Asbestosis** is a chronic lung condition that is caused by prolonged exposure to high concentrations of asbestos fibers in the air.

• **Asthma** is a lung disease that makes breathing difficult due to swollen and inflamed airways.

• **Bronchiectasis** is a chronic condition where the walls of the bronchi are thickened from inflammation and infection. People with bronchiectasis have periodic flare-ups of breathing difficulties, called exacerbations.

• **Bronchitis** is an inflammation of the bronchi. This inflammation means the walls of your bronchi are swollen and filled with extra sticky mucus. Airflow into and out of your lungs is partly blocked because of the swelling and extra mucus in your bronchi. There are two kinds of bronchitis:
  - **Acute bronchitis** makes you sick for a while, but gets better after two to three weeks.
  - **Chronic bronchitis** doesn't go away. With chronic bronchitis, you have a cough with mucus most days for three months of the year.

• **Chronic obstructive pulmonary disease (COPD),** which includes chronic bronchitis and emphysema, is a chronic lung disease that makes it hard to breathe.

• **Croup** is a viral infection that causes swelling in the throat and vocal cords (larynx). Croup commonly affects children under five because their airways are smaller and more prone to swelling. One of the tell-tale signs of croup is a loud, "barky" cough that is worse at night.
• **Cryptogenic organizing pneumonia (COP)** is a rare lung condition affecting the small airways (bronchioles) and alveoli (tiny air sacs).

• **Cystic Fibrosis (CF)** is an inherited disease that causes thickened mucus to form in the lungs, pancreas and other organs. In the lungs, this mucus blocks the airways, causing lung damage and making it hard to breathe.

• **Emphysema** is one of the diseases that comprises COPD (chronic obstructive pulmonary disease). Emphysema involves gradual damage of lung tissue, specifically thinning and destruction of the alveoli or air sacs.

• **Hantavirus pulmonary syndrome (HPS)** is a rare but potentially life-threatening viral illness transmitted to humans by inhaling infected rodent urine, droppings or saliva.

• **Hypersensitivity pneumonitis** is a disease of the lungs in which your lungs become inflamed as an allergic reaction to inhaled dust, fungus, molds or chemicals.

• **Influenza (flu)**, also referred to as seasonal flu, is a highly contagious respiratory illness caused by influenza viruses. The influenza virus causes infections of the nose, throat and lungs.
• **Lung cancer** is cancer that starts in the lungs. Cancer is a disease where cancer cells grow out of control, taking over normal cells and organs in the body.

• **Mesothelioma** is a rare type of cancer that develops in the pleura, a thin membrane that separates the lung from the chest wall. It usually occurs from prior exposure to asbestos, a type of mineral fiber used in the insulation industry.

• **Nontuberculous mycobacteria (NTM)** are organisms naturally found in soil and water. In some people, the organism infects the airways and lung tissue leading to disease.

• **Pertussis**, also known as whooping cough, is an extremely contagious respiratory tract infection caused by the bacteria *Bordetella pertussis*.

• **Pneumoconiosis** is a general term given to any lung disease caused by dusts that are breathed in and then deposited deep in the lungs causing damage. Pneumoconiosis is usually considered an occupational lung disease, and includes asbestosis, silicosis and coal workers' pneumoconiosis (CWP), also known as "Black Lung Disease."

• **Pneumonia** (nu-MO-ne-ah) is swelling (inflammation) of one or both lungs that is usually caused by an infection. Many different germs can cause pneumonia, including bacteria, viruses, and fungi.
• **Pulmonary embolism** happens when one or more of your arteries in your lungs gets blocked by a blood clot, fat or tumor. The most common type of pulmonary embolism is caused by a blood clot that moves through your blood stream, goes through your heart and blocks off an artery in your lung.

• **Pulmonary fibrosis (PF)** is one of a family of related diseases called interstitial lung diseases that can result in lung scarring. As the lung tissue becomes scarred, it interferes with a person's ability to breathe. In some cases, the cause of pulmonary fibrosis can be found. But most cases of pulmonary fibrosis have no known cause. These cases are called idiopathic pulmonary fibrosis (IPF).

• **Pulmonary hypertension (PH)** is a disease where you have abnormally high blood pressure in the blood vessels of your lungs (pulmonary arteries). In PH, the pulmonary arteries become narrowed, and can be scarred to the point of being closed.

• **Respiratory syncytial virus (RSV)** is a common respiratory virus that can affect people of all ages. RSV causes mostly upper respiratory symptoms (colds), but it can cause a serious infection in the lungs (bronchiolitis or pneumonia) among infants and adults with serious underlying medical problems.

• **Sarcoidosis** ("sar-koy-do-sis") is a disease that causes swelling in the cells in different organs of your body. It usually affects your lungs. It can also affect other organs, like your skin, eyes, lymph nodes and brain.
• **Severe acute respiratory syndrome (SARS)** is an infectious condition, caused by a coronavirus, that can cause serious respiratory illness or death.

• **Silicosis** is a lung disease caused by breathing in tiny bits of silica, a mineral that is part of sand, rock, and mineral ores such as quartz. It mostly affects workers exposed to silica dust in occupations such as mining, glass manufacturing, and foundry work. Over time, exposure to silica particles causes scarring in the lungs, which can harm your ability to breathe.

• **Obstructive sleep apnea (OSA)** is a disease that interrupts sleep by stopping and starting your breathing. Those with OSA have airways that repeatedly collapse when throat muscles relax during sleep, blocking the flow of air. The disease causes snoring and choking or gasping during sleep.

• **Tuberculosis (TB)** is an airborne bacterial infection caused by the organism *Mycobacterium tuberculosis* that primarily affects the lungs, although other organs and tissues may be involved.

**Terms related to Breathing**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>apnea</td>
<td>Absence of breathing</td>
</tr>
<tr>
<td>hypopnea</td>
<td>Shallow breathing</td>
</tr>
<tr>
<td>tachypnea</td>
<td>Rapid breathing</td>
</tr>
<tr>
<td>bradypnea</td>
<td>Slow breathing</td>
</tr>
<tr>
<td>orthopnea</td>
<td>Difficulty in breathing while lying down</td>
</tr>
<tr>
<td>eupnea</td>
<td>Normal breathing</td>
</tr>
<tr>
<td>hyperpnea</td>
<td>Deep breathing</td>
</tr>
<tr>
<td>hypopnea</td>
<td>Shallow breathing</td>
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</tbody>
</table>
**Terms relating to Inflammation**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bronchitis</td>
<td>Inflammation of the bronchi</td>
<td>pneumonitis</td>
<td>Inflammation of the lungs</td>
</tr>
<tr>
<td>epiglottitis</td>
<td>Inflammation of the epiglottis</td>
<td>rhinitis</td>
<td>Inflammation of the nose</td>
</tr>
<tr>
<td>laryngitis</td>
<td>Inflammation of the larynx</td>
<td>sinusitis</td>
<td>Inflammation of the sinuses</td>
</tr>
<tr>
<td>nasopharyngitis</td>
<td>Inflammation of the nose and pharynx</td>
<td>tonsillitis</td>
<td>Inflammation of the tonsils</td>
</tr>
<tr>
<td>pansinusitis</td>
<td>Inflammation of all the sinuses</td>
<td>tracheitis</td>
<td>Inflammation of the trachea</td>
</tr>
<tr>
<td>pharyngitis</td>
<td>Inflammation of the pharynx</td>
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</table>

**PHARMACOLOGICAL TERMS**

Conditions that affect the airways and lungs range from minor illnesses, such as the common cold, to long-term disorders, such as asthma. The symptoms of a cough and/or cold may be relieved with over-the-counter remedies. Symptoms of long-term disorders however, may require specific medical treatment.

- **Bronchodilator drugs** are used to widen (dilate) the airways (bronchi) inside the lungs. Widening the airways prevents or relieves the wheezing, tightness of the chest, and shortness of breath that can result from conditions such as asthma. Many bronchodilator drugs are inhaled through a metered-dose inhaler, a small aerosol pump that delivers a controlled amount of the drug to be inhaled into the lungs.
• **Corticosteroids** are an anti-inflammatory medicine prescribed for a wide range of conditions. When used to treat respiratory disorders, these drugs reduce or prevent inflammation of the airways. Corticosteroids are frequently prescribed to prevent attacks of asthma.

• **Cough Remedies**: The main groups of drugs used to treat coughs are expectorants, mucolytics, and suppressants.
  
  o **Expectorants** promote coughing and the expulsion of mucus.
  
  o **Mucolytics** make mucus less sticky and easier to cough up.
  
  o **Suppressants (antitussives)** often contain drugs such as codeine and aid in relieving a troublesome cough.

• **Decongestants**: Act to relieve congestion in the nose and sinuses by reducing the swelling of the membranes lining the nose and sinuses; reduce mucus buildup.
**Word Building Examples**

**Bronch/o = bronchus**
- Bronch/o + -itis = bronchitis
  Inflammation of the bronchus
- Bronch/o + -plasty = bronchoplasty
  Surgical repair of the bronchus
- Bronch/o + -scope = bronchoscope
  Instrument to view bronchus
- Bronch/o + -ial = bronchial
  Pertaining to the bronchus

**Pharyng/o = pharynx**
- Pharyng/o + -itis = pharyngitis
  Inflammation of the pharynx
- Pharyng/o + -eal = pharyngeal
  Pertaining to the pharynx
- Pharyng/o + nas/o + -it is = nasopharyngitis
  Pertaining to the nose and pharynx

**Laryng/o = voice box**
- Laryng/o + -ectomy = laryngectomy
  Surgical removal of the larynx
- Laryng/o + -plasty = laryngoplasty
  Surgical repair of the larynx
- Laryng/o + scope = laryngoscope
  Instrument to view the larynx
- Laryng/o + -eal = laryngeal
  Pertaining to the larynx

**Rhin/o = nose**
- Rhin/o + -itis = rhinitis
  Inflammation of the nose
- Rhin/o + -myc/o + -osis = rhinomycosis
  Abnormal condition of fungus in nose
- Rhin/o + -rrhagia = rhinorrhagia
  Rapid flow (of blood) from the nose
Match the terms listed on the left with the definition listed on the right. Click the image to compare your answers.

1. bronchiectasis  
2. emphysema  
3. pneumonia  
4. tuberculosis  
5. allergy  

a) inflammation of the lungs  
b) chronic dilatation of the bronchi, with fetid breath and coughing spells  
c) state of hypersensitivity to certain things  
d) gastrocele — swelling or inflation of the lung(s) due to presence of trapped air; chronic shortness of breath  
e) communicable disease caused by tubercle bacilli primarily affecting the lungs

Answer:
1. b  
2. d  
3. a  
4. e  
5. c
TEST YOUR KNOWLEDGE

You have seen the term bronchiectasis (bronch = bronchial tubes of the lung) + (-estasis = expansion, dilatation). This is a condition characterized by the chronic dilatation of the bronchi. The suffix -ectasis means dilatation; the suffix -stenosis means constriction or narrowing. Therefore, a condition opposite to bronchiectasis would be bronchostenosis — the stricture or abnormal diminution of the caliber (diameter) of the bronchi.

What word is described in the following statement.

1. Emphysema, abnormal swelling or inflation of the lungs, is known as:
   a) pheumonectasis   b) pharyngostenosis

Answer:

1. a) phenumonectasis
-ectasis means dilatation, expansion, inflation. See under -ectasia in your dictionary. Pneum(o) means relationship to lung, air, or to breath.

Click the image to compare your answer.
**PRONUNCIATION**

Practice pronouncing each term, then click the audio icon to hear it.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthracosis (an-thra-KO-sis)</td>
<td>A benign deposition of coal dust within the lungs from inhalation of sooty air.</td>
</tr>
<tr>
<td>Atelectasis (at-e-LEK-ta-sis)</td>
<td>Collapse of the expanded lung.</td>
</tr>
<tr>
<td>Bacilli (sing: Bacillus) (ba-SIL-eye)</td>
<td>A disease-producing bacterium.</td>
</tr>
<tr>
<td>Bronchospasm (BRONG-ko-spazm)</td>
<td>Constriction of the air passages of the lung (as in asthma) by spasmodic contraction of the bronchial muscles.</td>
</tr>
<tr>
<td>Diphtheria (dif-THER-ee-a)</td>
<td>An infection of the throat and upper respiratory tract cause by bacteria.</td>
</tr>
<tr>
<td>Dysphonia (dis-FO-nia)</td>
<td>Defective use of the voice.</td>
</tr>
<tr>
<td>Empyema (em-pi-EE-ma)</td>
<td>The presence of pus in a body cavity.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td><strong>Hemoptysis</strong> (he-MOP-ti-sis)</td>
<td>Expectoration of blood from some part of the respiratory tract.</td>
</tr>
<tr>
<td><strong>Hypercapnia</strong> (hi-per-KAP-nia)</td>
<td>The presence of an excess of carbon dioxide in the blood.</td>
</tr>
<tr>
<td><strong>Hypoxia</strong> (hi-POK-sia)</td>
<td>A deficiency of oxygen reaching the tissues of the body.</td>
</tr>
<tr>
<td><strong>Otorhinolaryngologist</strong> (oh-toe-RYE-no-lar-ing-GOL-o-jist)</td>
<td>Doctor who diagnoses and treats disorders of the ear, nose and throat.</td>
</tr>
<tr>
<td><strong>Mucolytic</strong> (mew-ke-LIT-ic)</td>
<td>Liquefies mucus so it is easier to cough and clear it from the respiratory tract.</td>
</tr>
<tr>
<td><strong>Paroxysmal</strong> (par-ok-SIZ-mal)</td>
<td>Sudden, as a spasm or convulsion.</td>
</tr>
<tr>
<td><strong>Pneumothorax</strong> (nu-mo-THOR-ax)</td>
<td>A condition in which air or other gas is present in the pleural cavity.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Rhonchi</strong> (RONG-ki)</td>
<td>A whistling or snoring sound heard on auscultation of the chest when the air channels are partly obstructed.</td>
</tr>
<tr>
<td><strong>Singultus</strong> (sing-GULL-tus)</td>
<td>Hiccupping</td>
</tr>
<tr>
<td><strong>Stridor</strong> (STRI-door)</td>
<td>A harsh vibrating sound heard during respiration in cases of obstruction of the air passages.</td>
</tr>
<tr>
<td><strong>Thoracocentesis</strong> (THOR-a-ko-sen-TEE-sis)</td>
<td>Surgical puncture of the chest cavity.</td>
</tr>
</tbody>
</table>