

Medical Terminology

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Lecture Six

RESPIRATORY SYSTEM

An Overview of the Respiratory System

The respiratory system consists of the nose (nasal cavity), pharynx, larynx, bronchi, bronchioles, alveoli, and lungs (Fig. 11-1). The primary purpose of the respiratory system is to furnish oxygen to the body's cells and to remove gaseous waste products (i.e., carbon dioxide). Figure 11-2 is a diagram that shows the process of gas exchange, which is accomplished through external and internal respiration .

External respiration is the process whereby air is brought into the lungs and oxygen and carbon dioxide (a waste product) are exchanged in the blood within the capillaries surrounding the alveoli. Internal respiration is the process whereby oxygen and carbon dioxide move between the blood and the body cells.

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Structure and Function

Several structures make up the respiratory system.

The Nose

Air enters the body through the nose, which is lined with small hairs called cilia , and passes into the nasal cavity where it is warmed and moistened. Mucus coats the lining of the nasal cavity to filter out particles too small to be blocked by the cilia.

The Pharynx

The pharynx , also known as the throat, has three divisions: the nasopharynx (nas/o means “nose”; pharynx means “throat”), oropharynx (or/o means “mouth” or “opening”; pharynx..

The Larynx

The larynx (voice box) is a cartilaginous structure located between the pharynx and trachea. The larynx is held open by a number of cartilages, the largest being the thyroid cartilage (Adam’s apple). Also contained in the larynx are the vocal cords (These folds of mucous membrane vibrate as air from the lungs flows over them to produce sound. The space between the vocal cords is termed the glottis (comes from the Greek word *glottis* meaning “opening”). The glottis is closed during swallowing to keep food out of the respiratory tract that the glottis is widely opened when a person takes a forced breath to allow air down into the respiratory tract. The little leaf-shaped cartilage located above the glottis is called the epiglottis (epi- means “upon”; glottis means opening in the vocal cords”). Along with the glottis in the closed position, this flap-like structure swings downward during swallowing to cover the larynx so food does not enter the trachea and the lungs.

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The Trachea

The trachea (windpipe) is a cartilaginous tube that extends from the pharynx to the main bronchi. It is composed of smooth muscle and is kept open with C-shaped rings of cartilage. The trachea is lined with cilia to help sweep foreign material out of the air passage. The purpose of the trachea is to provide an open airway to the lungs.

The Bronchi, Bronchioles, And Alveoli

The inferior portion of the trachea branches off into two major airways called the right and left bronchus (plural: bronchi). Air passes down through the bronchi, which subdivide into increasingly smaller branches called bronchioles (bronch/o means “bronchi”; -iole means “smaller”). The air terminates in the bronchial tree in tiny air sacs called alveoli (singular: alveolus). A network of thin-walled capillaries surrounds each alveolar sac. During respiration, the gas exchange between the alveolar air and the pulmonary capillary takes place through the alveolar walls.

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The Lungs

The lungs lie on either side of the heart and are protected by the rib cage. They take up the major portion of the thoracic cavity and are enclosed in the pleura , a membrane composed of two principal layers, called the parietal and the visceral layers . The parietal (outer) layer lines the thoracic cavity and forms the sac containing each lung. The visceral (inner) layer closely surrounds each lung. The space in between contains a lubricating fluid that prevents friction during respiration. The right lung has three lobes, and the left lung has two lobes. The mediastinum , the space between the two lungs, contains the heart, aorta, trachea, esophagus, and bronchi. The apex , or superior part of each lung, is located at the level of the clavicle. The base, or inferior part of each lung, rests on the diaphragm. This process of gas exchange between the tissue cells happens after air is inhaled into the alveoli. Oxygen from the air passes into the blood and is carried to the body's cells, while carbon dioxide passes back from the tissue cells into the blood and is eventually exhaled.

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Pharmacology

- 1- Antipyretics: (anti- means “against”; pyret/o means “fever”).**
- 2- Bronchodilators: (bronchi/o means “bronchus”; dilator means “increase diameter” or “open up”).**
- 3- Mucolytics: (muc/o means “mucus”; -lytic means “digesting” or “dissolving”).**
- 4- Corticosteroids: (treat inflammatory and allergic conditions).**
- 5- Expectorants: (stimulate respiratory secretions to treat dry).**
- 6- Decongestants: (reduce nasal congestion).**
- 7- Antibiotics: (anti- means “against”; biotic is an adjective form of bio or life).**
- 8- Antihistaminics: (anti- means “against”; histaminic is an adjective form of histamine).**

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Abbreviation table of Respiratory system

Abbreviation Table • The Respiratory System



ABBREVIATION	MEANING
ABG	arterial blood gas
CF	cystic fibrosis
CO ₂	carbon dioxide
COPD	chronic obstructive pulmonary disease

ABBREVIATION	MEANING
CXR	chest X-ray
ERV	expiratory reserve volume (as measured with test equipment)
IRV	inspiratory reserve volume (as measured with test equipment)
O ₂	oxygen
PFT	pulmonary function test
R	respiratory rate
RV	residual volume (as measured with test equipment)
SOB	shortness of breath
T&A	tonsils and adenoids (also tonsillectomy and adenoidectomy)
TB	tuberculosis
TLC	total lung capacity (as measured with test equipment)
TV	tidal volume (as measured with test equipment)