

The Respiratory system

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THE RESPIRATORY SYSTEM

Paranasal Sinuses

Anterior View

- Frontal sinus
- Ethmoid cells
- Sphenoid sinus
- Middle nasal concha
- Maxillary sinus
- Inferior nasal concha
- Superior nasal concha
- Sphenoidal sinus

Lateral View

- Frontal sinus
- Ethmoid cells
- Sphenoid sinus
- Middle nasal concha
- Maxillary sinus
- Inferior nasal concha
- Superior nasal concha
- Sphenoidal sinus

Conducting System

The conducting system comprises all of the passages through which air travels to and from the lungs. These passages include the nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, and terminal bronchioles. The conducting system acts to warm, humidify, and filter the inhaled air and to conduct it to and from the gas exchange area in the lungs.

Lungs and Pleurae

The general term for the membranes that cover the lungs and line the thoracic cavity is the pleura. The space between the two layers of the pleura is the pleural cavity, which contains a small amount of pleural fluid that lubricates the movement of the lungs in the chest.

Larynx

Cartilages

- Epiglottic cartilage
- Thyroid cartilage
- Cricoid cartilage
- Tricrural cartilage
- Wedge-shaped cartilage
- Arched cartilage
- Epiglottis
- Thyroid cartilage
- Cricoid cartilage
- Tricrural cartilage
- Wedge-shaped cartilage
- Arched cartilage

Muscles

- Epiglottic muscle
- Thyroid muscle
- Cricoid muscle
- Tricrural muscle
- Wedge-shaped muscle
- Arched muscle

Respiratory Mucosa

The respiratory mucosa is the lining of the respiratory tract. It consists of the epithelium, lamina propria, and submucosa. The epithelium is composed of ciliated columnar cells and goblet cells. The lamina propria is composed of loose connective tissue. The submucosa is composed of dense connective tissue.

Bronchopulmonary Segments

Anterior View

- Right: Superior, Middle, Inferior
- Left: Superior, Middle, Inferior

Posterior View

- Right: Superior, Middle, Inferior
- Left: Superior, Middle, Inferior

Right Lung Segments: Superior, Middle, Inferior

Left Lung Segments: Superior, Middle, Inferior

Major Vessels: Superior vena cava, Inferior vena cava, Pulmonary artery, Pulmonary vein

Nerves: Vagus nerve, Phrenic nerve

Structure of Intrapulmonary Airways

The intrapulmonary airways consist of the bronchi, bronchioles, and terminal bronchioles. The bronchi are lined with cartilage and have a thick wall. The bronchioles are lined with simple cuboidal epithelium and have a thin wall. The terminal bronchioles are lined with simple cuboidal epithelium and have a very thin wall.

Cross Section of Alveolus

The alveolus is the site of gas exchange. It is a small, sac-like structure with a thin wall. The wall is composed of simple squamous epithelium. The alveolus is surrounded by a network of capillaries. The capillaries are lined with simple cuboidal epithelium. The alveolus is connected to the terminal bronchiole by a short tube called the alveolar duct.

Ventilation

Breathing, or ventilation, is the movement of air into and out of the respiratory system. During inspiration, the diaphragm contracts and moves down, and the rib cage expands. This increases the volume of the thoracic cavity, which causes the air pressure to decrease. Air then moves in to equalize the pressure. During expiration, the diaphragm relaxes and moves up, and the rib cage contracts. This decreases the volume of the thoracic cavity, which causes the air pressure to increase. Air then moves out to equalize the pressure.

Gas Exchange

The respiratory system consists of the respiratory tract, which includes the nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, and terminal bronchioles. The respiratory system is responsible for the exchange of gases between the atmosphere and the body. The respiratory system is divided into the upper respiratory tract and the lower respiratory tract. The upper respiratory tract includes the nasal cavity, pharynx, and larynx. The lower respiratory tract includes the trachea, bronchi, bronchioles, and terminal bronchioles. The respiratory system is also responsible for the regulation of the body's acid-base balance.

ASTHMA

UNDERSTANDING ASTHMA

What Happens in an Asthma Attack?

1. The airways become inflamed and swollen.

2. The airways produce extra mucus.

3. The airways become hyper-responsive to triggers.

4. The airways become hyper-responsive to triggers.

5. The airways become hyper-responsive to triggers.

6. The airways become hyper-responsive to triggers.

What is Asthma?

Asthma is a chronic respiratory condition that causes the airways in the lungs to become inflamed and swollen. This makes it difficult to breathe.

What Causes Asthma?

Asthma is caused by a combination of genetic and environmental factors. Triggers that can cause an asthma attack include allergens, irritants, and stress.

How is Asthma Diagnosed?

Asthma is diagnosed based on a person's symptoms and a physical exam. A doctor may also use a spirometry test to measure lung function.

How Do the Lungs Work?

The lungs are responsible for taking in oxygen and getting rid of carbon dioxide. This process is called breathing.

1. Air enters the lungs through the trachea.
2. The air moves through the bronchi to the bronchioles.
3. The air then moves through the bronchioles to the alveoli.
4. The alveoli are tiny air sacs where oxygen and carbon dioxide are exchanged.
5. The air then moves back through the bronchioles and bronchi.
6. The air leaves the lungs through the trachea.

Monitoring Your Asthma by Zone

Green Zone	Yellow Zone	Red Zone
<p>Green Zone</p> <p>You have no asthma symptoms. You are able to do all your normal activities without any trouble. Your asthma is well controlled.</p>	<p>Yellow Zone</p> <p>There may be coughing, wheezing, and mild shortness of breath. Sleep and normal activities may be affected. You may need to use your rescue inhaler more often.</p>	<p>Red Zone</p> <p>Symptoms may be severe. You may have trouble breathing, wheezing, and coughing. You may need to use your rescue inhaler frequently. You may need to see your doctor.</p>

Symptoms of Asthma

Common symptoms include coughing, wheezing, chest tightness, and shortness of breath. Symptoms may be worse at night or in the morning.

Common Asthma Triggers

Triggers that can cause an asthma attack include allergens, irritants, and stress. Common triggers include pollen, dust, mold, and pet dander.

Management of Asthma

Asthma can be managed with medication and lifestyle changes. Medication includes inhalers and oral steroids. Lifestyle changes include avoiding triggers and staying active.

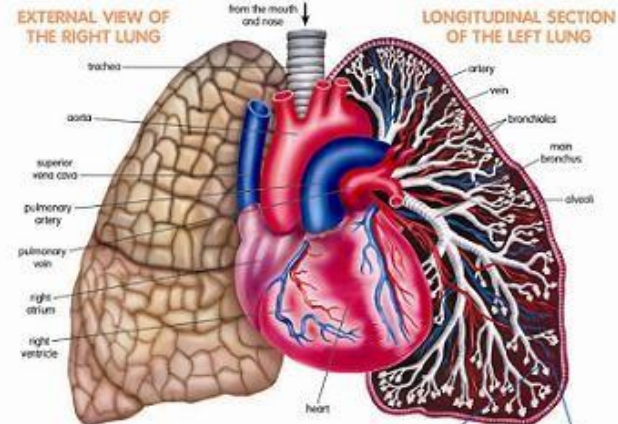
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Respiration



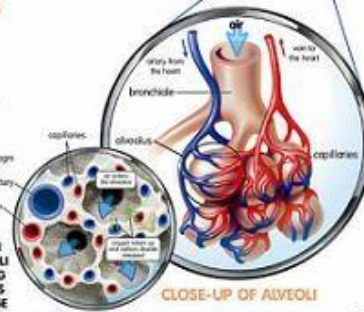
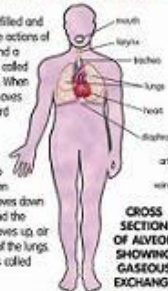
Respiration

Respiration is the intake of oxygen from the air into the body through specialised organs called the lungs. The air is taken in through the mouth and nose into both lungs via the trachea and bronchi into small sacs called alveoli. From the alveoli oxygen diffuses into the bloodstream. Carbon dioxide passes from the blood into the alveoli and is exhaled out of the body.

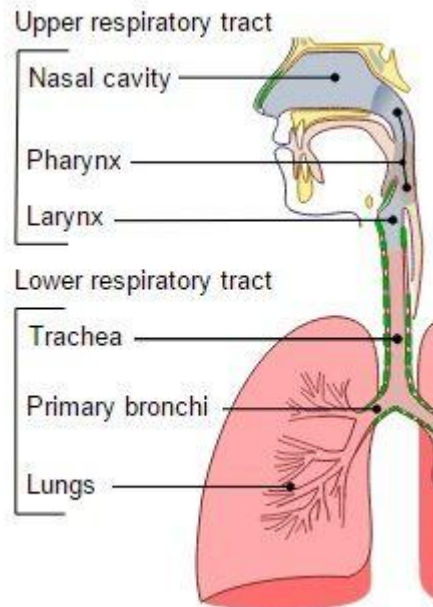


THE POSITION OF THE LUNGS

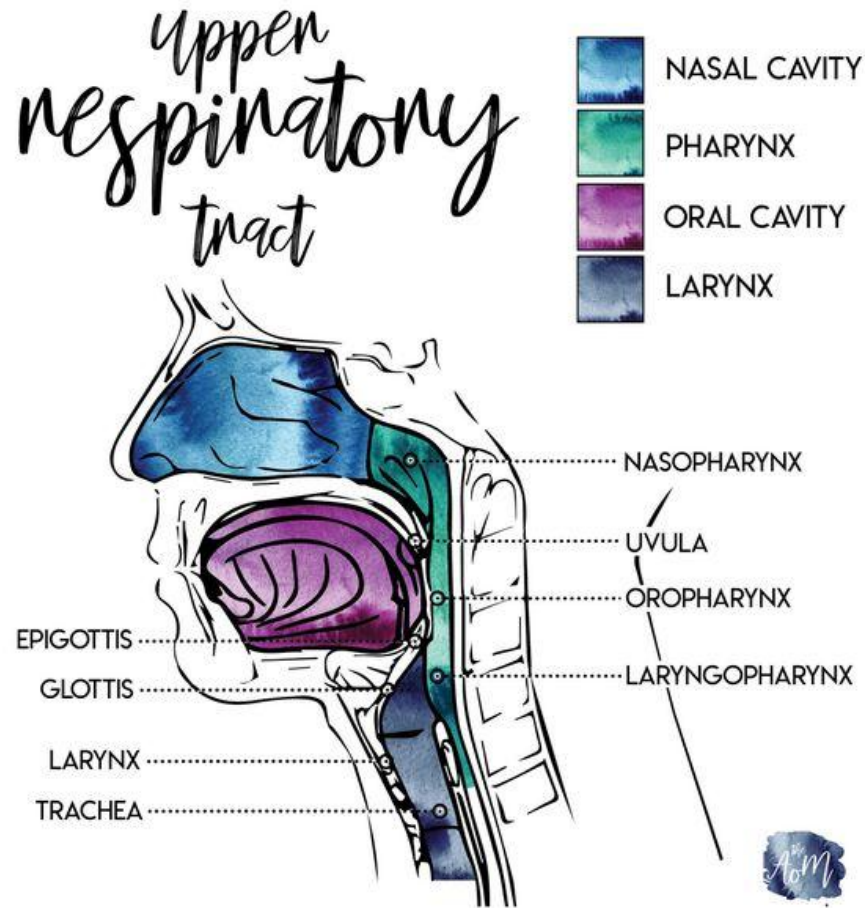
The lungs are filled and emptied by the actions of the rib cage and a special muscle called the diaphragm. When the rib cage moves up and outward and the diaphragm moves down, air is pulled into the lungs. When the rib cage moves down and inward and the diaphragm moves up, air is pushed out of the lungs. This process is called breathing.



Histology of the Airways



Upper respiratory system



First Aid



Problems of the Respiratory System

Lesson

2

Problems of the Respiratory System (cont'd.)

Disease or Disorder	Description	Treatment
Cold/Flu	Diseases caused by viruses; symptoms include runny nose, cough, fever, aches	Bed rest and fluids; vaccines can prevent some types of flu
Pneumonia	Bacterial or viral disease that affects the lungs; symptoms include fever, chest pain, breathing difficulty	Antibiotics for bacterial type; bed rest for viral type
Asthma	Disease in which airways narrow; symptoms include wheezing, shortness of breath, coughing	Medication to relieve symptoms; avoiding activities or substances that trigger attacks

