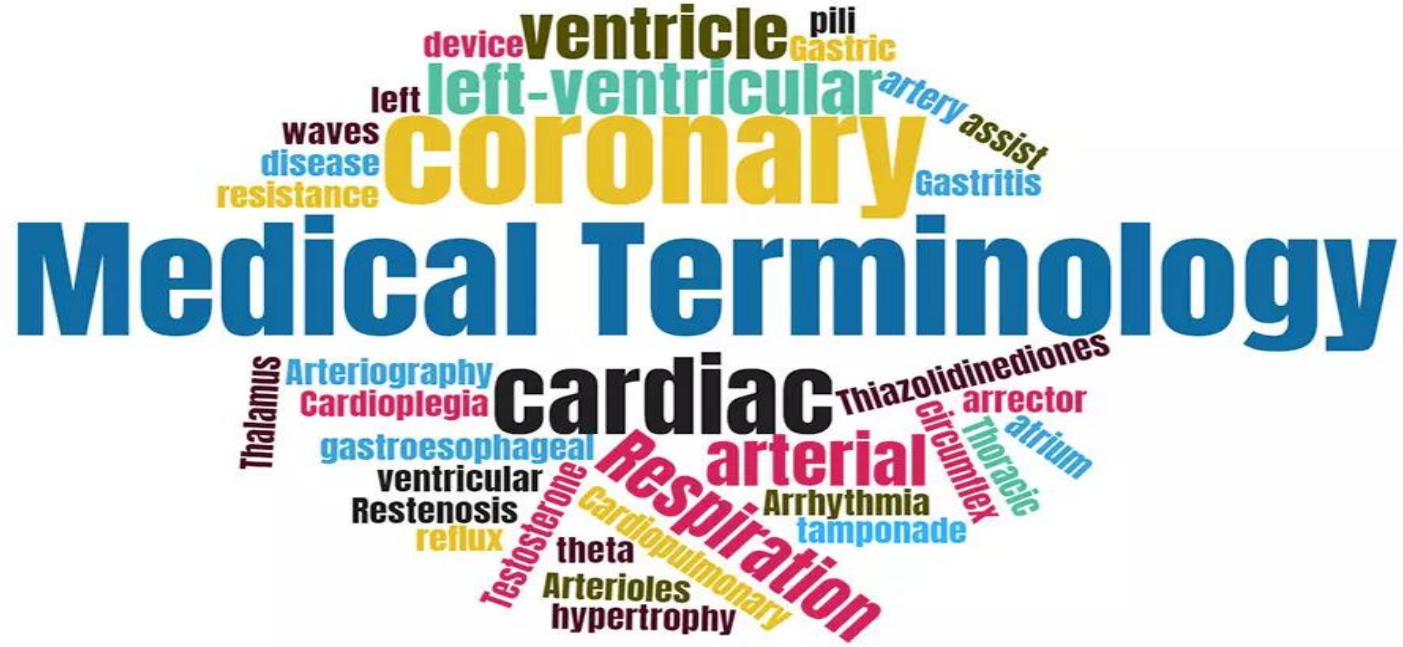
AL MUSTAQBAL UNIVERSITY

College of Pharmacy / First Stage



(L4) Respiratory System Terminology

Dr. Abdulhusein Mizhir Almaamuri

Respiratory System Overview:

The respiratory system is a complex network of organs and tissues responsible for the exchange of gases between the body and the external environment. Its primary functions include the intake of oxygen, essential for cellular respiration, and the expulsion of carbon dioxide, a byproduct of metabolism. This crucial physiological process ensures a constant supply of oxygen to body tissues while removing waste gases.

Components of the Respiratory System:

The Respiratory Tract Consists of the Upper and Lower Respiratory Tract.

The upper respiratory tract begins at the nose and ends at the larynx.

The Lower Respiratory Tract begins at the trachea and ends in the lungs.

Nose: The respiratory process begins with the nose, where air is filtered, moistened, and warmed before entering the respiratory tract. The nasal cavity contains tiny hair-like structures called cilia that trap particles and prevent them from reaching the lungs.

Pharynx: Commonly known as the throat, the pharynx is a muscular tube connecting the nasal cavity and mouth to the larynx.It serves as a pathway for both air and food.

Larynx: The larynx, or voice box, is located below the pharynx and houses the vocal cords. It plays a crucial role in speech production and acts as a protective mechanism, preventing food and liquid from entering the airway.

Trachea: Also known as the windpipe, the trachea is a rigid tube composed of cartilage rings that connect the larynx to the bronchi. It allows the passage of air into the lungs.

Bronchi: The trachea divides into two bronchi—one leading to each lung. These bronchi further divide into smaller bronchioles, forming an intricate branching system within the lungs.

Lungs: The paired lungs are the primary organs of the respiratory system, responsible for the exchange of gases. They are spongy, elastic structures containing millions of tiny air sacs called alveoli. The lungs are enclosed in a protective membrane called the pleura.

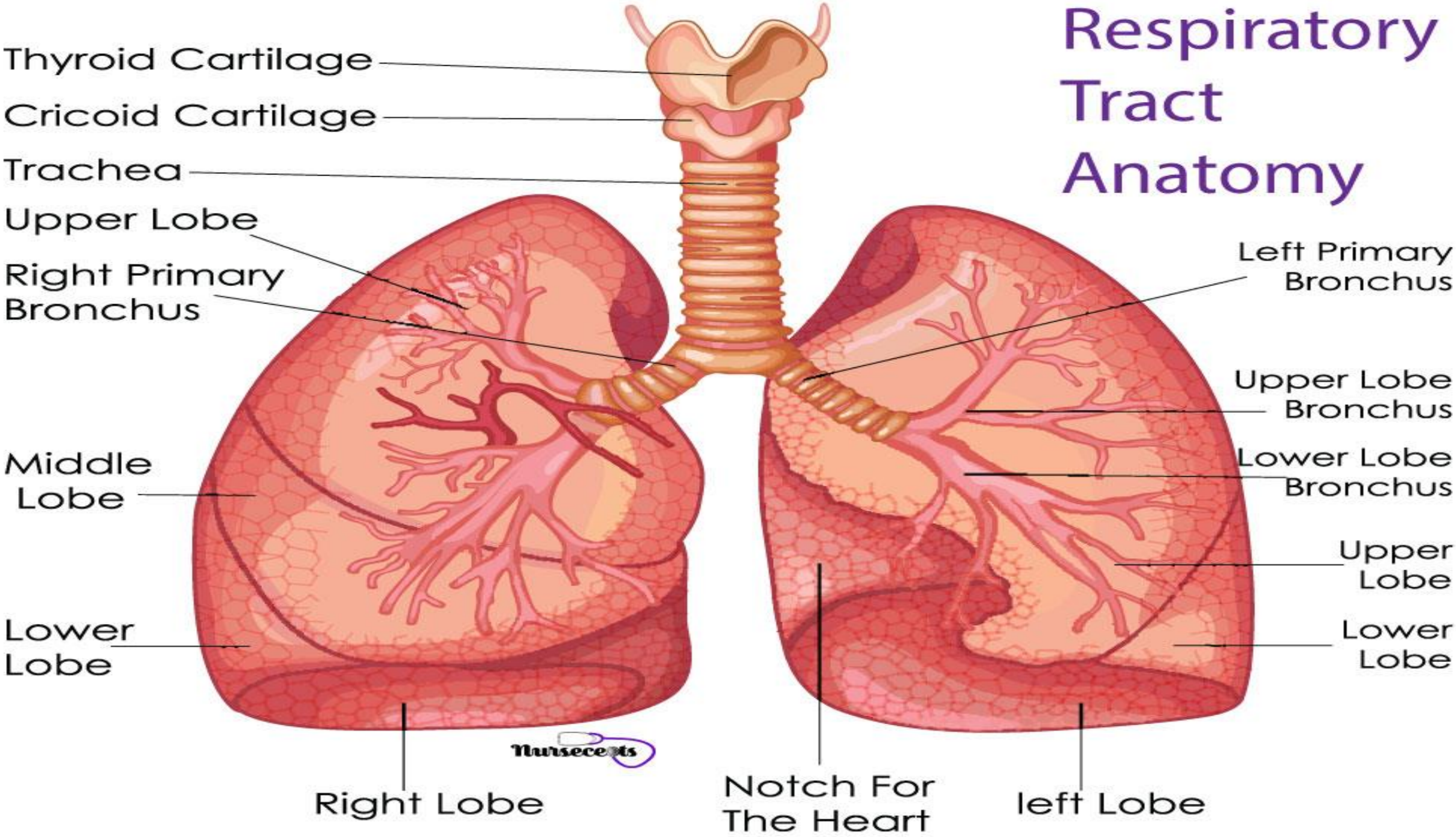
Respiratory Function:

Ventilation: The process of breathing involves the movement of air in and out of the lungs. During inhalation (inspiration), the diaphragm and intercostal muscles contract, expanding the thoracic cavity and creating a negative pressure that draws air into the lungs. Exhalation (expiration) occurs when these muscles relax, allowing the elastic lung tissue to recoil and expel air.

Gas Exchange: Within the alveoli, oxygen from the inhaled air diffuses into the bloodstream, binding with hemoglobin in red blood cells. Simultaneously, carbon dioxide, a waste product of metabolism, diffuses from the blood into the alveoli to be expelled during exhalation.

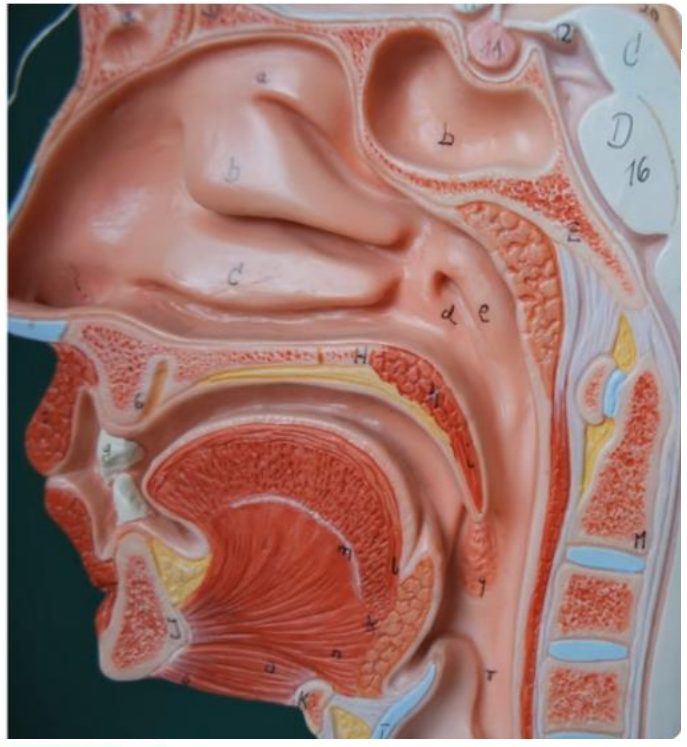
Oxygenation: The oxygen-rich blood is pumped by the heart to various tissues and organs, where it sustains cellular respiration—a process essential for energy production.

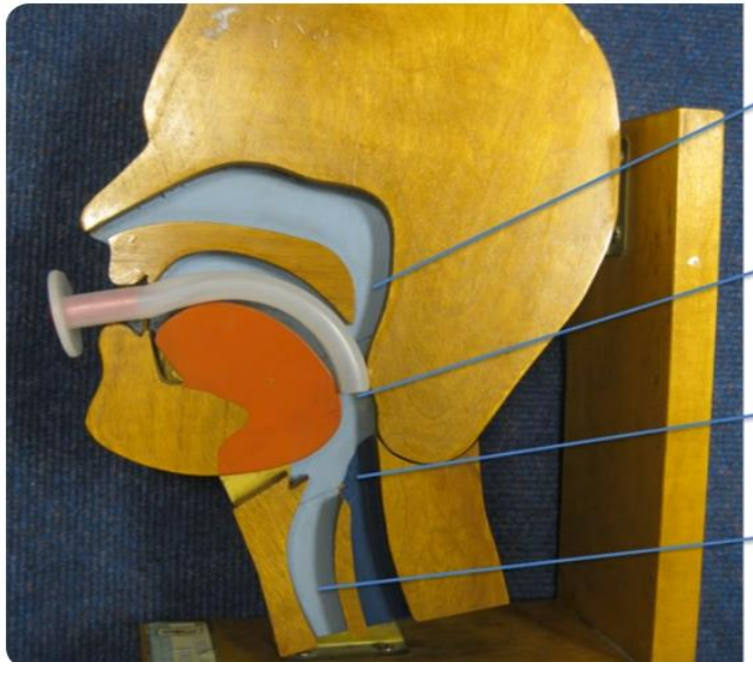
Respiratory Tract Anatomy



Nose
– nas (o)

- Nasal
- Nasoseptal
- Nasopharynx
- Nasogastric
- Nasoscope



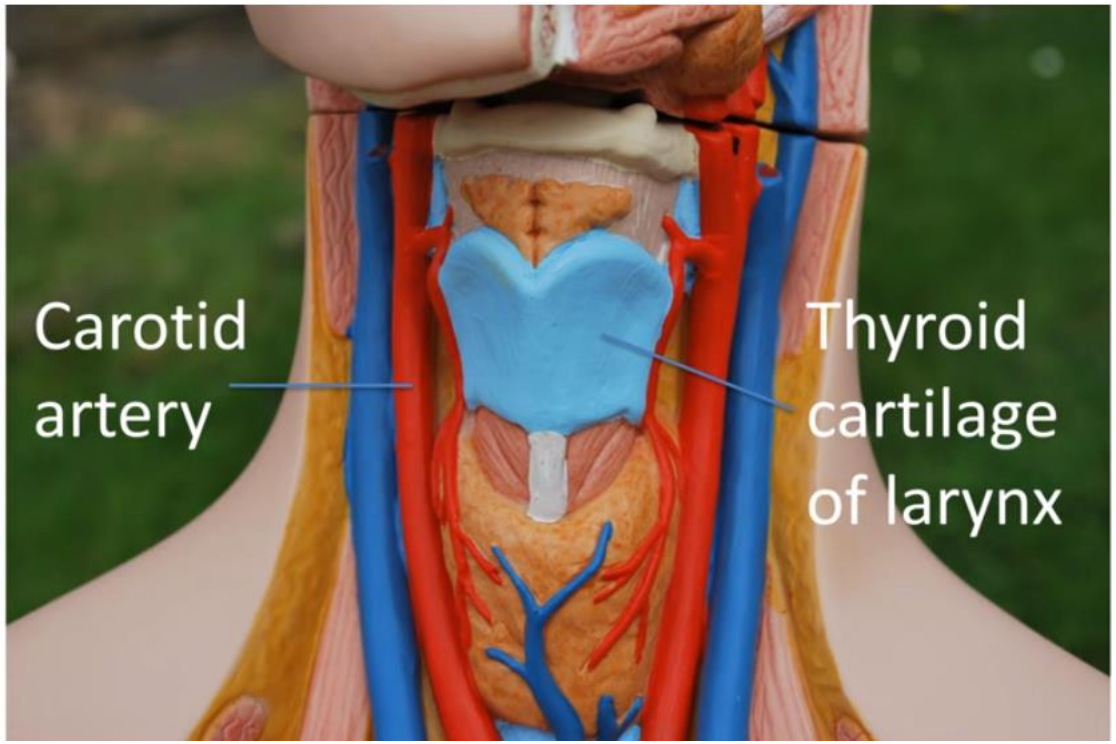


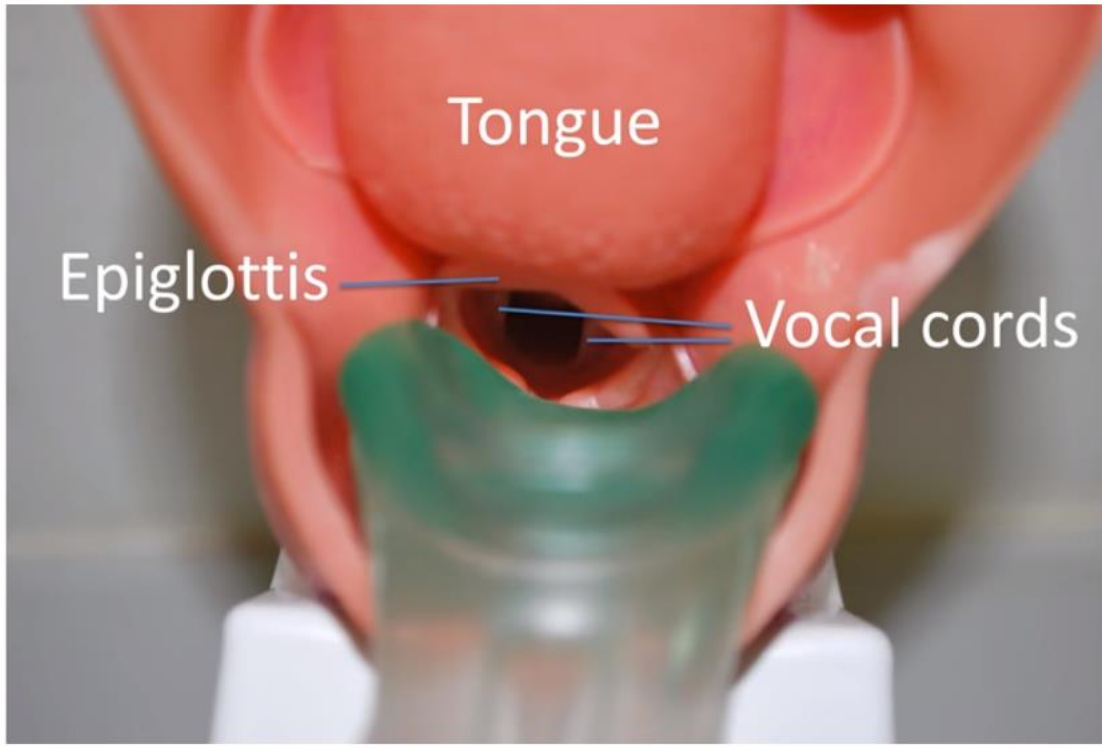
Nose – rhin (o)

- Rhinitis – inflammation
- Rhinodynia – pain
- Rhinorrhagia – excessive fluid flow (epistaxis)
- Rhinorrhoea
- Rhinovirus
- Rhinoplasty – molding, forming, plastic surgery

Pharynx – pharyng (o)

- Pharyngeal
- Pharyngitis - inflammation
- Pharyngoplegia – paralysis
- Oropharynx



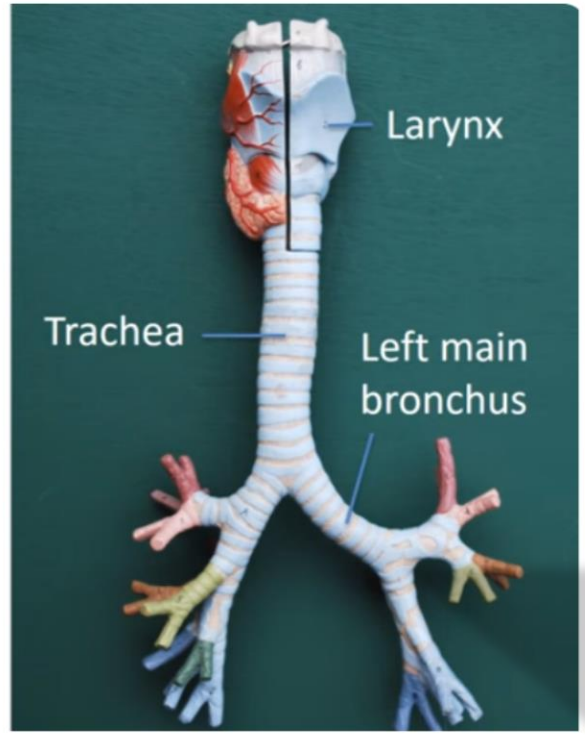


Larynx – laryng (o)

- Laryngeal – pertaining to
- Laryngitis – inflammation
- Laryngospasm - contraction
- Laryngostenosis – narrowing
- Laryngoplegia – paralysis
- Laryngectomy

Trachea – trache (o)

- Tracheal
- Tracheitis
- Tracheostomy
- Tracheostenosis
- Tracheoesophageal



Bronchial passages – bronch (o)

- Bronchogenic
- Bronchoscopy
- Bronchopneumonia
- Bronchopneumonitis
- Bronchiole – reduced in size

Bronchial passages – bronch (i)

- Bronchus – singular
- Bronchi – plural
- Bronchitis
- Bronchiectasis – pathological dilation

Lungs – pulmon (o)

- Pulmonary arteries, veins
- Pulmonary embolism
- Pulmonary hypertension
- Pulmonectomy
- Pulmonary oedema, fibrosis

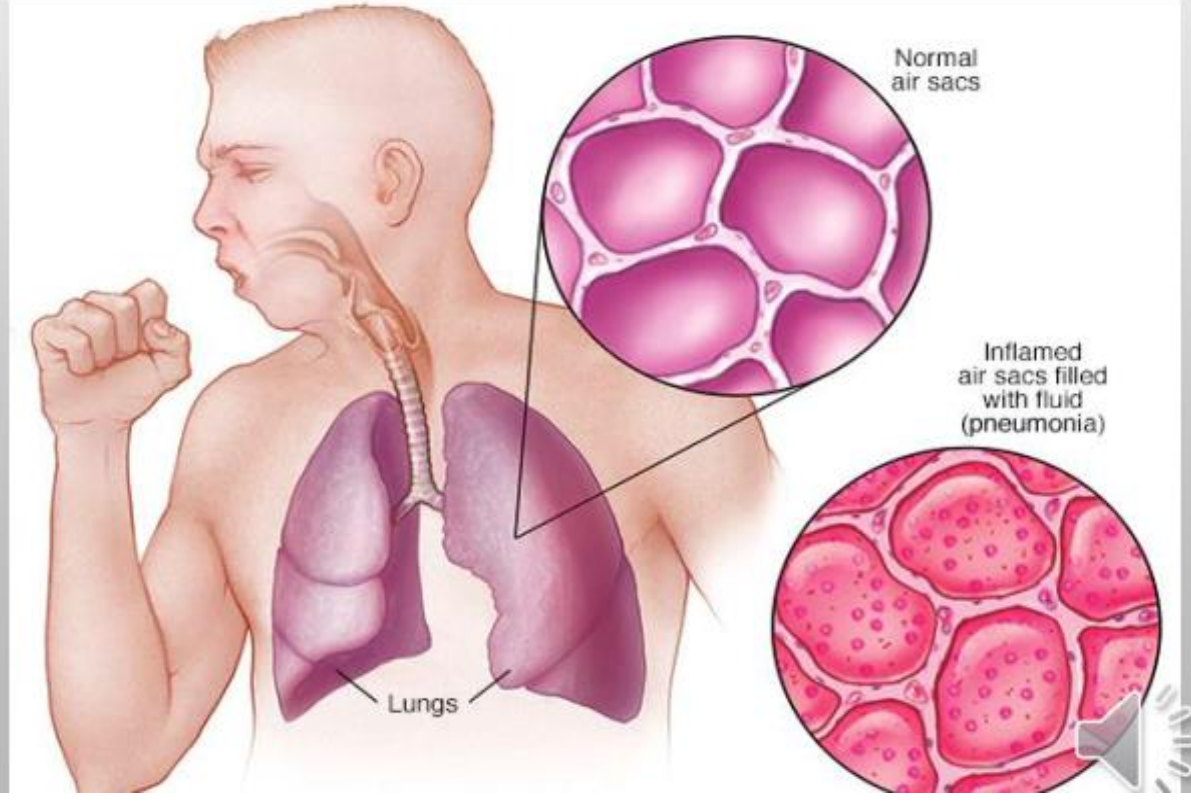
Medical term	Analysis	Meaning
Apnea	A- =without, -pnea= breathing	Without breathing
Bradypnea	Brady- =slow, -pnea= breathing	abnormally slow breathing rate
Dyspnea	Dys- = difficult or painful, -pnea= breathing	Painful or difficult breathing
Orthopnea	Ortho- = straight, -pnea= breathing	Difficulty or discomfort in breathing while lying flat, relieved by sitting or standing.
Tachypnea	Tachy- =fast, -pnea= brething	Abnormally rapid breathing
Dysphonia	Dys- =abnormal or difficult or painful, -phonia= voice	having an abnormal voice (difficult or painful speech)

HEMOPTYSIS

Hem/o (blood); -ptysis (spitting). Lung or bronchial hemorrhage that results in the spitting of blood.

PNEUMONIA

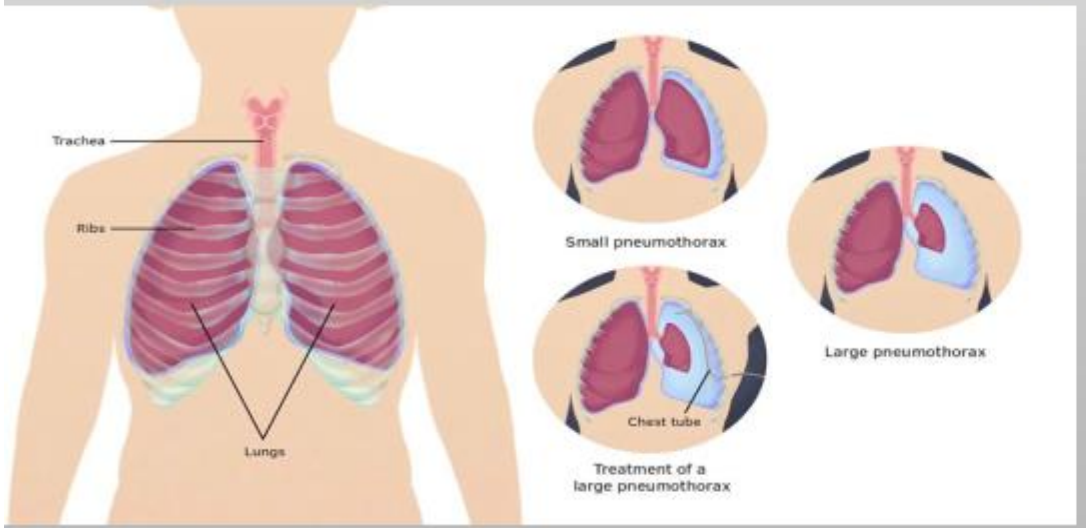
Pneumon/o (air, lung); ia (condition, state). Inflammation of a lung caused by Infection, chemical inhalation or trauma.



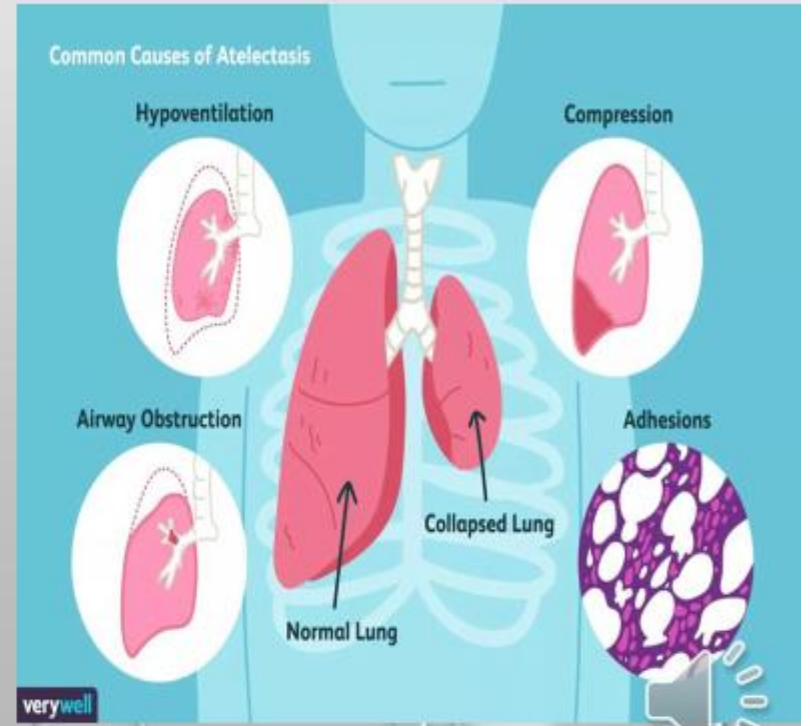
EXPANSION DISORDERS

Atelectasis: atel- means incomplete or imperfect, -ectasis means expansion. It is a complete or partial collapse of the entire lung or area (lobe) of the lung.

Pneumothorax: pneumo- means air or lung, -thorax means chest. It is an abnormal collection of air in the pleural cavity.



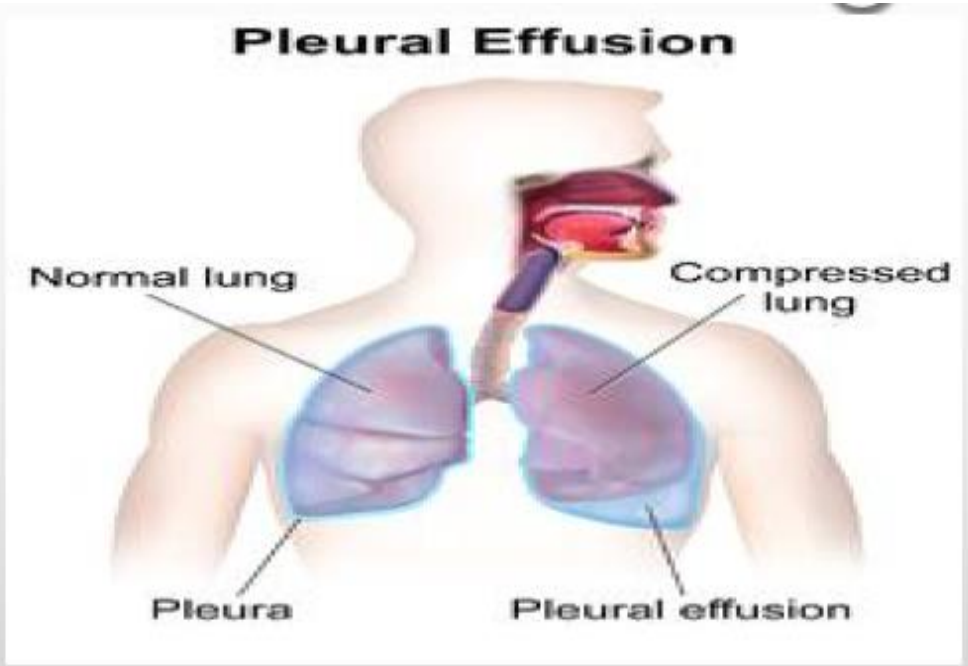
Pneumothorax

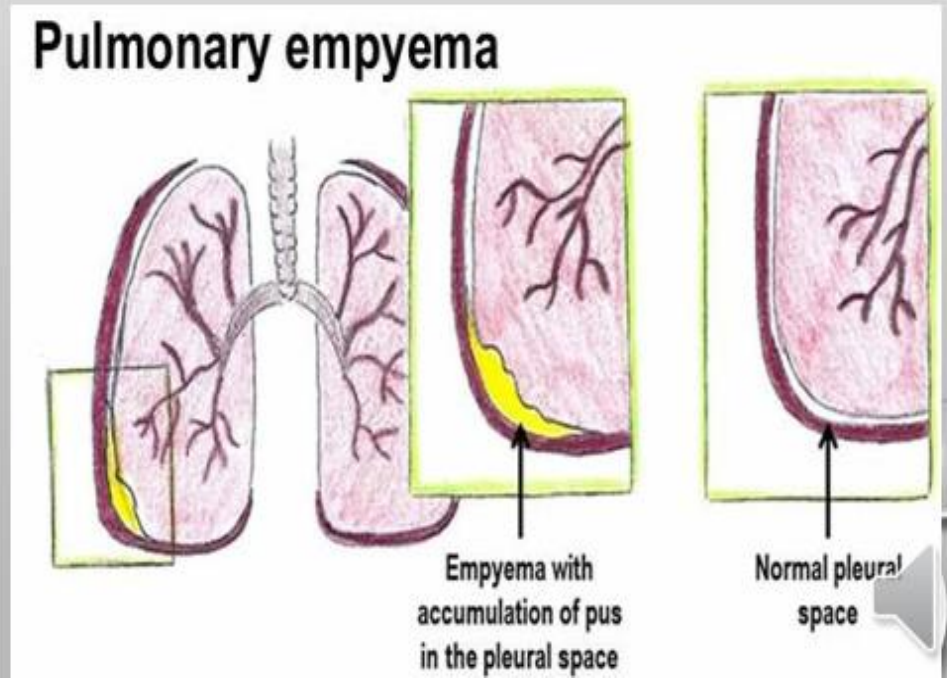


atelectasis

Pleural effusion: is the build-up of excess fluid between the layers of the pleura outside the lungs.

Empyema: a condition in which pus accumulates in the pleural cavity. It is originated from the Greek word “empyein” which means pus producing.





OTHER DISORDERS

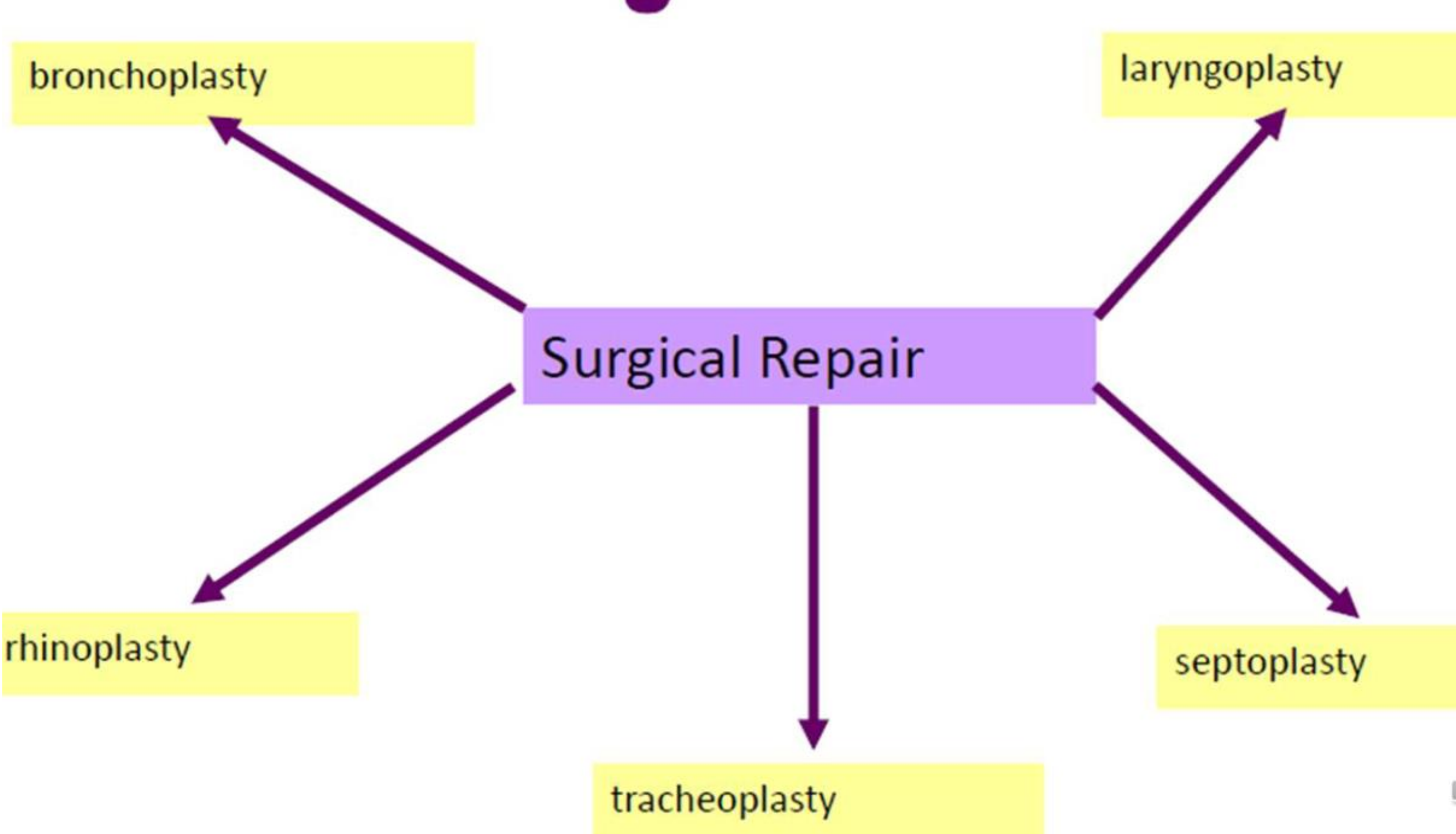
Bronchiectasis: chronic dilation of bronchi.

Bronchostenosis: narrowing of bronchial tube.

Bronchospasm: abnormal contraction of bronchi.

PHYSICIAN TERMS

Otolaryngologist: ot/o (ear) physician who specializes in diagnosis and treatment of ear, nose and throat diseases.
Pulmonologist: physician who specializes in diagnosis and treatment of respiratory disorders.


bronchoplasty
laryngoplasty
Surgical Repair
rhinoplasty
septoplasty
tracheoplasty

PHARMACOLOGY

Medications that may be used to treat respiratory disorders include:

Note: Anti- = against

Antibiotics: Agents that treat bacterial infections.

Antihistamines: Agents used to treat histamine mediated reactions like allergies.

Antipyretics: Agents that reduce fever.

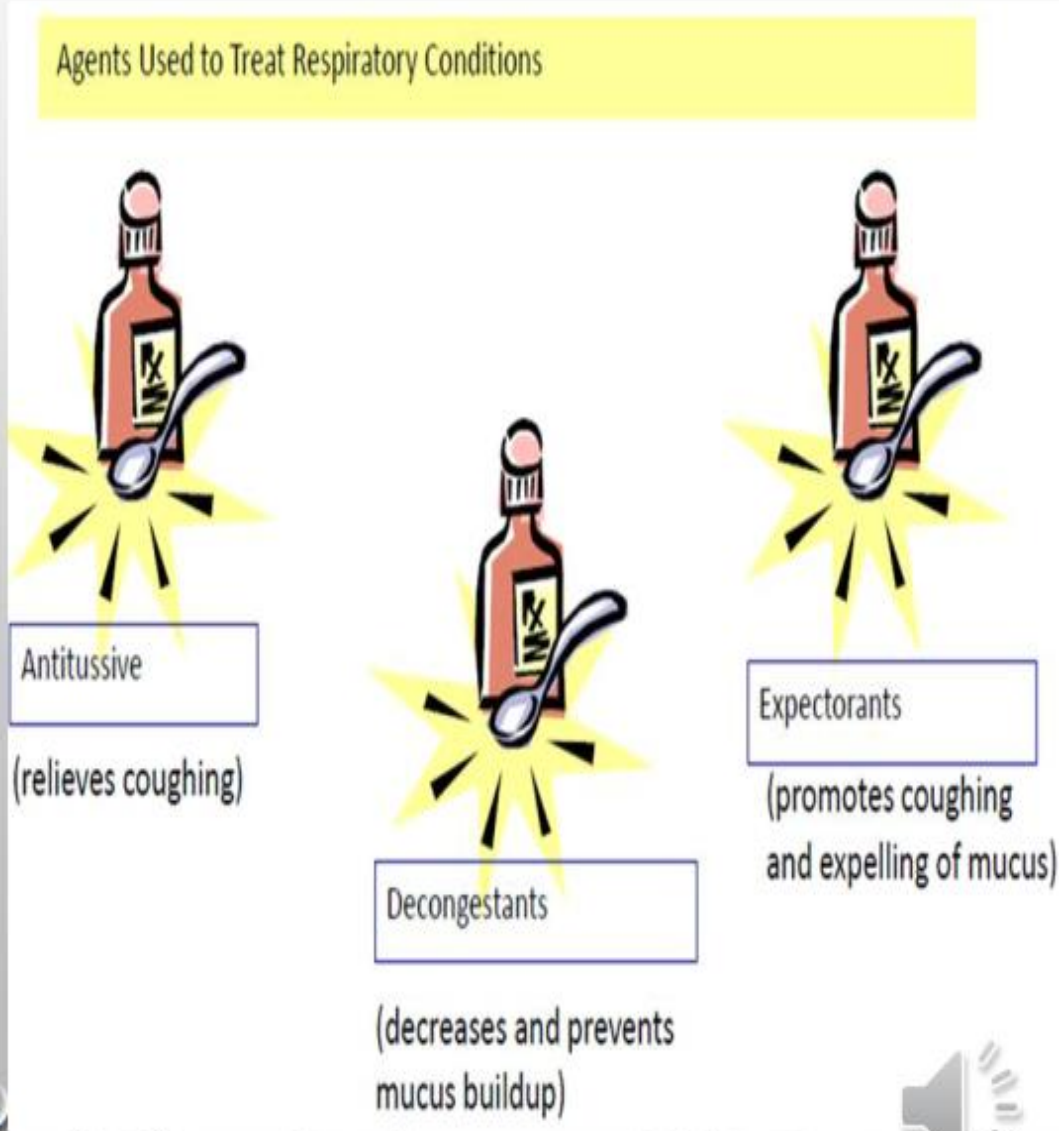
Anticoagulants: Agents used to prevent blood from clotting.

Bronchodilators: drugs that dilate the bronchial walls by relaxing bronchial muscles.

Expectorants: drugs that promote coughing and expulsion of mucus.

Antitussives: drugs relief the cough by blocking cough reflex.

Corticosteroids: drugs that reduce inflammation, used to treat respiratory diseases such as asthma.



Element	Meaning	Word Analysis
lob/o	lobe	lob/ectomy (lō-BĔK-tō-mē): surgical removal of a lobe of an organ or gland (such as the lungs, liver, and thyroid gland) *-ectomy:* excision *A lobectomy is performed when a malignancy is confined to a single lobe of the lung.*
orth/o	straight	orth/o/pnea (or-THŎP-nē-ă): condition in which the patient experiences difficulty breathing in any position other than sitting or standing erect *-pnea:* breathing
ox/o	oxygen	hyp/ox/emia (hī-pŏks-Ē-mē-ă): abnormal decrease of oxygen in arterial blood resulting in hypoxia *hyp-:* under, below, deficient *-emia:* blood condition
ox/i		ox/i/meter (ŏk-SĬM-ĕ-tĕr): device used to measure the oxygen saturation of arterial blood *-meter:* instrument for measuring *The oximeter is usually attached to the tip of a finger but may also be placed on a toe or earlobe.*

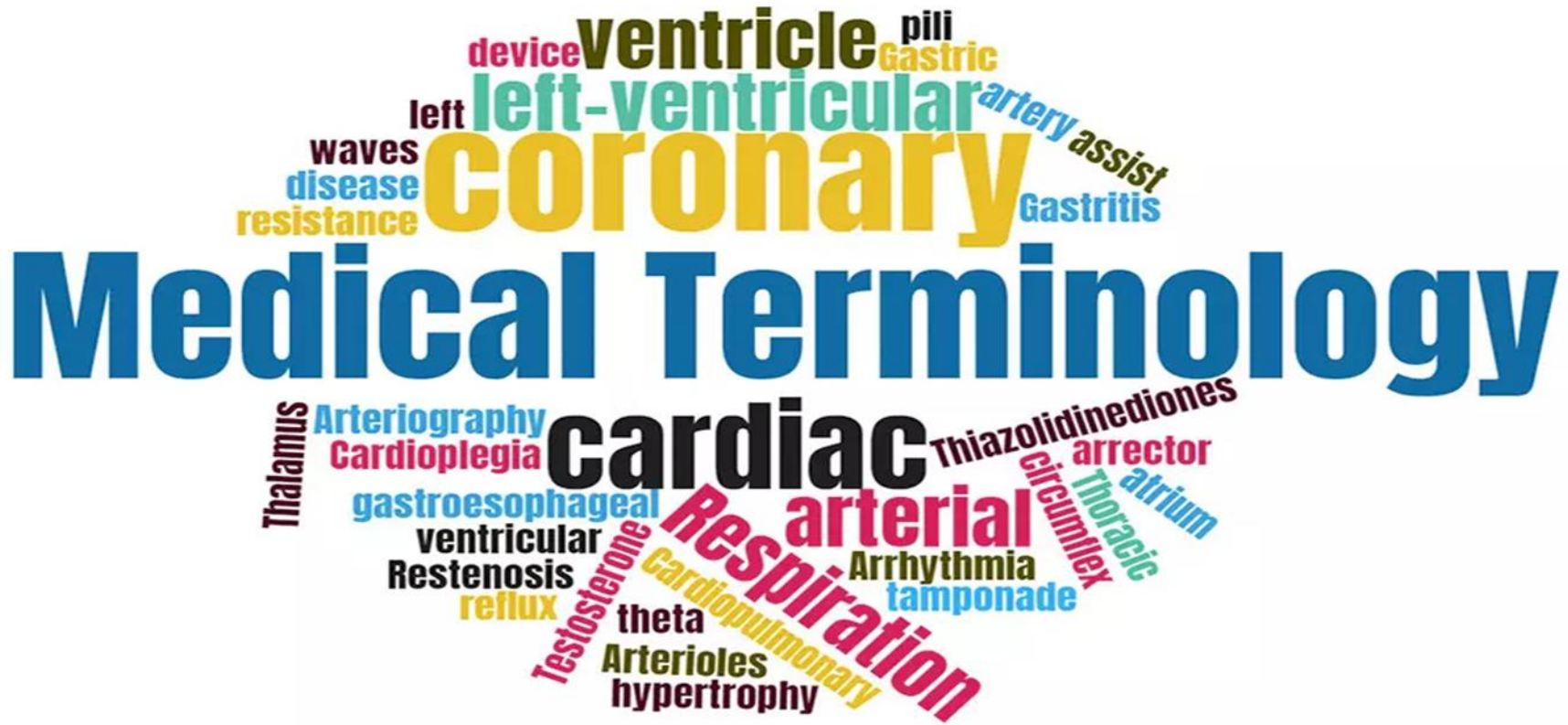
pector/o	chest	pector/algia (pĕk-tō-RĂL-jē-ă): pain in the chest *-algia:* pain
steth/o		steth/o/scope (STĔTH-ō-skōp): instrument used to evaluate the sounds of the chest and abdomen *-scope:* instrument for examining
thorac/o		thorac/algia (thō-răk-ĂL-jē-ă): pain in the chest wall; also called *thoracodynia* *-algia:* pain
phren/o	diaphragm; mind	phren/o/ptosis (frĕn-ŏp-TŌ-sĭs): abnormal downward displacement of the diaphragm *-ptosis:* prolapse, downward displacement
spir/o	breathe	spir/o/meter (spī-RŎM-ĕt-ĕr): instrument that measures how much air the lungs can hold (vital capacity) as well as how much and how quickly air can be exhaled *-meter:* instrument for measuring

Term	Definition
acidosis ăs-ĭ-DŌ-sĭs	Excessive acidity of body fluids, commonly associated with pulmonary insufficiency and the subsequent retention of carbon dioxide
anosmia ăn-ŎZ-mē-ă *an-:* without, not *-osmia:* smell	Absence of or decrease in the sense of smell *Anosmia usually occurs as a temporary condition resulting from an upper respiratory infection or a condition that causes intranasal swelling.*
apnea ăp-NĒ-ă *a-:* without, not *-pnea:* breathing **sleep**	Temporary loss of breathing *There are three types of apnea: obstructive (enlarged tonsils and adenoids), central (failure of the brain to transmit impulses for breathing), and mixed (combination of obstructive and central apnea).* One of several disorders in which breathing during sleep stops for more than 10 seconds and usually more than 20 times/hour, causing measurable blood deoxygenation
asphyxia ăs-FĬK-sē-ă *a-:* without, not *-sphyxia:* pulse	Condition caused by insufficient intake of oxygen *Some common causes of asphyxia are drowning, electrical shock, lodging of a foreign body in the respiratory tract, inhalation of toxic smoke, and poisoning.*
atelectasis ăt-ĕ-LĔK-tă-sĭs *atel-:* incomplete; imperfect *-ectasis:* dilation, expansion	Collapsed or airless state of the lung, which may be acute or chronic and affect all or part of a lung *Atelectasis is a potential complication of some surgical procedures, especially those of the chest because breathing is commonly shallow after surgery to avoid pain from the surgical incision. In fetal atelectasis, the lungs fail to expand normally at birth.*

PREFIXES

brady-	slow	brady/pnea (brăd-ĭp-NĒ-ă): abnormally slow respiratory rate *-pnea:* breathing
dys-	bad; painful; difficult	dys/pnea (dĭsp-NĒ-ă): breathing discomfort or significant breathlessness *-pnea:* breathing
eu-	good, normal	eu/pnea (ūp-NĒ-ă): normal, unlabored breathing *-pnea:* breathing *The normal range for a resting adult respiratory rate is 12 to 20 breaths/minute.*
tachy-	rapid	tachy/pnea (tăk-ĭp-NĒ-ă): abnormally rapid respiratory rate *-pnea:* breathing

THANK YOU!


device
ventricle
pili
Gastric
left
left-ventricular
artery
assist
waves
coronary
disease
resistance
Gastritis
Medical Terminology
Thalamus
Arteriography
Cardioplegia
cardiac
Thiazolidinediones
arrector
atrium
Thoracic
circumflex
gastroesophageal
arterial
ventricular
Restenosis
Respiration
Arrhythmia
tamponade
reflux
cardiopulmonary
Testosterone
theta
Arterioles
hypertrophy