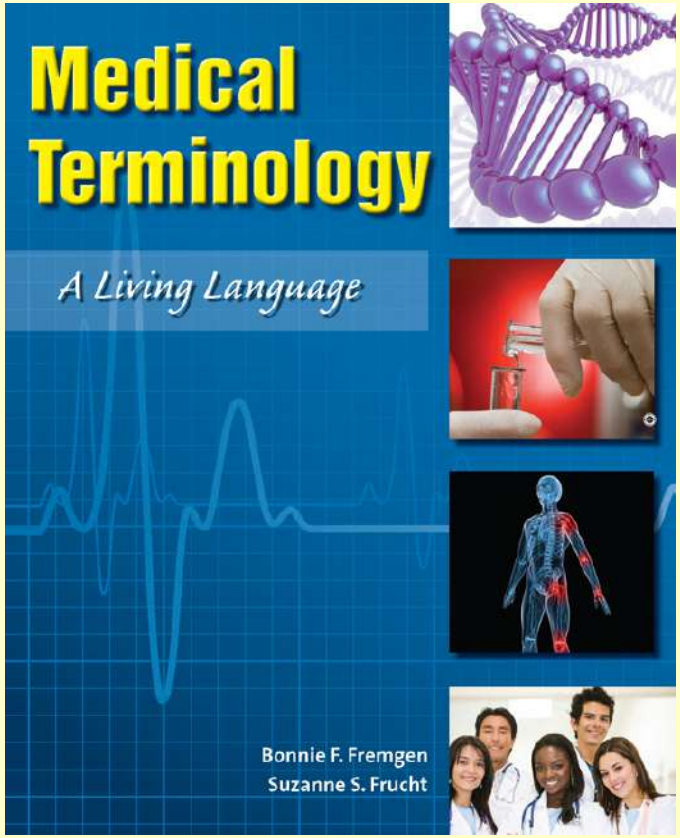
Medical Terminology
A Living Language



Chapter 7

Respiratory System

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Bonnie F. Fremgen and Suzanne S. Frucht

Multimedia Directory

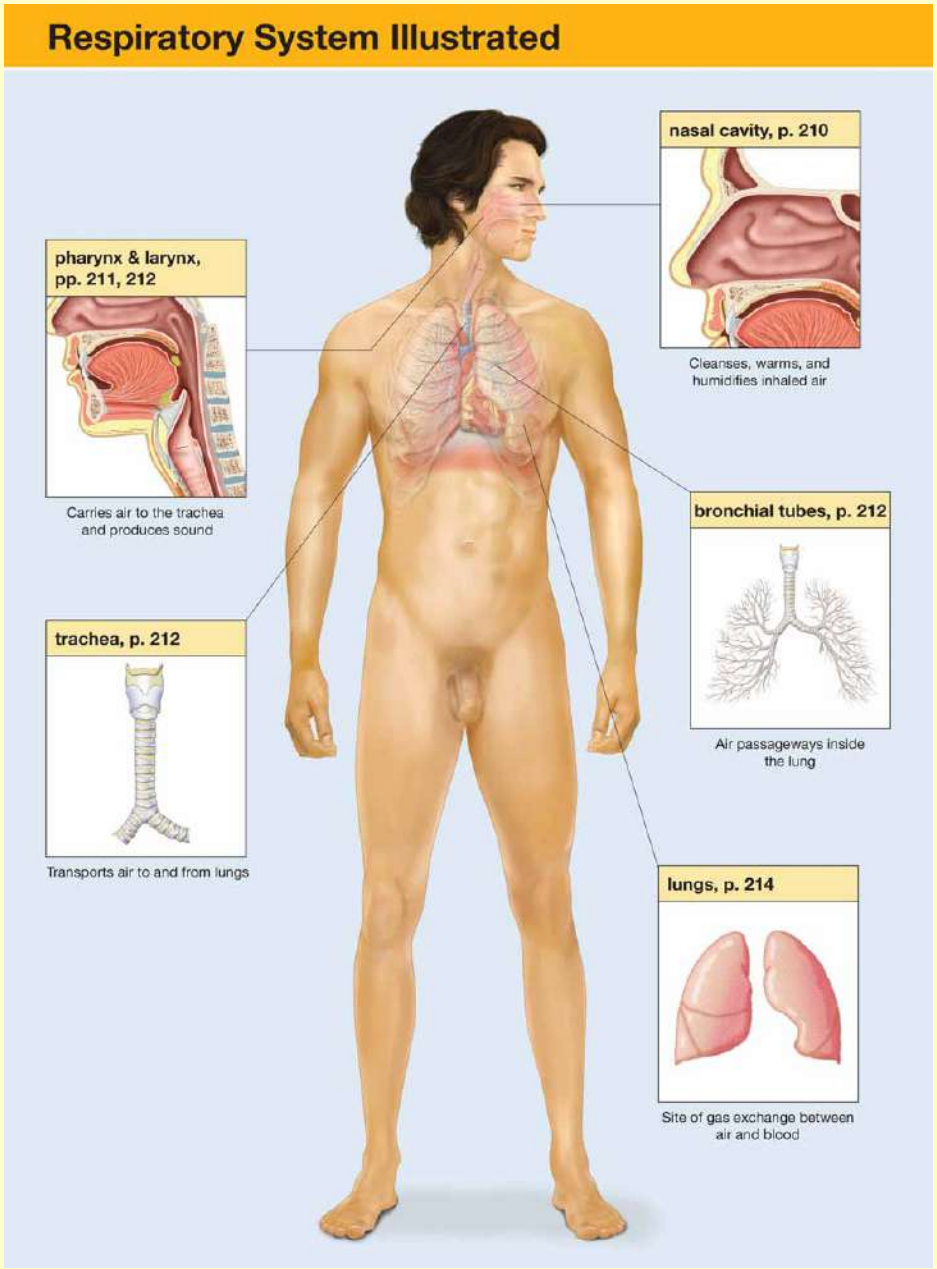
Respiratory System at a Glance

- Functions of the Respiratory System
  - Inhale fresh air into lungs
  - Exchange oxygen for carbon dioxide
  - Exhale stale air

Respiratory System at a Glance

- Organs of the Respiratory System
  - Nasal cavity
  - Pharynx
  - Larynx
  - Trachea
  - Bronchial tubes
  - Lungs

Respiratory System Illustrated



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Respiratory System Combining Forms

- alveol/oalveolus; air sac
- anthrac/ocoal
- atel/oincomplete
- bronch/obronchus
- bronchi/obronchus
- bronchiol/obronchiole

Respiratory System Combining Forms

- coni/odust
- diaphragmat/odiaphragm
- epiglott/oepiglottis
- laryng/olarynx
- lob/olobe
- nas/onose

Respiratory System Combining Forms

- orth/ostraight, upright
- ox/o, ox/ioxygen
- pharyng/opharynx
- pleur/opleura
- pneum/olung, air
- pneumon/olung, air

Respiratory System Combining Forms

- pulmon/olung
- rhin/onose
- sinus/osinus, cavity
- spir/obreathing
- trache/otrachea, windpipe

Respiratory System Suffixes

- –capniacarbon dioxide
- –ectasisdilated, expansion
- –osmiasmell
- –phoniavoice
- –pneabreathing
- –ptysisspitting
- –thoraxchest

Anatomy and Physiology

- Cells of body require constant gas exchange
  - Delivery of oxygen
  - Removal of carbon dioxide
- Respiratory system works in conjunction with cardiovascular system to meet this need

Respiration

- Must be continuous to meet cells' needs
- Subdivided into three distinct parts:
  - **Ventilation**
  - **Inhalation**
  - **Exhalation**

Ventilation

- Flow of air between outside environment and lungs
- **Inhalation**
  - Flow of air into lungs
  - Brings fresh oxygen into air sacs
- **Exhalation**
  - Flow of air out of lungs
  - Removes carbon dioxide from body

External Respiration

- Exchange of oxygen and carbon dioxide in lungs
- Gases diffuse in opposite directions
- Oxygen
  - Leaves air sacs and enters blood stream
- Carbon dioxide
  - Leaves blood stream and enters air sacs

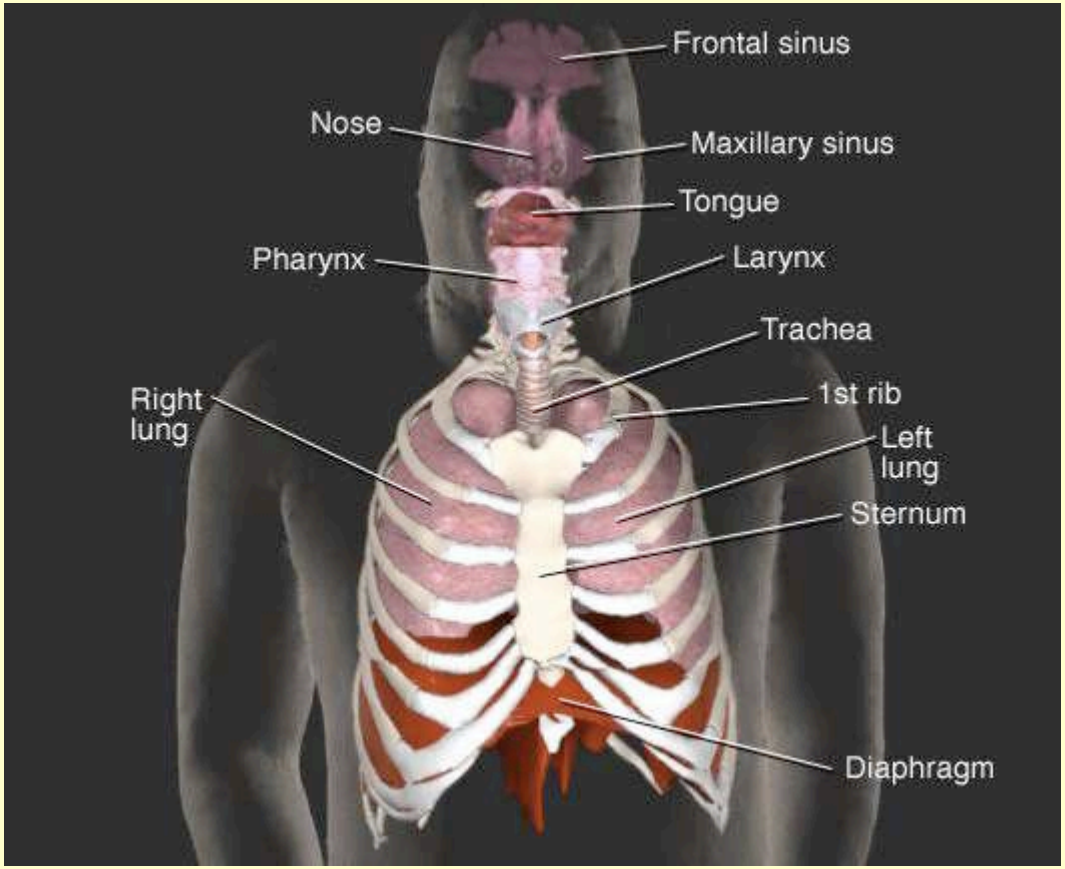
Internal Respiration

- Oxygen and carbon dioxide exchange at cellular level
- Oxygen
  - Leaves bloodstream and is delivered to tissue
  - Used immediately for metabolism
- Carbon dioxide
  - Waste product of metabolism
  - Leaves tissue and enters bloodstream

Respiratory System Organs

- **Nasal cavity**
- **Pharynx**
- **Larynx**
- **Trachea**
- **Bronchial tubes**
- **Lungs**

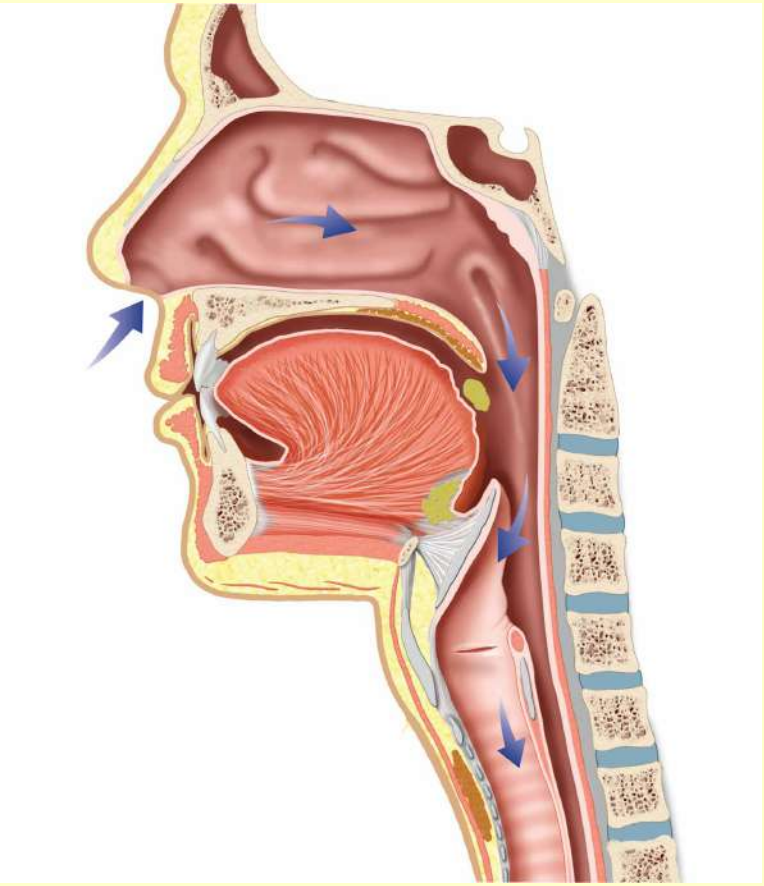
Respiratory System Animation



Click here to view an animation of the respiratory system.

Nasal Cavity

- Air enters through **nares**
- Nasal cavity divided by **nasal septum**
- **Palate** in roof of mouth separates nasal cavity above from mouth below



Nasal Cavity

- **Cilia**
  - Small hairs line opening to nasal cavity
  - Filter out large dirt particles before they can enter lungs
- Walls of nasal cavity and nasal septum
  - Made of flexible cartilage
  - Covered with **mucous membrane**

Nasal Cavity

- Much of respiratory tract is covered with mucous membrane
  - **Mucus** is thick and sticky secretion of membrane
  - Cleanses air by trapping dust and bacteria
- Capillaries in mucous membranes
  - Warm air
  - Humidify air

Nasal Cavity

- **Paranasal sinuses**
  - Located within facial bones
  - Echo chamber for sound production
  - Gives resonance to voice

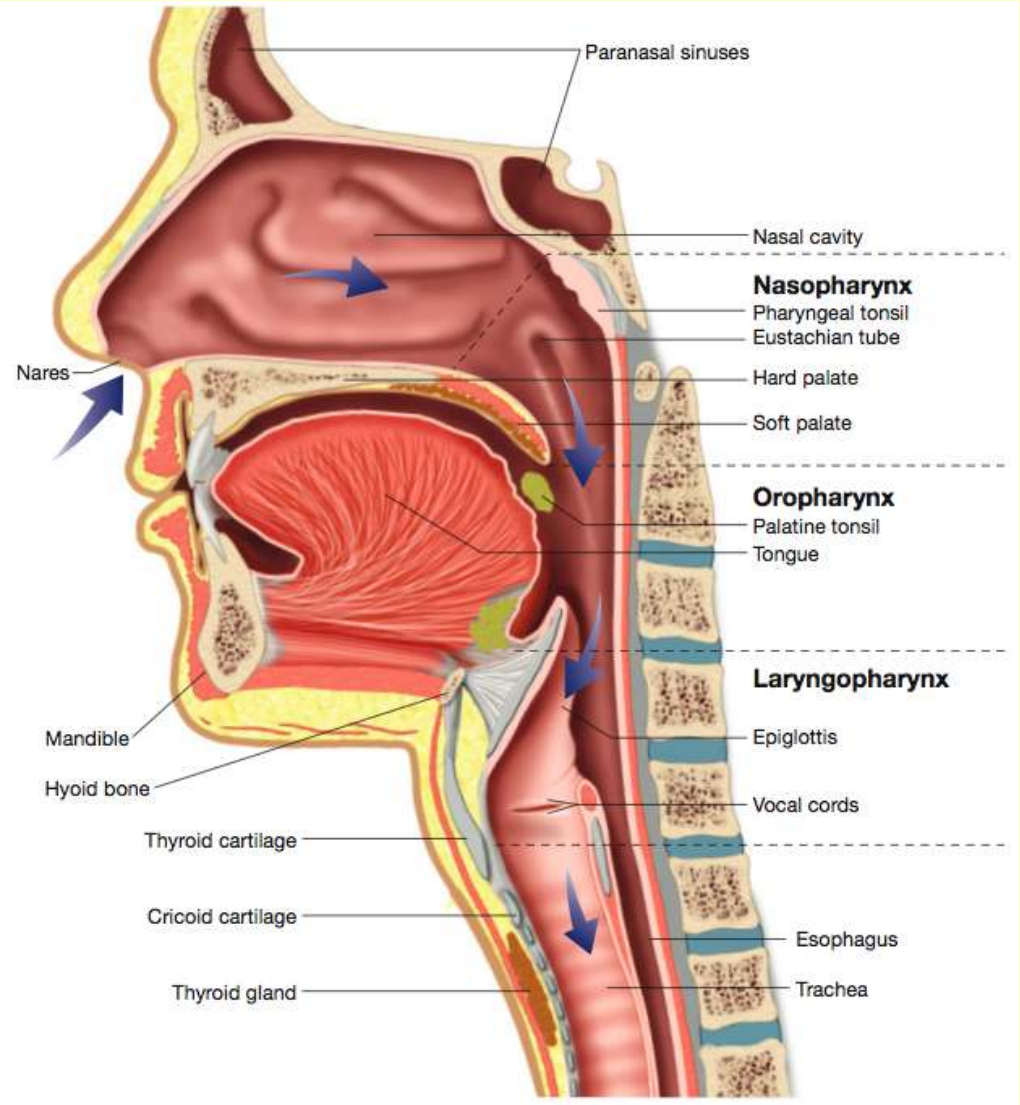


Figure 7.1 – Sagittal section of upper respiratory system illustrating the internal anatomy of the nasal cavity, pharynx, larynx, and trachea.

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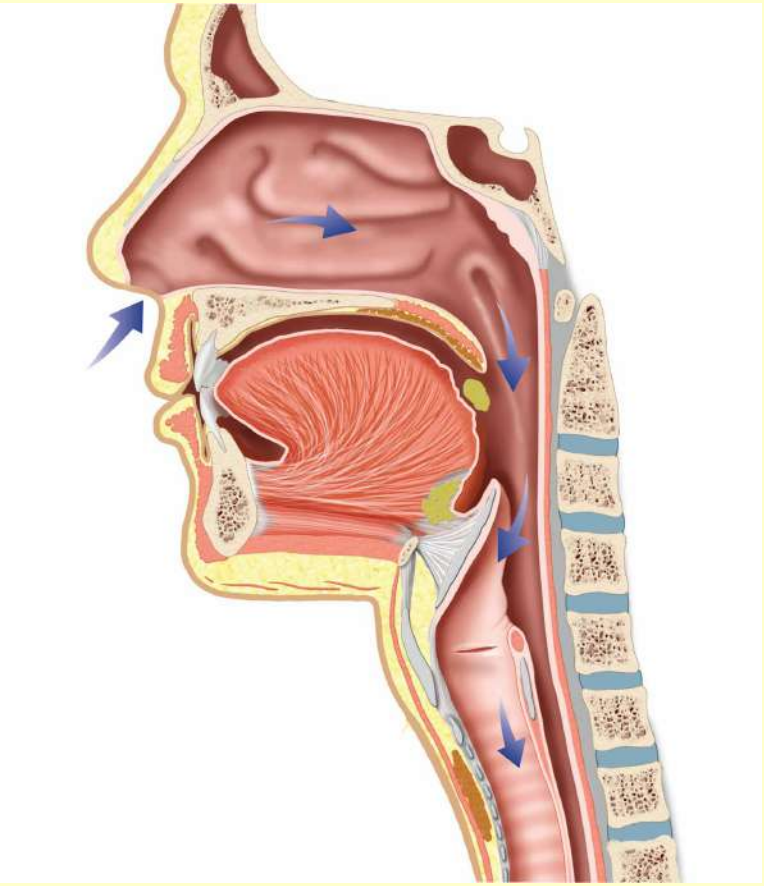
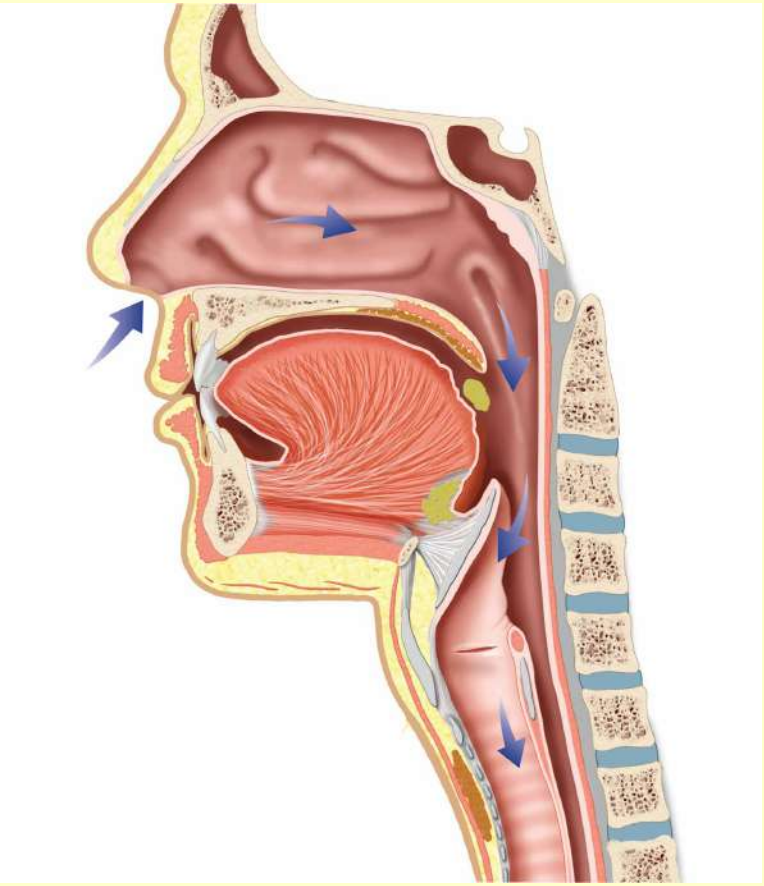
Pharynx

- Commonly called **throat**
- Used by respiratory and digestive systems
- At end of pharynx
  - Air enters trachea
  - Food and liquids enter esophagus



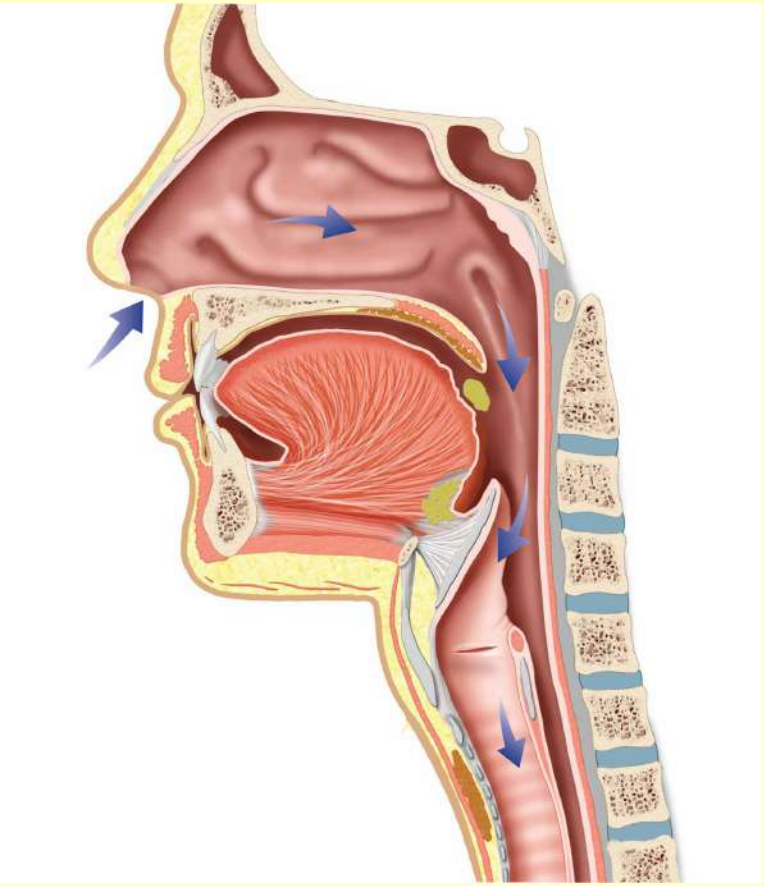
Three Subdivisions of Pharynx

- **Nasopharynx**
  - Upper section by nasal cavity
- **Oropharynx**
  - Middle section by oral cavity
- **Laryngopharynx**
  - Lower section by larynx



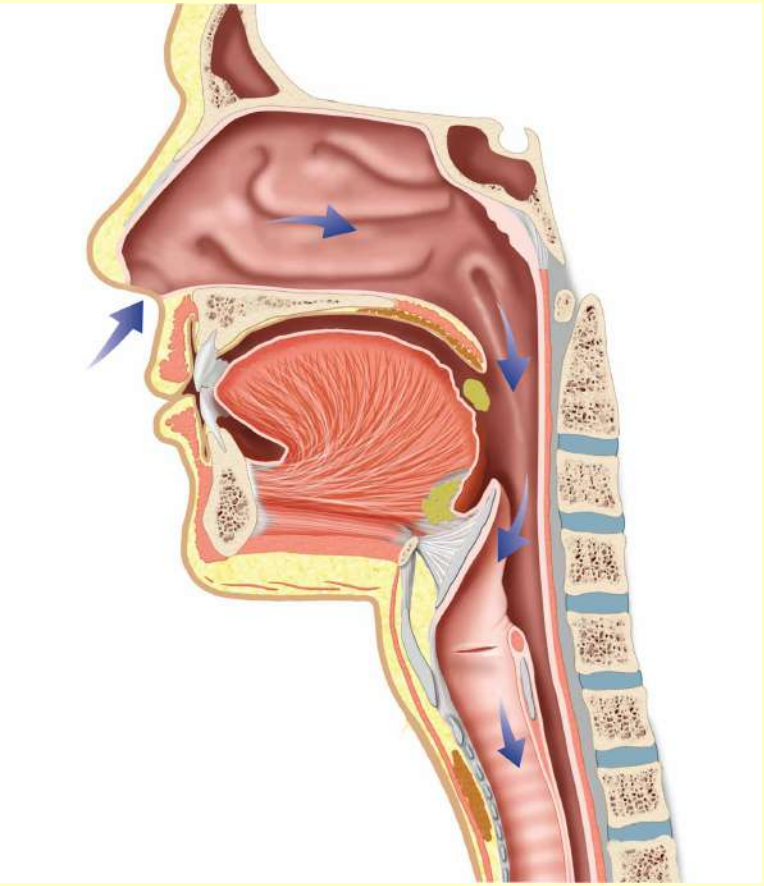
Tonsils

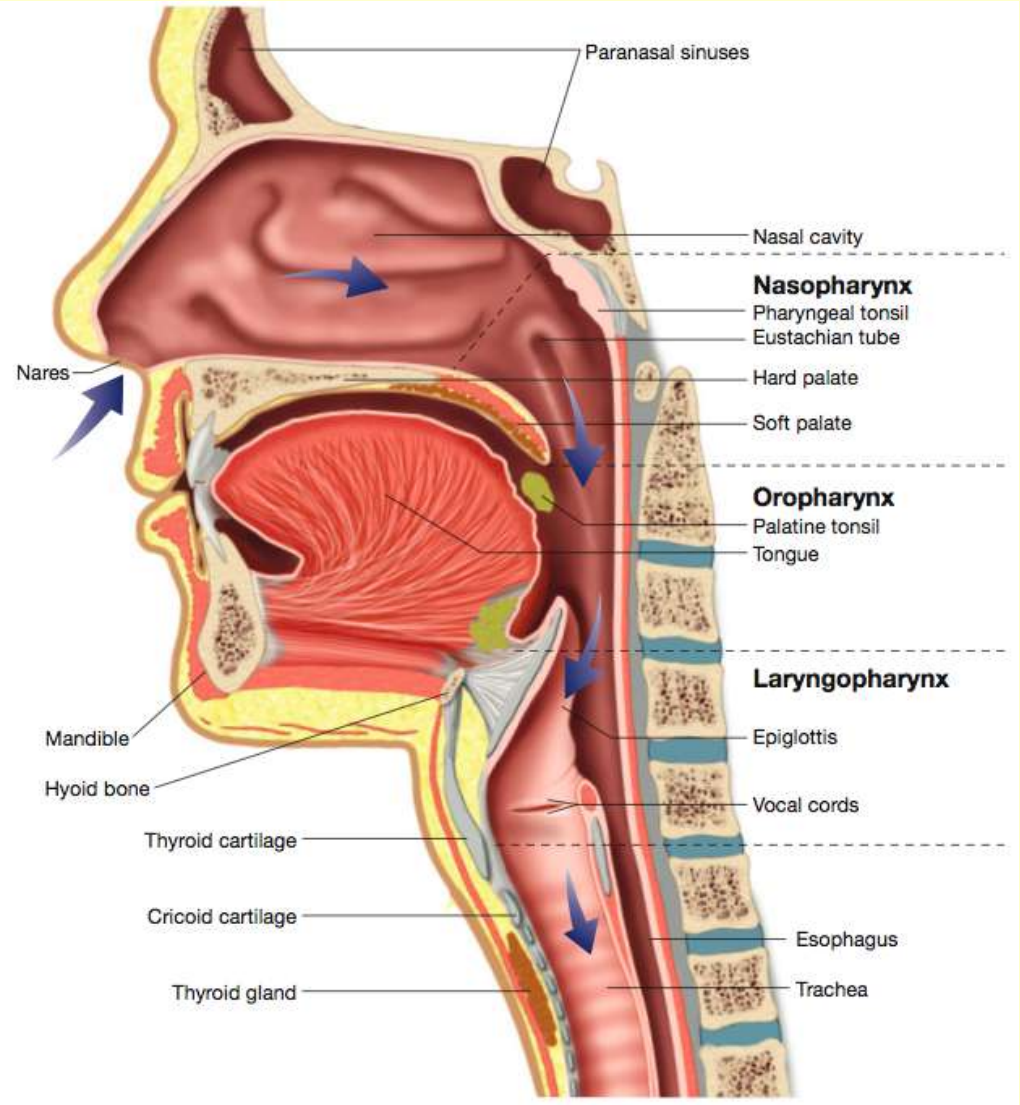
- Lymphatic tissue
  - Removes pathogens in air and food
- Three pairs
  - **Adenoids**
  - **Palatine**
  - **Lingual**



Eustachian or Auditory Tube

- Opening found in nasopharynx
- Other end opens into middle ear
- Tube opens with each swallow
  - Equalizes air pressure between middle ear and outside atmosphere





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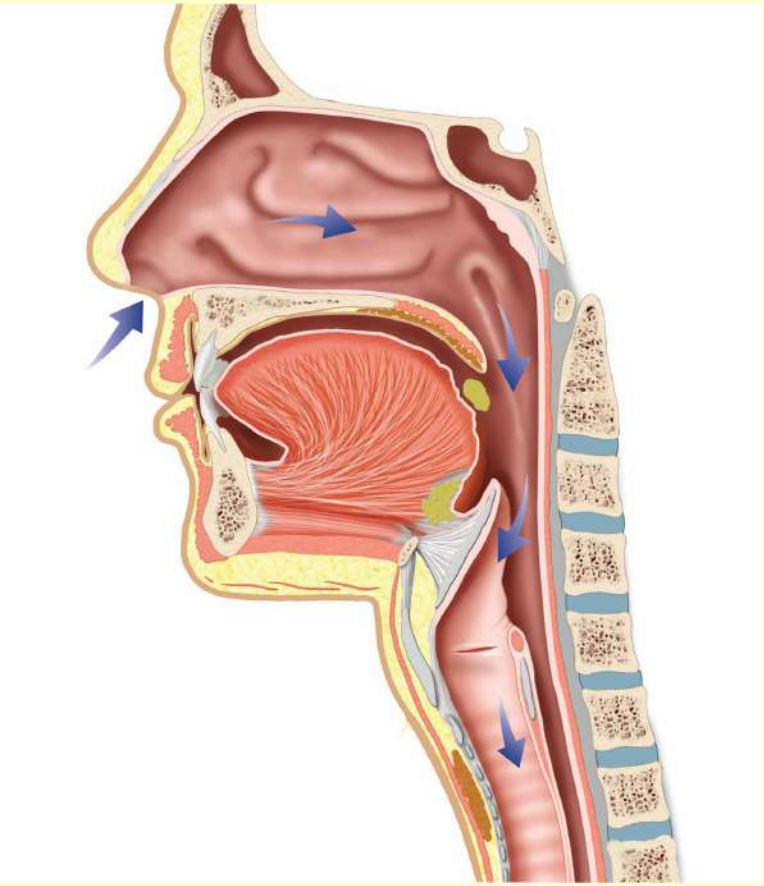
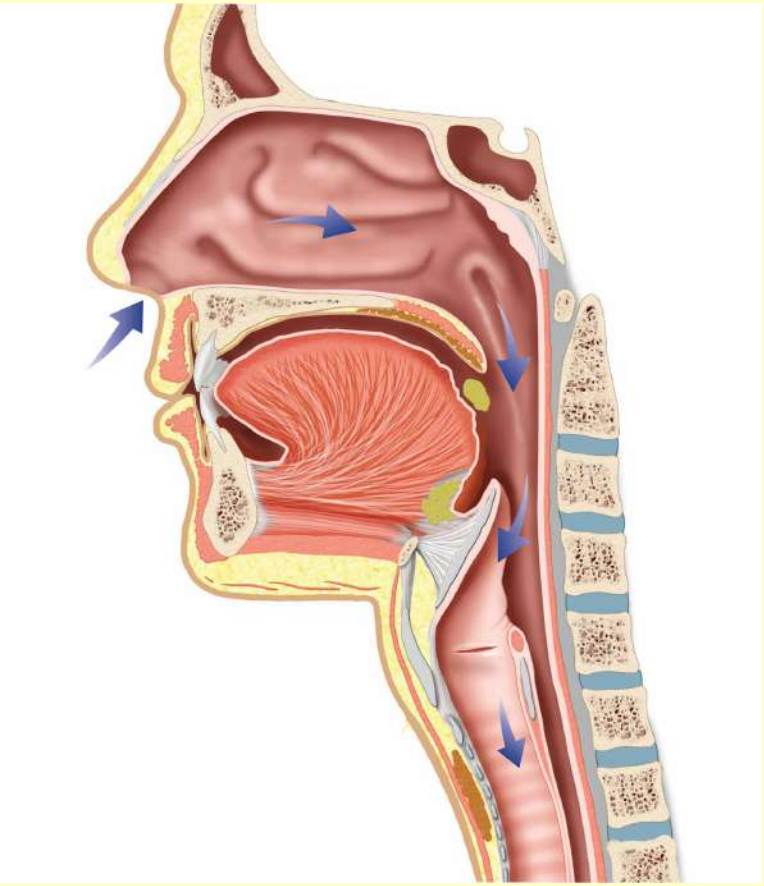
Larynx

- Commonly called **voice box**
- Muscular tube between pharynx and trachea
- Contains **vocal cords**



Larynx

- Walls of larynx
  - Composed of cartilage plates
  - Held in place by ligaments and muscles
  - Thyroid cartilage forms the Adam's apple



Vocal Cords

- Folds of membranous tissue
  - Not actually cord-like in structure
- Vibrate to produce sound as air passes through opening between folds
  - Called **glottis**

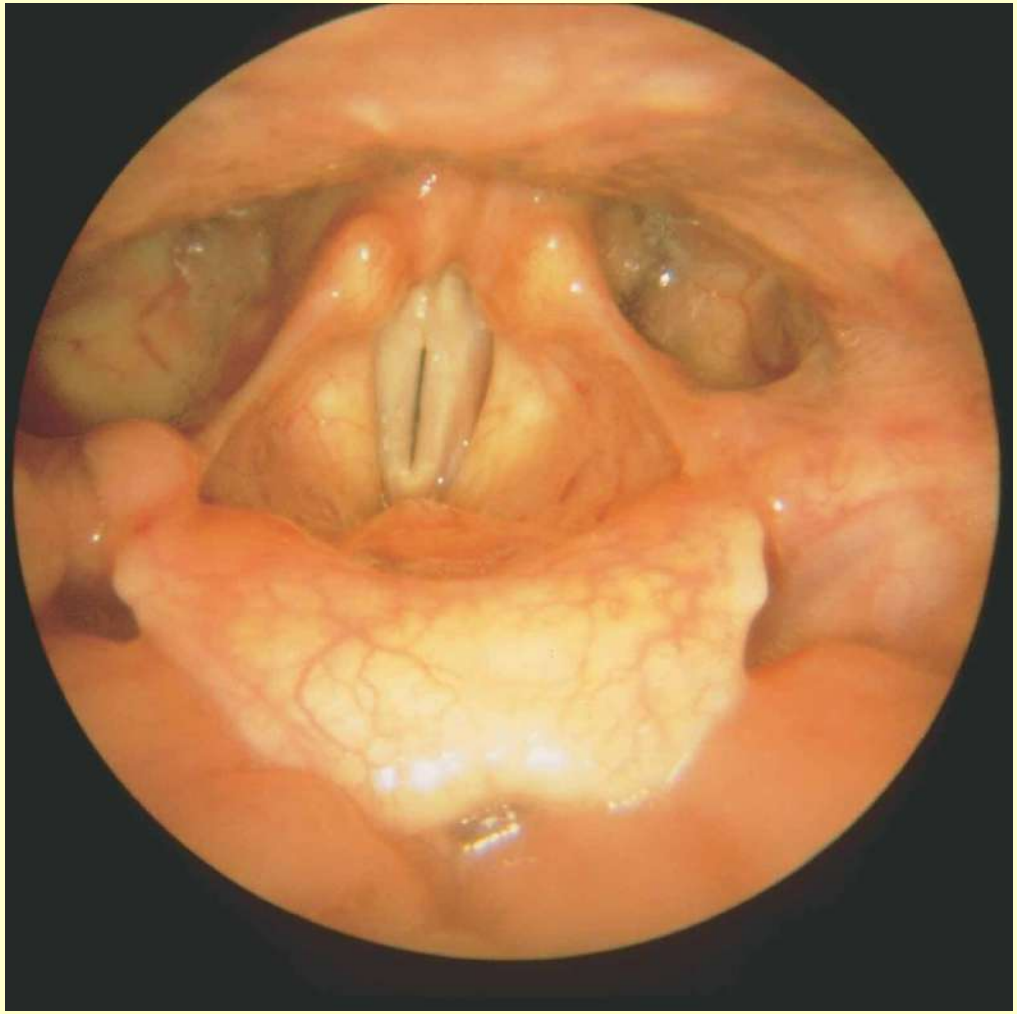
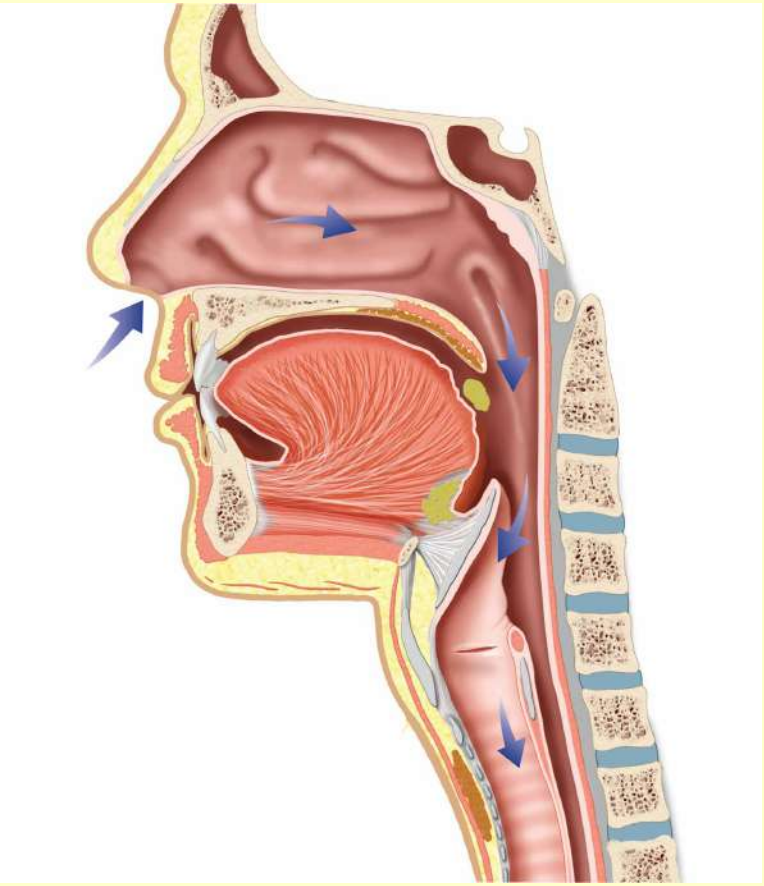
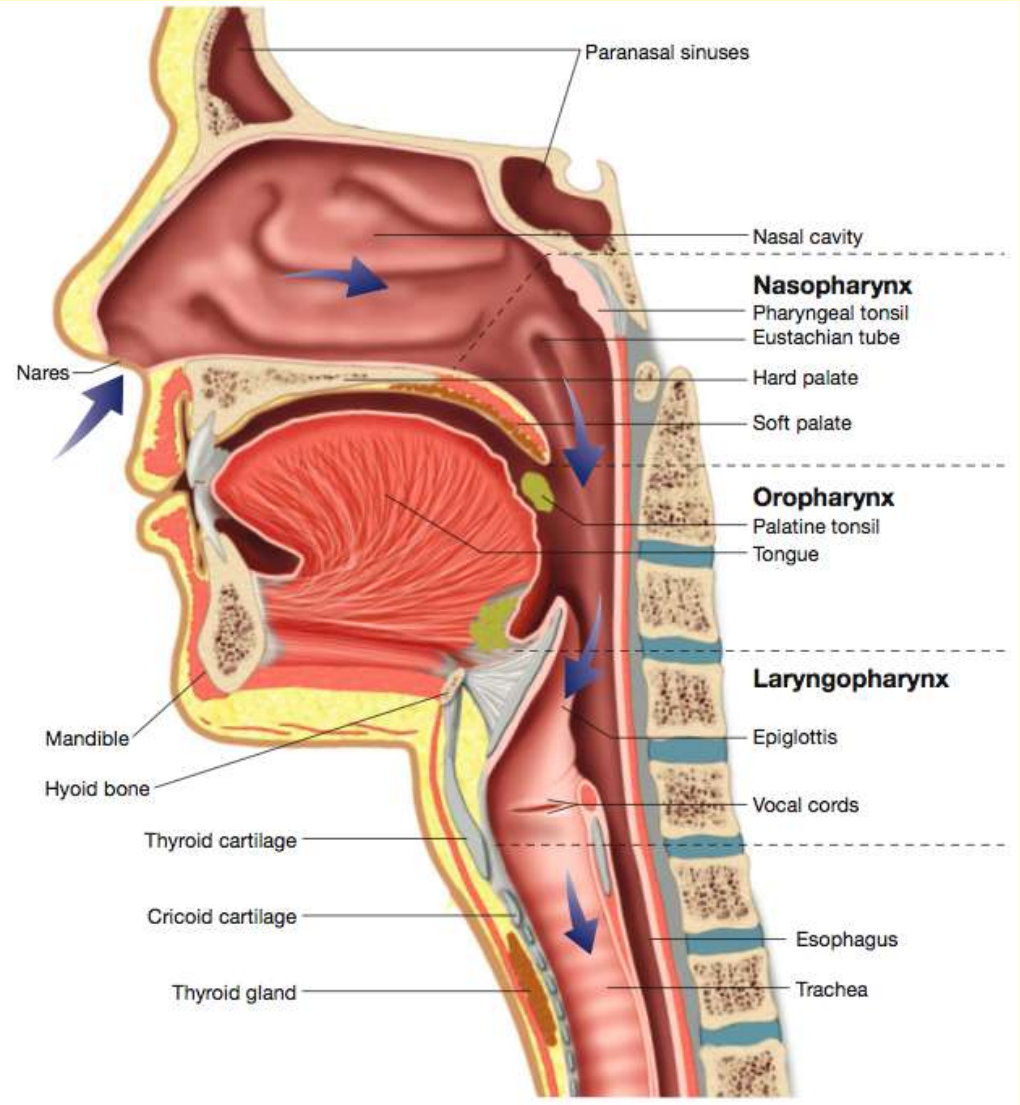


Figure 7.2 – The vocal cords within the larynx, superior view from the pharynx. *(CNRI/Phototake NYC)*

Epiglottis

- Flap of cartilage
- Sits above glottis
- Covers larynx and trachea during swallowing
  - Food goes into esophagus
  - Not into trachea





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Trachea

- Commonly called **windpipe**
- Carries air from larynx to main bronchi
- Approximately four inches in length

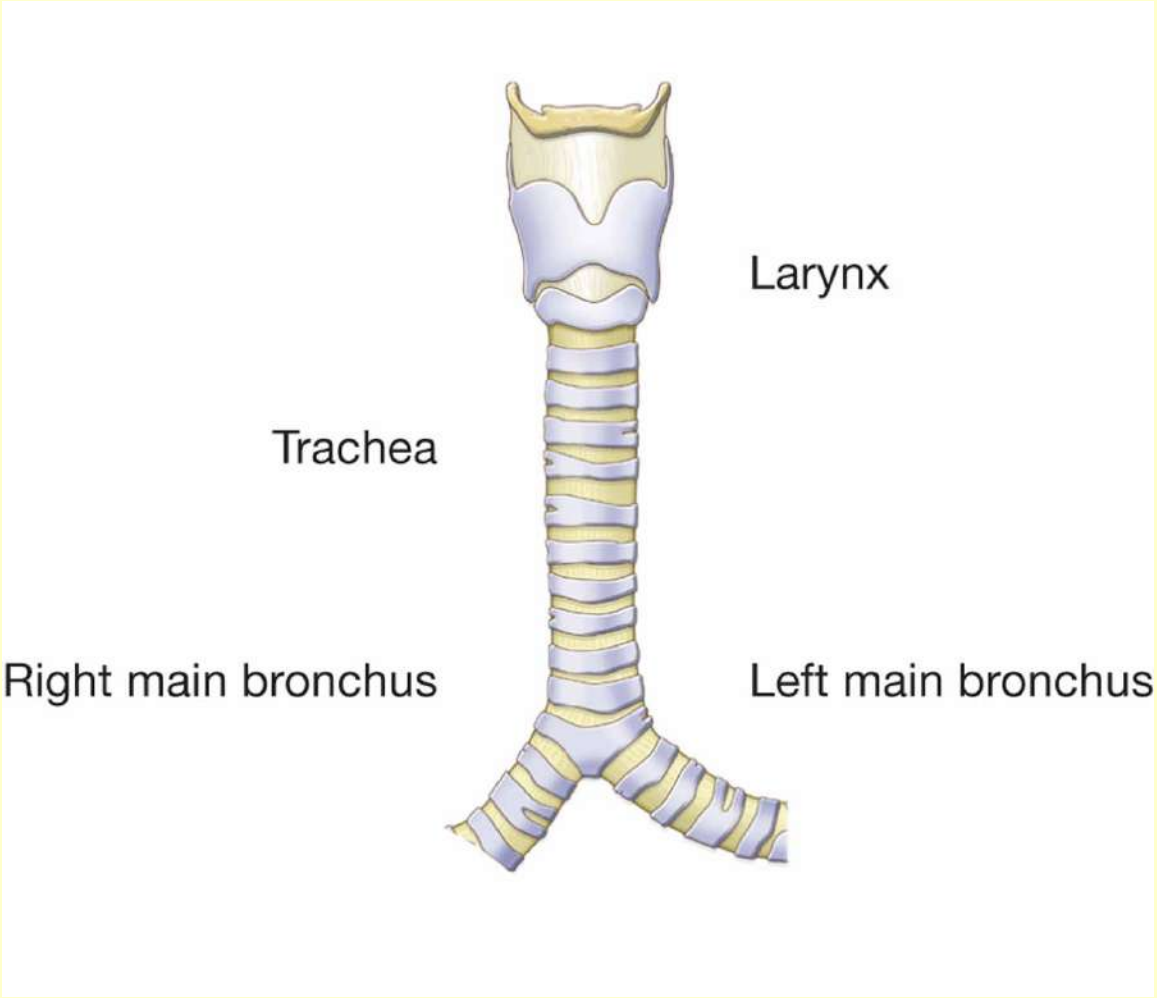


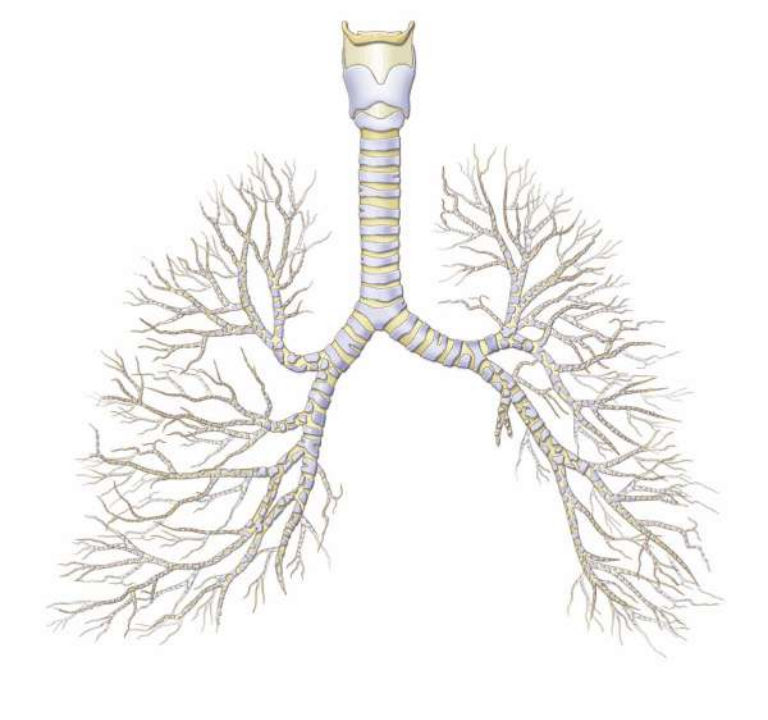
Figure 7.3 – Structure of the trachea which extends from the larynx above to the main bronchi below.

Trachea

- Tube composed of:
  - Smooth muscle
  - Cartilage rings
- Lined with mucous membrane and cilia
  - Assists in cleansing, warming, and moisturizing air as it travels to lungs

Bronchial Tubes

- Distal end of trachea divides
  - Forms left and right main or **primary bronchi**
- Each bronchus enters a lung
- Branches to form **secondary bronchi**



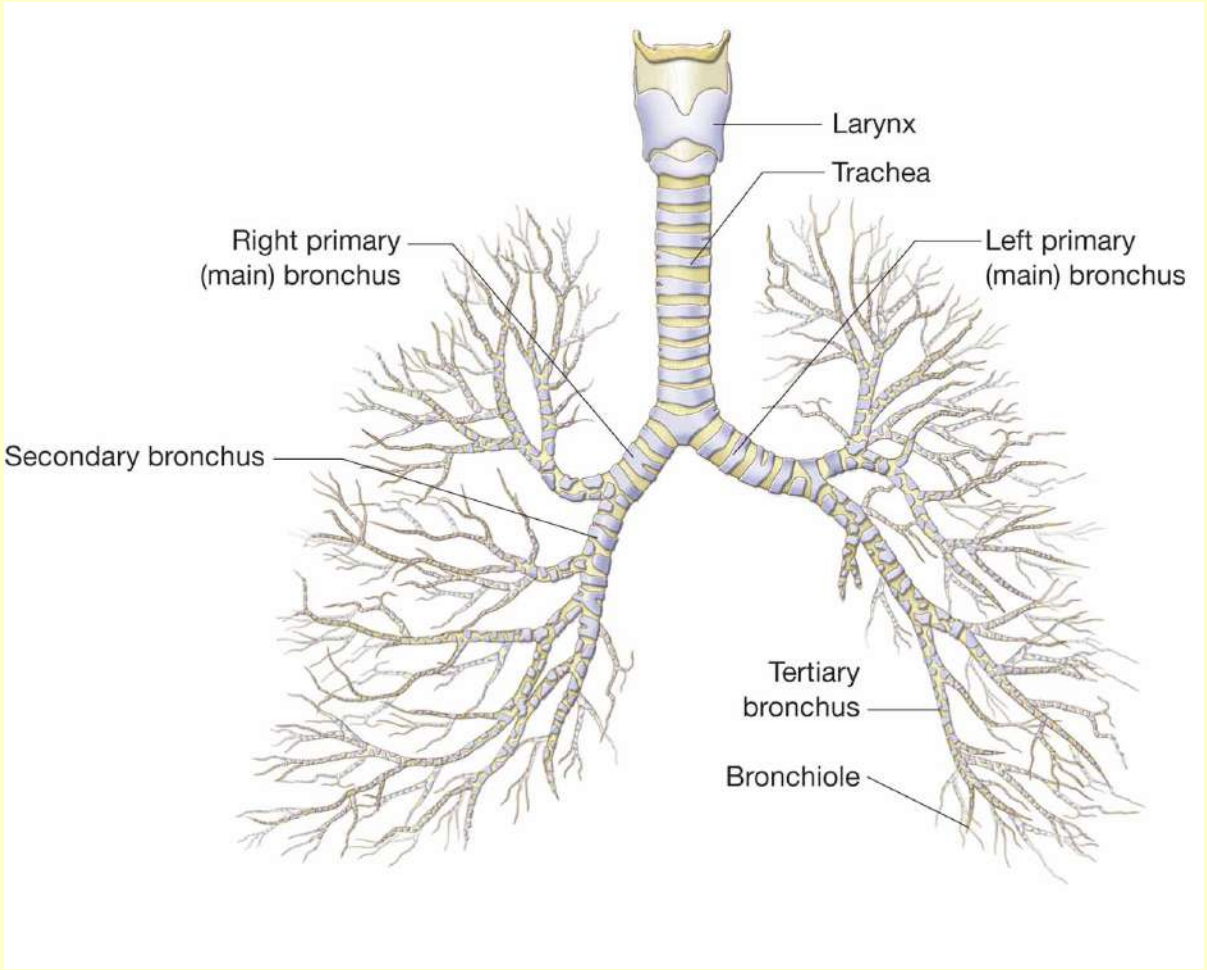
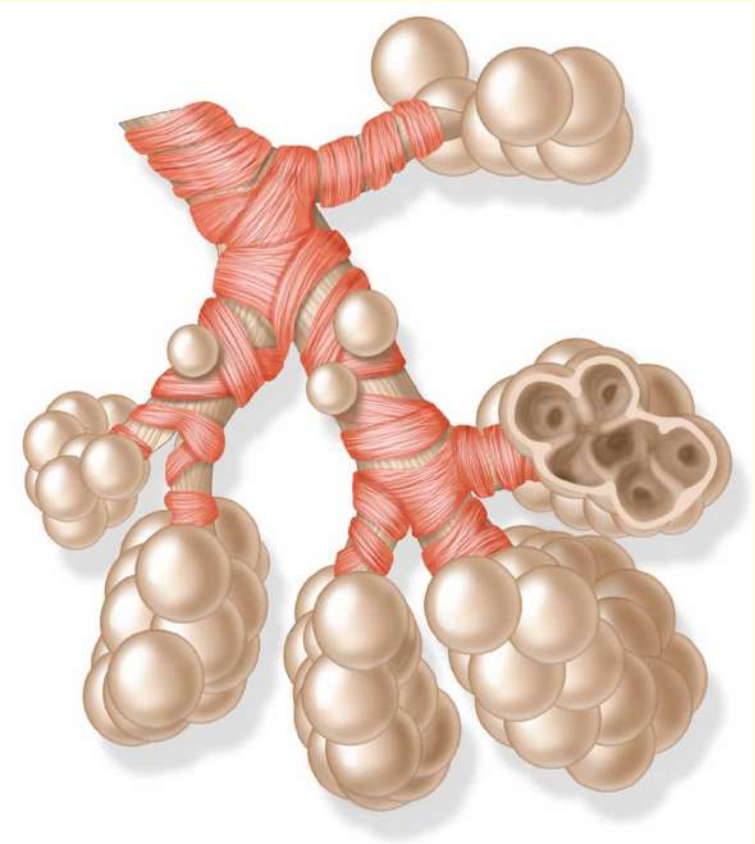


Figure 7.4 – The bronchial tree, note how each main bronchus enters a lung and then branches into smaller and smaller primary bronchi, secondary bronchi, and bronchioles.

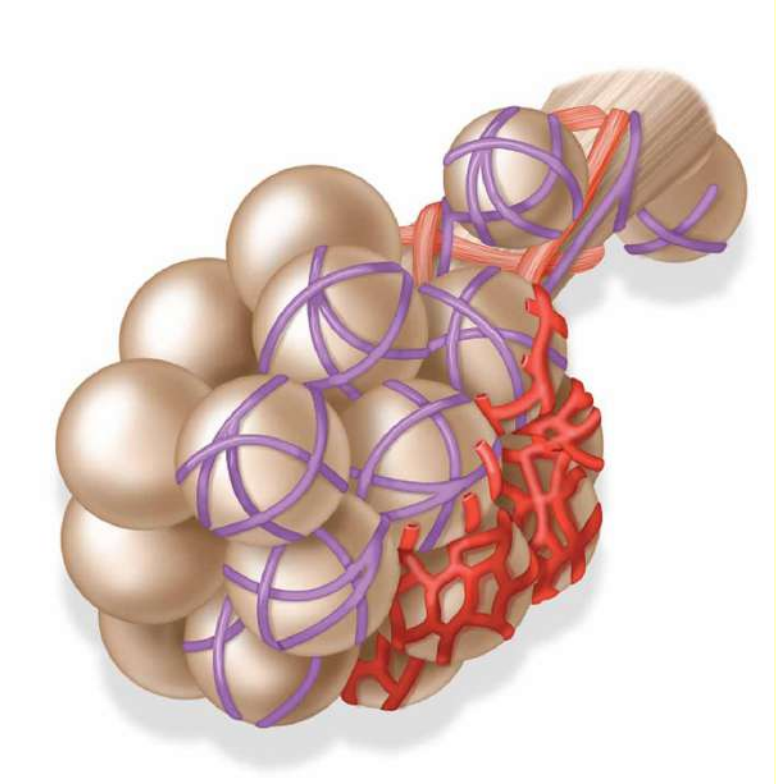
Alveoli

- Bronchi continue to branch to form narrow **bronchioles**
- Bronchiole terminates in **alveoli**
- Approximately 150 million alveoli in each lung



Respiratory Membrane

- **Pulmonary capillaries** encase each alveolus
- Alveoli wall + capillary wall forms **respiratory membrane**
  - External respiration takes place across respiratory membrane



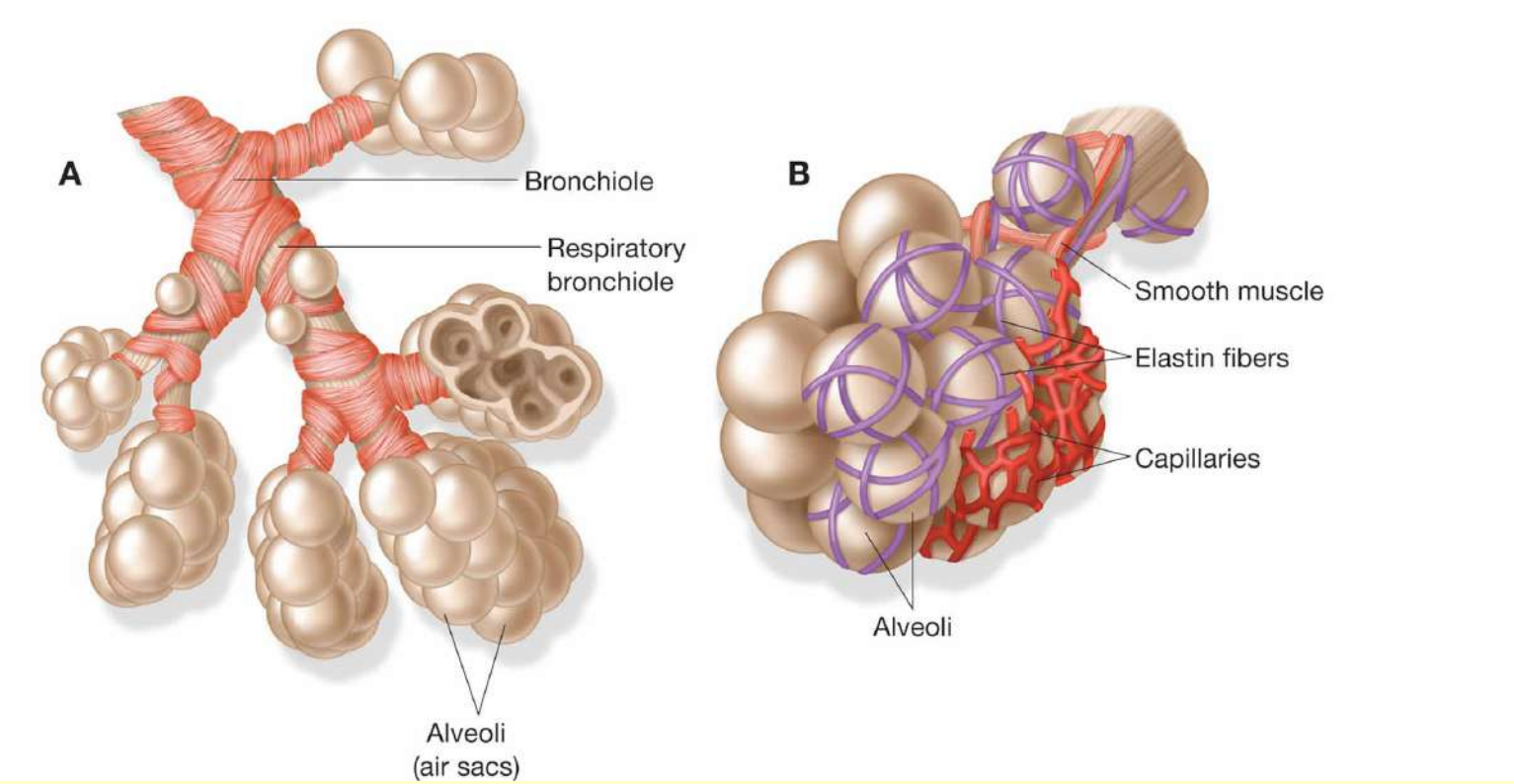
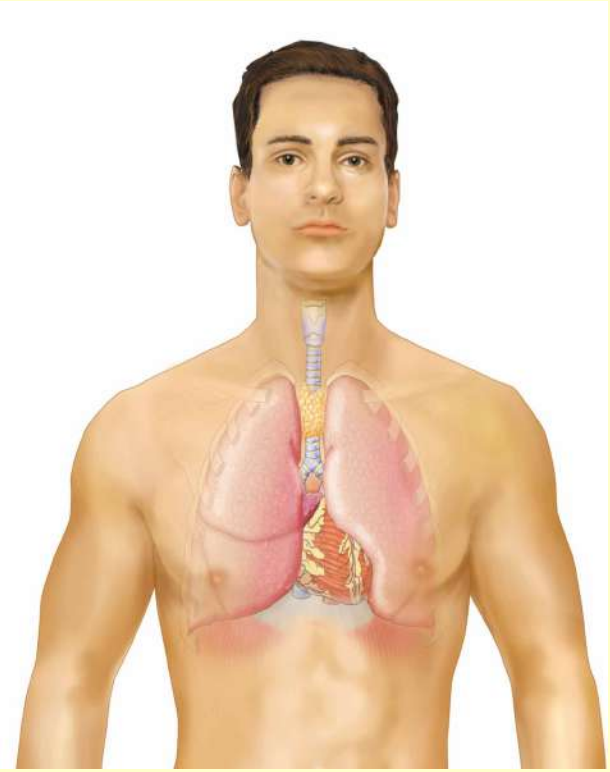


Figure 7.5 - A) Each bronchiole terminates in an alveolar sac, a group of alveoli. B) Alveoli encased by network capillaries, forming the respiratory membrane.

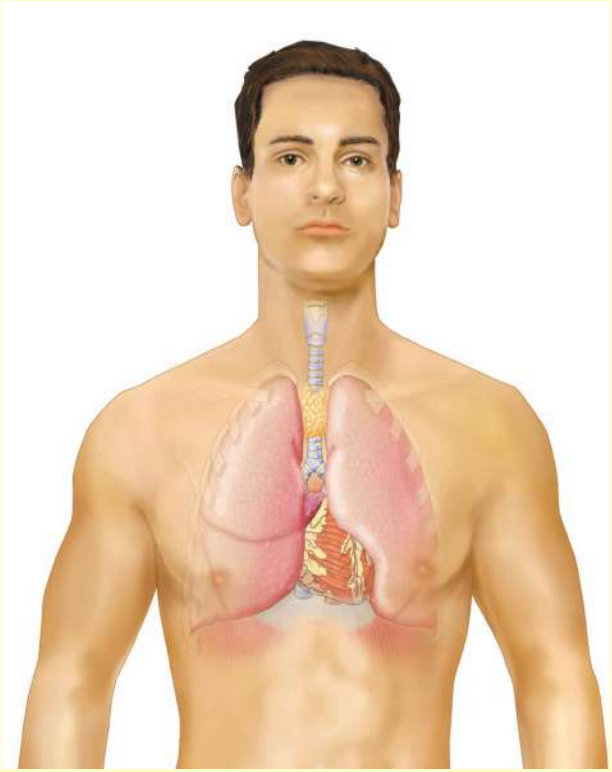
Lungs

- Each is total collection of bronchi, bronchioles, and alveoli
- Two lungs
  - Right lung has 3 lobes
  - Left lung has 2 lobes
- Spongy because they contain air



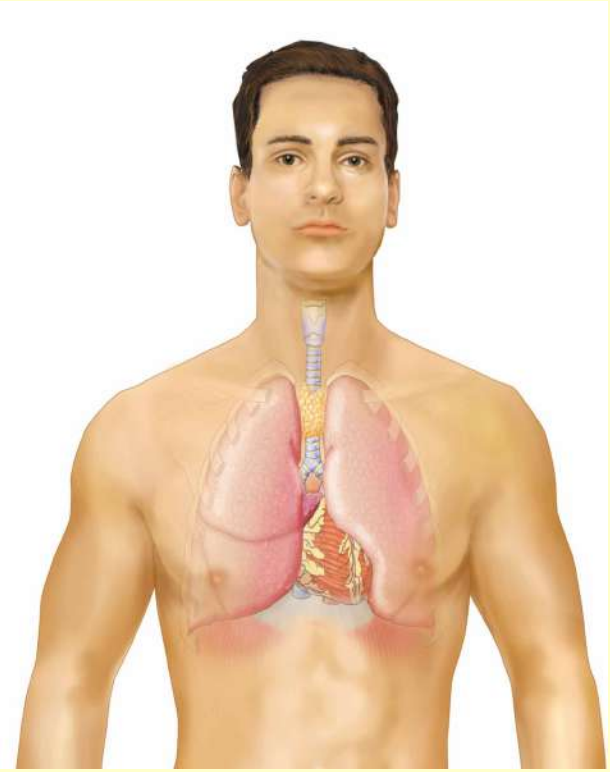
Lungs

- **Apex**
  - Pointed superior portion
- **Base**
  - Broad lower area
- **Hilum**
  - Entry and exit point
  - Bronchi, blood vessels, nerves



Lungs

- Protected externally by the ribs
- Protected internally by double membrane called **pleura**



Pleura

- **Parietal pleura**
  - Outer membrane that lines wall of chest cavity
- **Visceral pleura**
  - Inner membrane that adheres to surface of lungs
- Pleura is folded to form a sac around each lung called **pleural cavity**
- **Serous fluid** between two pleural layers reduces friction when two layers rub together during ventilation

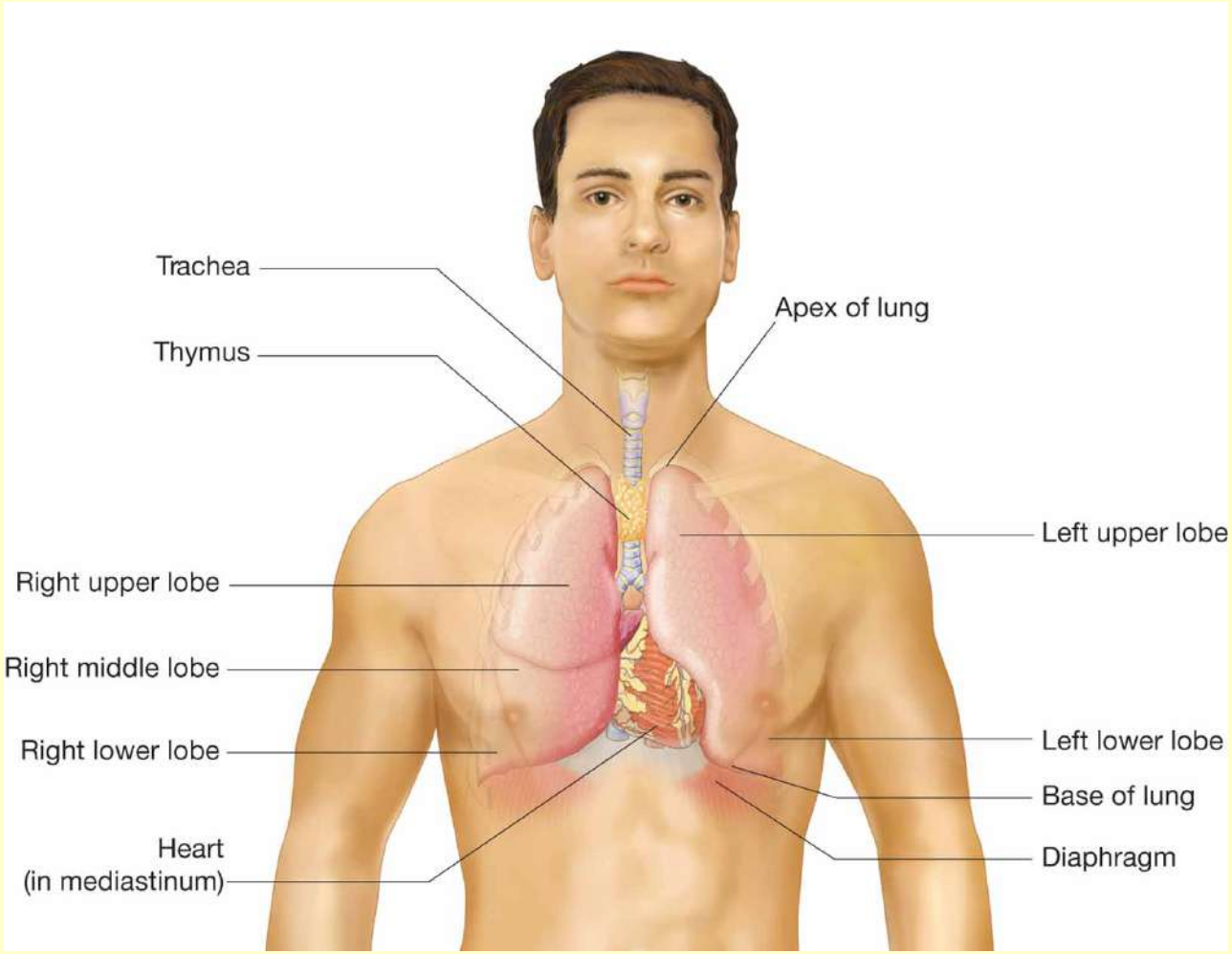
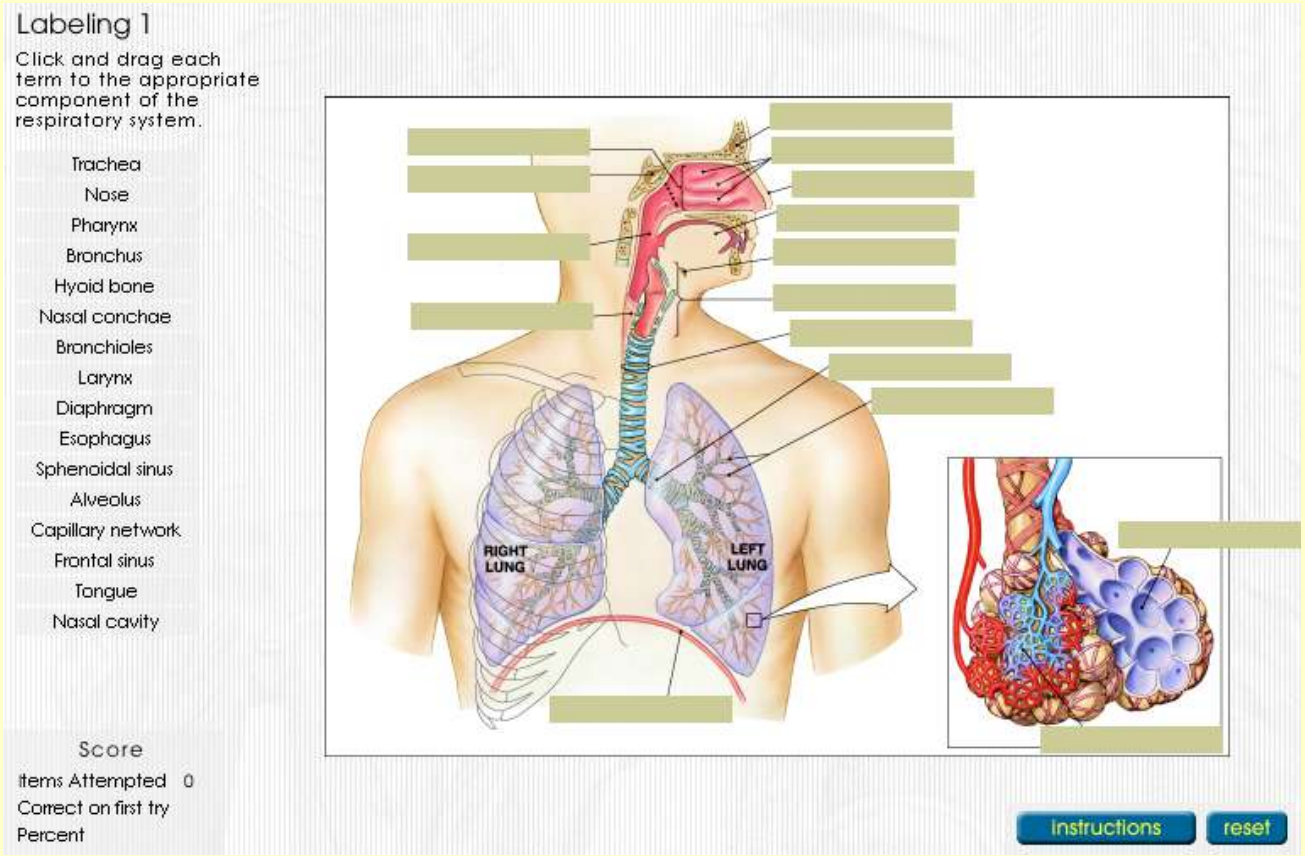


Figure 7.6 - Position of the lungs within the thoracic cavity, anterior view illustrating lung structure and their relationship to other thoracic organs.

Respiratory System Structure Exercise



Click here to review the respiratory system anatomy with a labeling exercise.

Pulmonary Function Tests

- It is important to measure actual volume of air flowing in and out of lungs
  - Can then determine lung capacity
- **Respiratory therapist**
  - Measures lung volumes
  - Pulmonary function tests

Lung Volumes

Tidal volume (TV)	Volume of air moving in and out of lungs in a single relaxed breath
Inspiratory reserve volume (IRV)	Volume of air that can be forcefully inhaled after a normal inhale
Expiratory reserve volume (ERV)	Volume of air that can be forcefully exhaled after a normal exhale
Residual volume (RV)	Volume of air remaining in lungs after a forced exhale

Lung Capacities

Inspiratory capacity (IC)	Tidal volume + inspiratory reserve volume
Functional residual capacity (FRC)	Expiratory reserve volume + residual volume
Vital capacity (VC)	Inspiratory reserve volume + tidal volume + expiratory reserve volume
Total lung capacity (TLC)	Inspiratory reserve volume + tidal volume + expiratory reserve volume + residual volume

Respiratory Muscles - Inhalation

- **Diaphragm**
  - Muscle separates abdomen from thoracic cavity
  - Contracts and moves down into abdominal cavity
  - Causes decrease of pressure, **negative pressure**, within chest cavity
  - Air then enters lungs (inhalation) to equalize pressure

Respiratory Muscles - Inhalation

- **Intercostal muscles**
  - Located between ribs
  - Raise rib cage to further enlarge thoracic cavity
  - Increases negative pressure
  - Assists with forceful inhalation

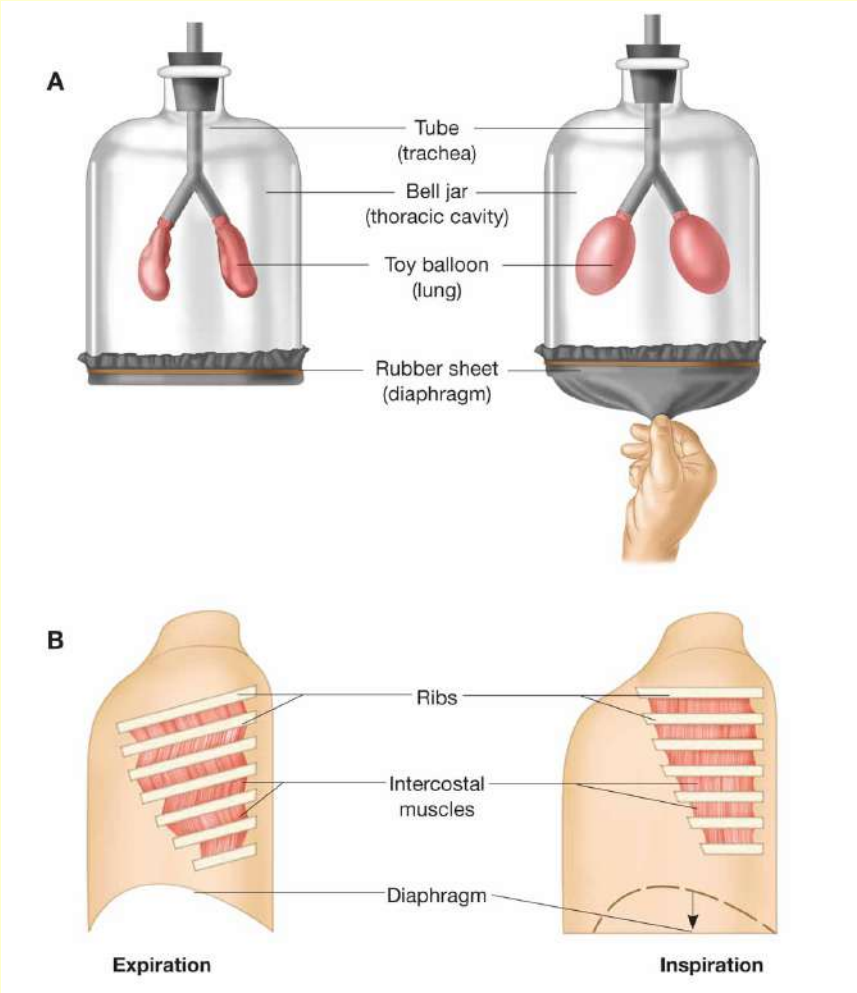


Figure 7.7 – A) Bell jar apparatus demonstrating how downward movement of the diaphragm results in air flowing into the lungs. B) Action of the intercostal muscles lifts the ribs to assist the diaphragm in enlarging the volume of the thoracic cavity.

Respiratory Muscles - Exhalation

- Unforced exhale results when:
  - Diaphragm and intercostal muscles relax
  - Thoracic cavity becomes smaller
  - Creates positive thoracic pressure
  - Air flows out of lungs to equalize pressure
- For forceful exhale
  - Use additional chest and neck muscles to further decrease size of thoracic cavity
  - Create greater positive pressure

Respiratory Rate

- One of the **vital signs** (VS), along with heart rate, temperature, and blood pressure
- Respiratory rate dependent on level of CO_2 in blood
- When CO_2 level is high, we breathe more rapidly to expel excess
- If CO_2 levels drop, respiratory rate will also drop until CO_2 builds up in bloodstream

Respiratory Rates by Age Group

- **AgeRespirations per Minute**
  - Newborn30–60
  - 1-year-old18–30
  - 16-year-old16–20
  - Adult 12–20

Respiratory Rate Assessment Video

Click here to view a video on assessing respiratory rate.

Word Building with bronch/o

–gram	bronchogram	record of bronchus
–itis	bronchitis	inflammation of bronchus
–plasty	bronchoplasty	surgical repair of bronchus
–genic	bronchogenic	produced by bronchus
–scope	bronchoscope	instrument to view bronchus
–spasm	bronchospasm	involuntary muscle contraction of bronchus
–ial	bronchial	pertaining to bronchus

Word Building with bronchi/o and diaphragmat/o

–ectasis	bronchiectasis	dilated bronchus

–ic	diaphragmatic	pertaining to diaphragm

Word Building with laryng/o

–ectomy	laryngectomy	surgical removal of larynx
–itis	laryngitis	inflammation of larynx
–plasty	laryngoplasty	surgical repair of larynx
–scope	laryngoscope	instrument to view larynx
–eal	laryngeal	pertaining to larynx
–plegia	laryngoplegia	paralysis of larynx

Word Building with lob/o & pleur/o

–ectomy	lobectomy	surgical removal of lobe

–centesis	pleurocentesis	puncture of pleura to withdraw fluid
–ectomy	pleurectomy	surgical removal of pleura
–dynia	pleurodynia	pleura pain

Word Building with ox/o and ox/i

–meter	oximeter	instrument to measure oxygen

an– –ia	anoxia	condition of no oxygen
hypo– –emia	hypoxemia	blood condition of insufficient oxygen
hypo– –ia	hypoxia	condition of insufficient oxygen

Word Building with pharyng/o and pulmon/o

–itis	pharyngitis	inflammation of pharynx
–eal	pharyngeal	pertaining to pharynx
nas/o –itis	nasopharyngitis	inflammation of nose and pharynx

–logist	pulmonologist	lung specialist
–ary	pulmonary	pertaining to lungs

Word Building with rhin/o

–itis	rhinitis	inflammation of nose
myc/o –osis	rhinomycosis	abnormal condition of fungus in nose
–plasty	rhinoplasty	surgical repair of nose
–rrhagia	rhinorrhagia	rapid flow (of blood) from nose
–rrhea	rhinorrhea	nose discharge

Word Building with sinus/o & thorac/o

pan– –itis	pansinusitis	inflammation of all sinuses

–algia	thoracalgia	chest pain
–ic	thoracic	pertaining to the chest
–otomy	thoracotomy	incision into chest

Word Building with trache/o

endo– –al	endotracheal	pertaining to within trachea
–otomy	tracheotomy	incision into trachea
–stenosis	tracheostenosis	narrowing of trachea

Word Building with –phonia & –capnia

a–	aphonia	no voice
dys–	dysphonia	abnormal voice

a–	acapnia	no carbon dioxide
hyper–	hypercapnia	excessive carbon dioxide

Word Building with –osmia & –thorax

an–	anosmia	no smell

hem/o	hemothorax	blood in the chest
py/o	pyothorax	pus in the chest
pneum/o	pneumothorax	air in the chest

Word Building with –pnea

a–	apnea	no breathing
brady–	bradypnea	slow breathing
dys–	dyspnea	difficult, labored breathing
eu–	eupnea	normal breathing
hyper–	hyperpnea	excessive (deep) breathing
hypo–	hypopnea	insufficient (shallow) breathing
ortho–	orthopnea	(sitting) straight breathing
tachy–	tachypnea	rapid breathing

Respiratory System Vocabulary

asphyxia	lack of oxygen; can lead to unconsciousness and death
aspiration	withdrawing fluid using suction; removing phlegm from patient's airway; inhaling food or liquid into trachea
Cheyne-Stokes respiration	abnormal breathing pattern with long periods of apnea followed by deep & rapid breathing
clubbing	abnormal widening and thickening of fingers due to chronic oxygen deficiency

Respiratory System Vocabulary

cyanosis	blue skin caused by low oxygen in blood
epistaxis	a nosebleed
hemoptysis	cough up blood or blood-stained sputum
hyperventilation	breathing too fast and too deep
hypoventilation	breathing too slow and too shallow
internal medicine	branch of medicine involving diagnosis and treatment of diseases of internal organs; physician is an internist

Respiratory System Vocabulary

nasal cannula	two-pronged plastic device to deliver oxygen into the nose
orthopnea	difficulty breathing made worse by lying flat; patient breaths better sitting up
otorhinolaryngology	branch of medicine involving diagnosis and treatment of diseases of the ear, nose, and throat

Respiratory System Vocabulary

patent	open or unblocked
percussion	using fingers to tap on surface to determine condition beneath surface
phlegm	thick mucus secreted by respiratory tract
pleural rub	grating sound made when layers of pleura rub together during respiration
pulmonology	branch of medicine involving diagnosis and treatment of diseases of respiratory system; physician is a pulmonologist

Respiratory System Vocabulary

rales	abnormal crackling sound during inspiration; indicates fluid or mucus in airway
rhonchi	musical sound during expiration; caused by bronchial tube spasms
respiratory therapy	allied health specialty; assists with respiratory and cardiopulmonary disorders
shortness of breath (SOB)	indicates that a patient is having difficulty breathing; also called dyspnea

Respiratory Therapy Video

Click here to view a video on respiratory therapy.

Respiratory System Vocabulary

sputum	phlegm coughed up from respiratory tract
stridor	harsh, high-pitched breath sound; indicates obstruction in the airway
thoracic surgery	branch of medicine involving diagnosis and treatment of diseases of respiratory system using surgical means

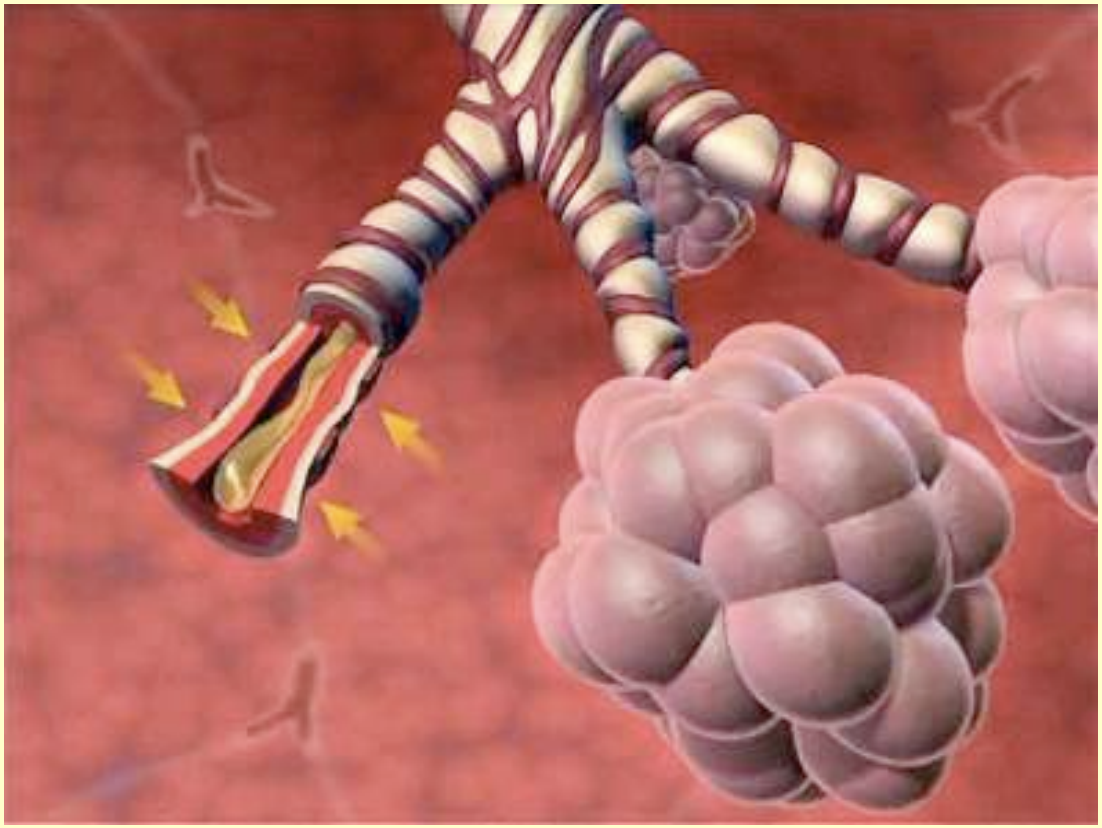
Upper Respiratory System Pathology

croup	acute respiratory condition in children; characterized by barking type of cough
diphtheria	bacterial infection characterized by formation of thick membranous film across throat; high mortality rate
pertussis	bacterial infection of upper respiratory system; characterized by whooping cough

Bronchial Tube Pathology

asthma	difficulty breathing caused by bronchospasms, dyspnea, coughing, and wheezing
bronchiectasis	enlarged bronchi due to destruction of bronchial wall; result of infections
bronchogenic carcinoma	cancerous tumor originating in bronchi

Asthma Video



Click here to view a video on asthma.

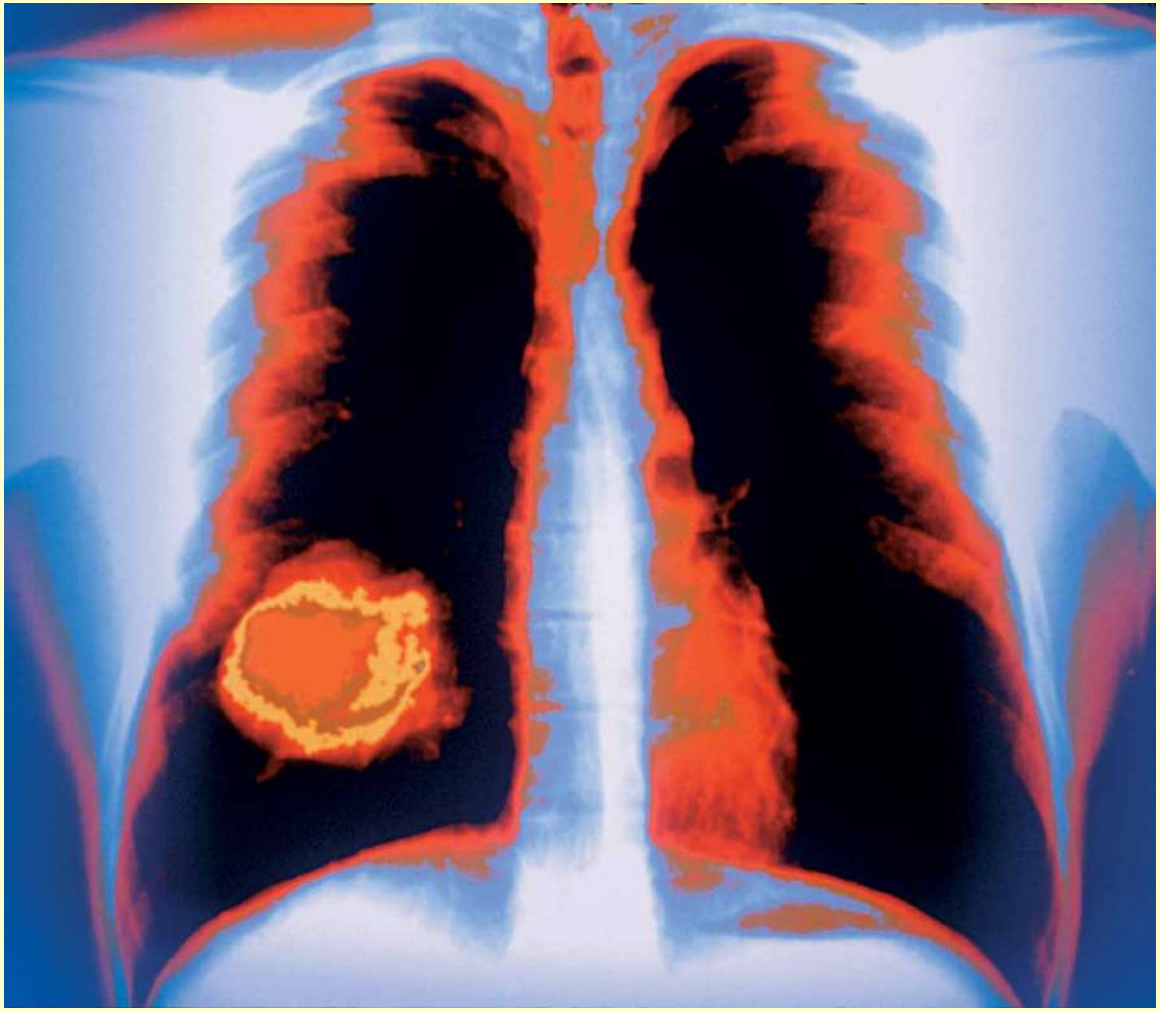


Figure 7.8 – Color enhanced X-ray of large malignant tumor in right lower lung. *(ISM/Phototake NYC)*

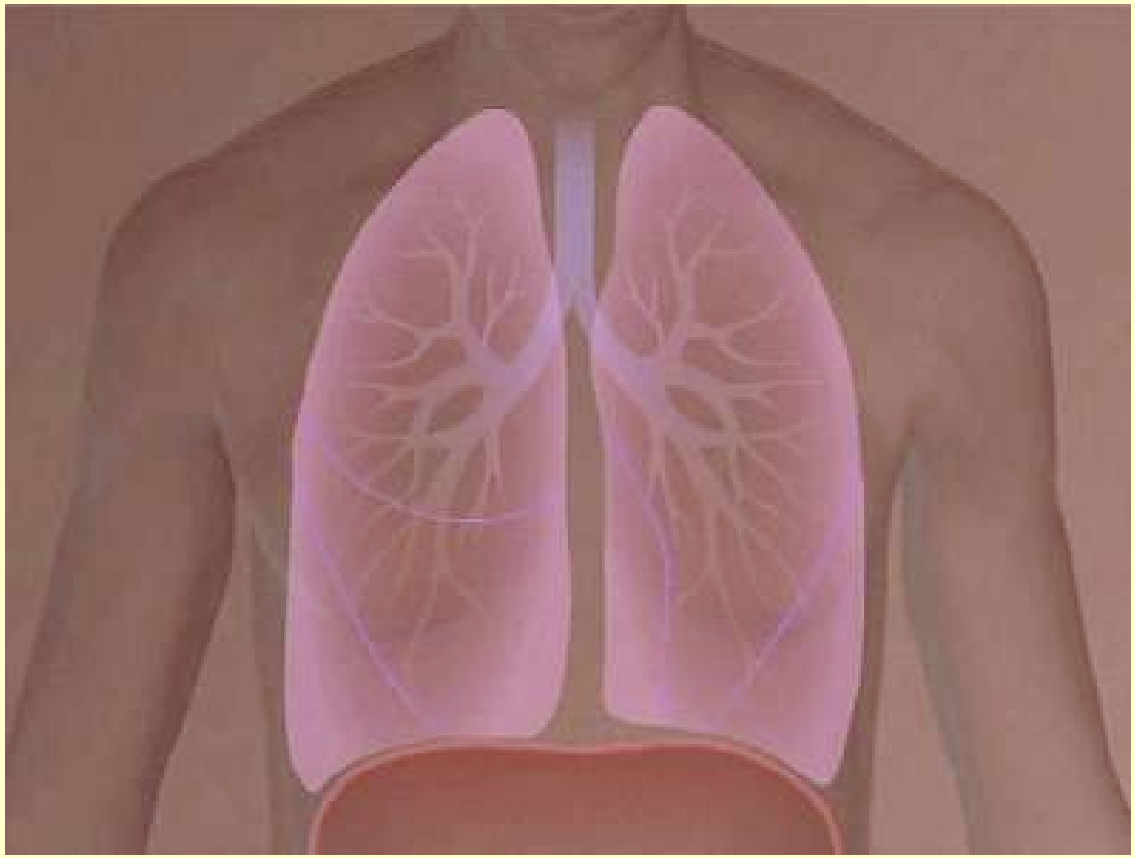
Lung Pathology

adult respiratory distress syndrome (ARDS)	acute respiratory failure; characterized by tachypnea, dyspnea, cyanosis, and hypoxemia
anthracosis	type of pneumoconiosis; coal dust collecting in lungs; also called black lung or miner's lung
asbestosis	type of pneumoconiosis; asbestos fibers collecting in lungs

Lung Pathology

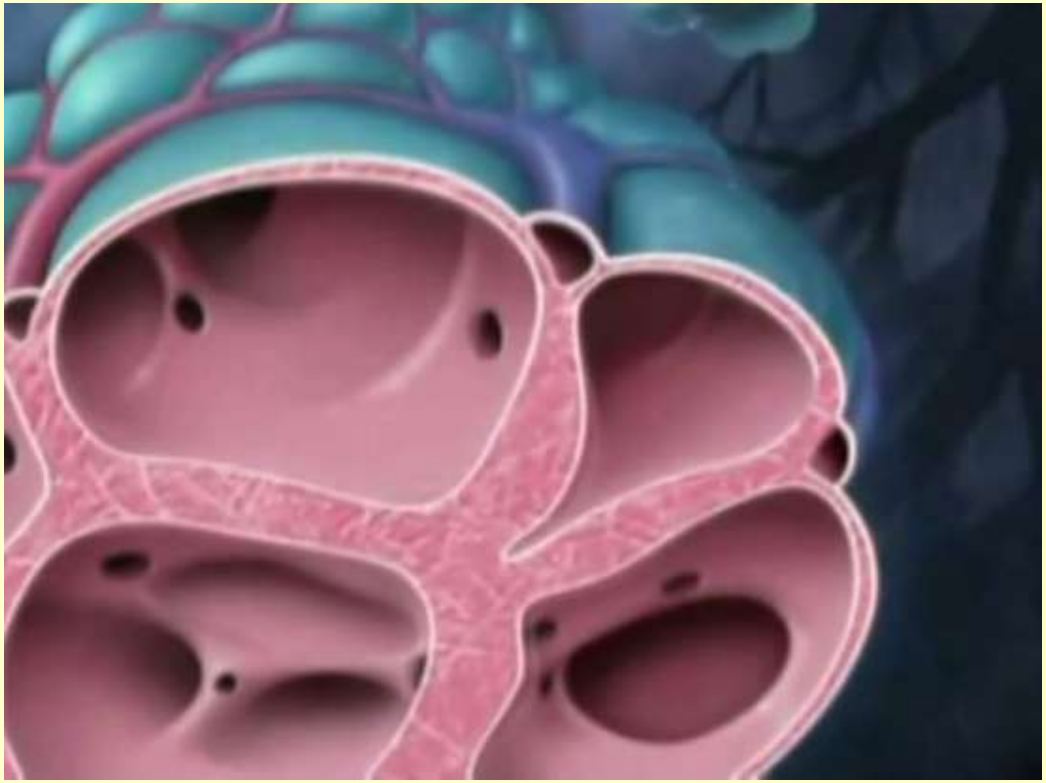
atelectasis	condition in which alveoli in a portion of lung collapses; prevents gas exchange in lung
chronic obstructive pulmonary disease (COPD)	progressive, chronic, and usually irreversible group of conditions; like emphysema; lungs have decreased capacity to function
cystic fibrosis (CF)	genetic condition; produces very thick mucus that causes severe congestion in lungs

COPD Video



Click here to view a video on chronic obstructive pulmonary diseases.

Cystic Fibrosis Video



Click here to view a video on cystic fibrosis.

Lung Pathology

emphysema	chronic lung condition characterized by destruction of alveolar walls
histoplasmosis	fungal infection of the lungs
infant respiratory distress syndrome (IRDS)	most common in premature infants; characterized by tachypnea; previously called hyaline membrane disease
influenza	viral infection of respiratory system

Lung Pathology

Legionnaire's disease	severe bacterial infection causing pneumonia, liver, and kidney damage
Mycoplasma pneumonia	less severe but longer lasting form of bacterial pneumonia; also called walking pneumonia
pneumoconiosis	accumulation of foreign particles, such as coal dust, in the lungs

Lung Pathology

Pneumocystis carinii pneumonia (PCP)	pneumonia caused by a fungus; an opportunistic infection seen in AIDS patients
pneumonia	inflammatory condition of lungs; results in alveoli filling with fluid
pulmonary edema	excessive amount of tissue fluid accumulating in the lung tissues
pulmonary embolism	floating blood clot obstructs pulmonary artery; causes infarct of lung tissue

Lung Pathology

pulmonary fibrosis	formation of fibrous scar tissue in lung; reduced ability to expand lungs
severe acute respiratory syndrome (SARS)	acute viral respiratory infection; begins like flu but quickly progresses; very high mortality rate
silicosis	type of pneumoconiosis; accumulation of silica dust in lungs

Lung Pathology

sleep apnea	breathing stops repeatedly during sleep; causes drop in oxygen levels
sudden infant death syndrome (SIDS)	unexpected and unexplained death of apparently well infant; stops breathing for unknown reasons
tuberculosis (TB)	bacterial lung infection; results in inflammation and calcification of lungs

Tuberculosis Testing Video

Click here to view a video on tuberculosis testing.

Pleural Cavity Pathology

empyema	accumulation of pus in pleural space; also called pyothorax
pleural effusion	accumulation of fluid in pleural cavity; prevents lungs from fully expanding
pleurisy	inflammation of pleura; characterized by sharp pain with each breath
pneumothorax	collection of air in pleural cavity; may result in collapsed lung

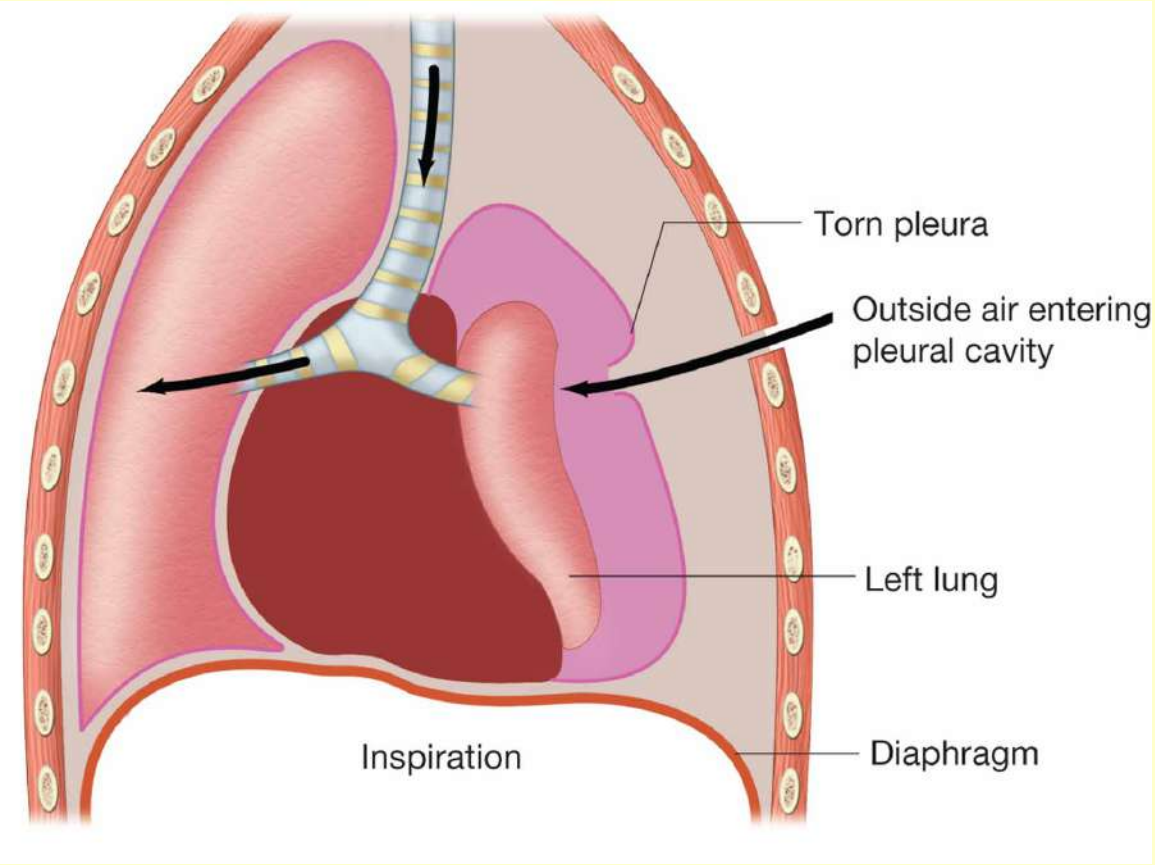


Figure 7.9 – Pneumothorax. Figure illustrates how puncture of thoracic wall and tearing of pleural membrane allows air into lung and results in collapsed lung.

Clinical Laboratory Tests

arterial blood gases (ABGs)	blood test of oxygen and carbon dioxide levels in the blood
sputum culture & sensitivity (C&S)	cultures sputum for bacterial growth, if present, then determines best antibiotic to use
sputum cytology	examining sputum for malignant cells

Diagnostic Imaging

bronchography	X-ray of lung after inhaling radiopaque substance
chest X-ray	X-ray of the organs of the thoracic cavity
pulmonary angiography	X-ray of lungs after injecting dye into blood vessel
ventilation-perfusion scan	nuclear medicine test; radioactive air is inhaled for ventilation portion; radioactive dye is injected for perfusion portion; looks for pulmonary emboli

Endoscopic Procedures

bronchoscopy (Bronch)	visual examination of bronchial tubes using a bronchoscope
laryngoscopy	visual examination of larynx using a laryngoscope

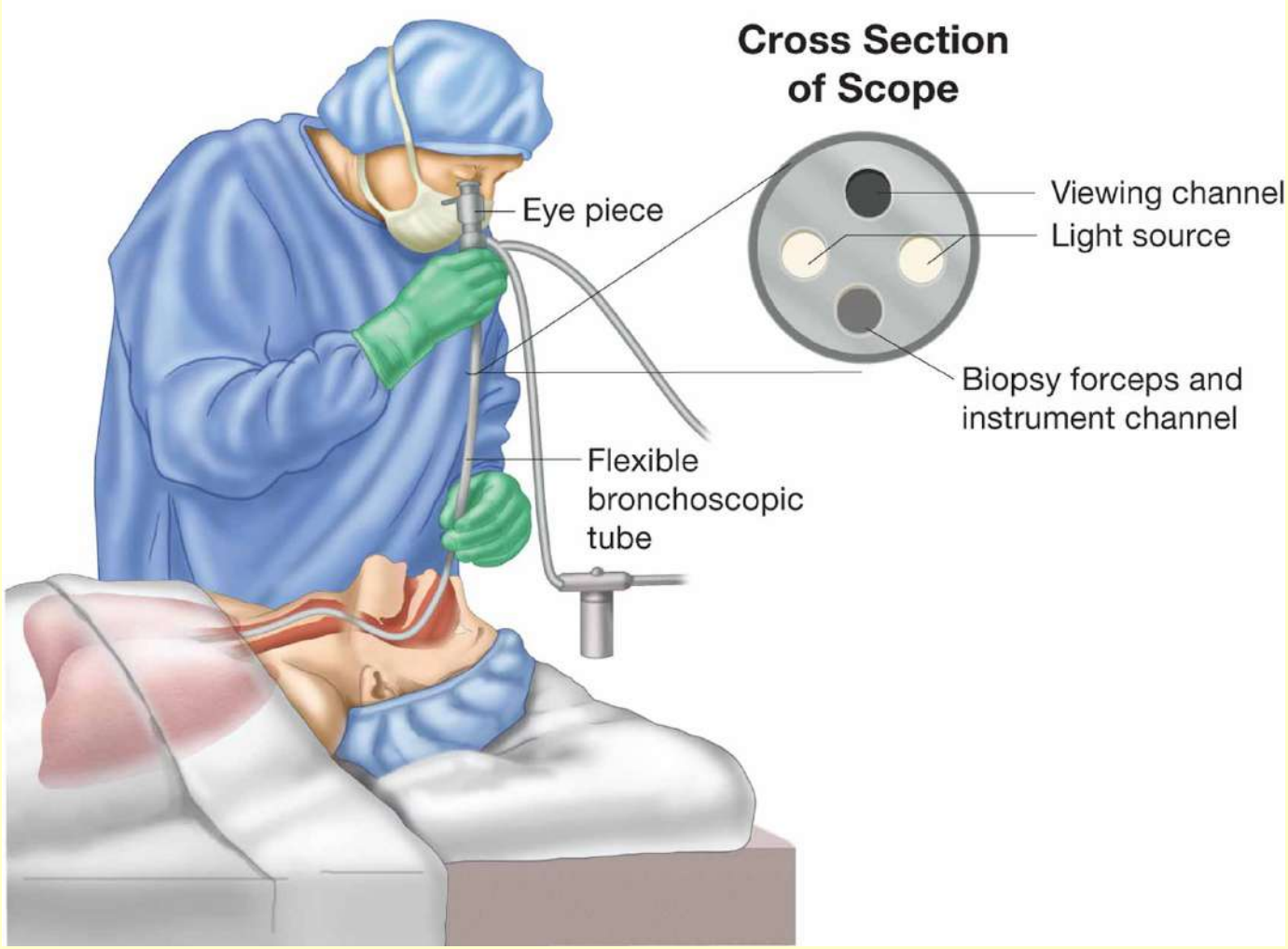


Figure 7.10 – Bronchoscopy. Figure illustrates physician using a bronchoscope to inspect the patient's bronchial tubes.

Pulmonary Function Tests

oximetry	measures oxygen level in blood; uses oximeter on patient's finger tip
pulmonary function test (PFT)	group of tests to measure air flow in and out of lungs, lung volumes, and gas exchange
spirometry	measures lung capacity using a spirometer

Oximetry Video

Click here to view a video on performing oximetry.

Spirometry Video

Click here to view a video on spirometry.

Additional Diagnostic Procedures

polysomnography	monitoring patient sleeping to identify sleep apnea
sweat test	test for cystic fibrosis; this disease causes large amount of salt in sweat
tuberculin skin tests (TB test)	introducing purified protein derivative (PPD) under the skin; determines if person has been exposed to TB

Respiratory Therapy

aerosol therapy	medication suspended in a mist and inhaled; delivered by a nebulizer or metered dose inhaler (single puff dose)
endotracheal intubation	placing a tube through the mouth and into the trachea to keep airway open
intermittent positive pressure breathing (IPPB)	method for assisting patients in breathing with a machine that produces an increase in positive thoracic pressure

Nebulizer Video

Click here to view a video on nebulizers.

Metered Dose Inhaler Video

Click here to view a video on using metered dose inhalers.

Endotrachael Intubation Video

Click here to view a video on endotrachael intubation.

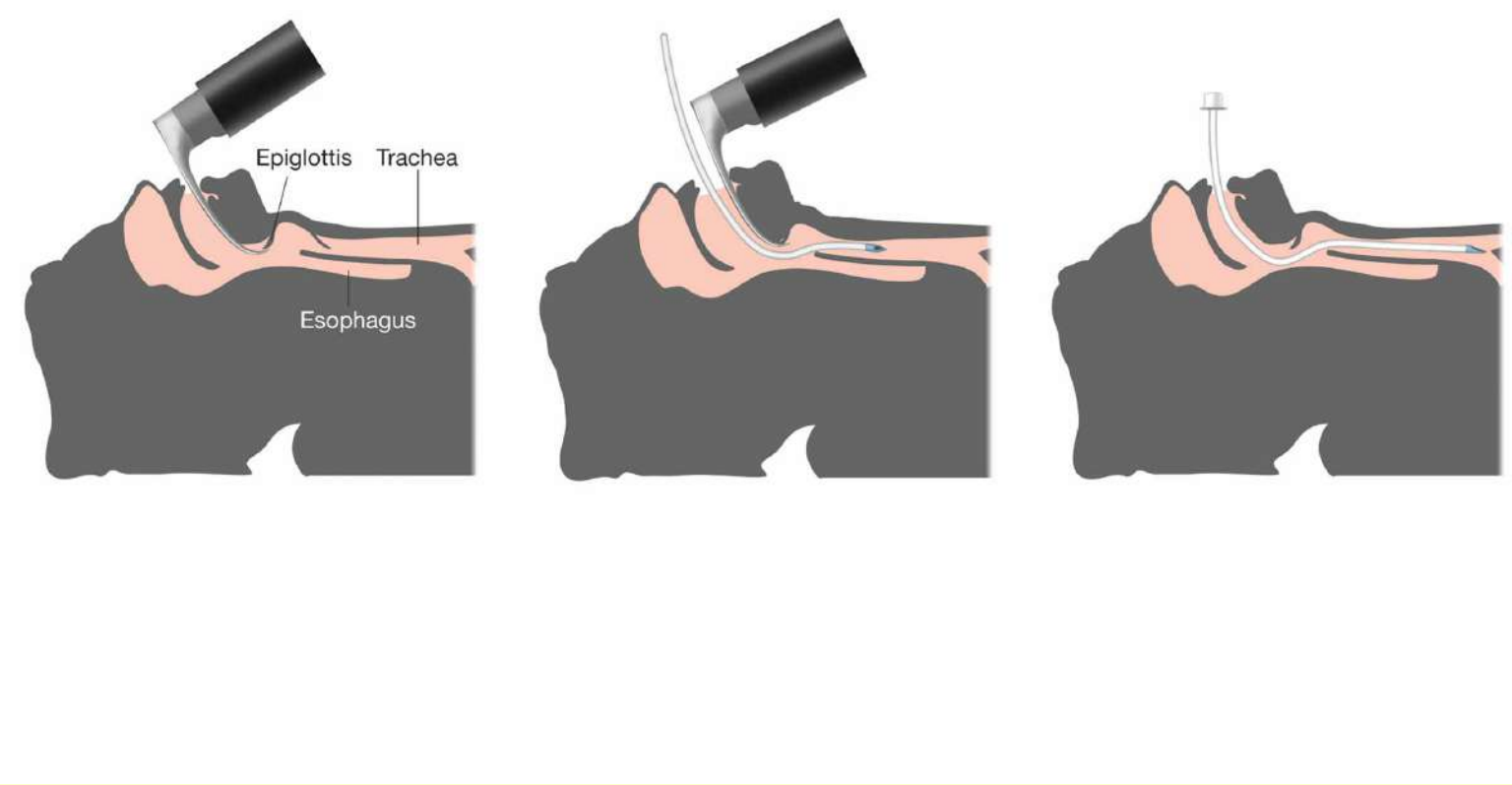


Figure 7.11 – Endotracheal intubation. First, a lighted scope is used to identify the trachea from the esophagus. Next, the tube is placed through the pharynx and into the trachea. Finally, the scope is removed, leaving the tube in place.

Respiratory Therapy

postural drainage	drainage of bronchial secretions by placing patient in positions using gravity to promote drainage; cystic fibrosis treatment
supplement oxygen therapy	providing additional oxygen concentration to improve oxygen levels in bloodstream
ventilator	machine that provides artificial ventilation for a patient unable to breathe alone

Nasal Cannula Video

Click here to view a video on applying a nasal cannula.

Surgical Procedures

thoracentesis	surgical puncture of chest wall to remove fluids; also called thoracocentesis
thoracostomy	insertion of tube (a chest tube) into chest to drain off fluid or air
tracheostomy	emergency procedure to create an opening directly into trachea so person can breathe easier; also called tracheotomy

Figure 7.12 – Patient with tracheostomy tube in place receiving oxygen through mask placed over the tracheostomy opening and attached to a ventilator. *(Ansell Horn/Phototake NYC)*

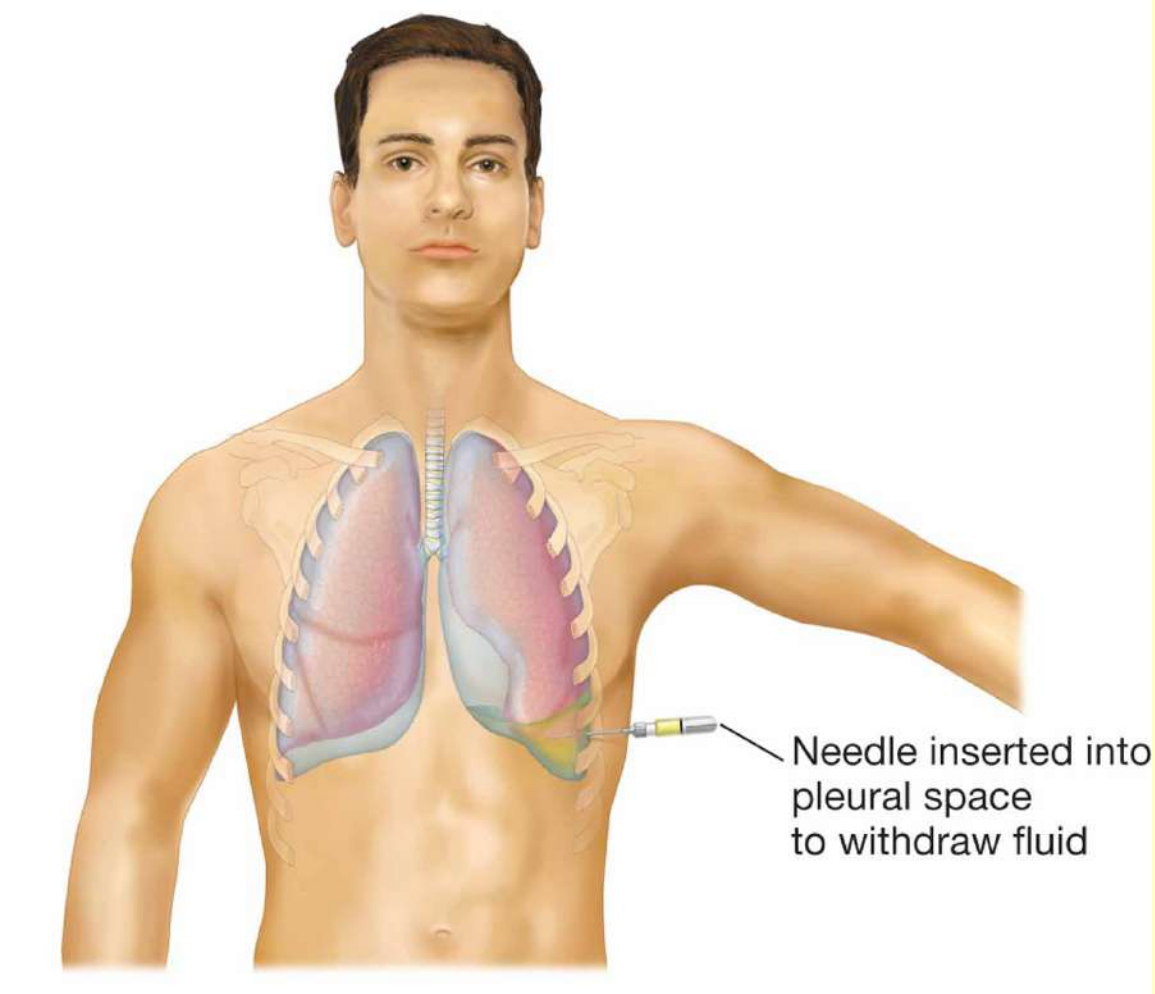


Figure 7.13 – Thoracentesis. The needle is inserted between the ribs to withdraw fluid from the pleural sac at the base of the left lung.

Additional Procedures

cardiopulmonary resuscitation (CPR)	emergency treatment given to persons when respiration and heart stop
Heimlich maneuver	technique for removing foreign body obstructing trachea or pharynx

Respiratory System Pharmacology

antibiotic	kills bacteria	Amoxil, Cipro
antihistamine	blocks histamine released during allergy attack	Allegra, Claritan, Benadryl
antitussive	relieves urge to cough	Hycodan, Vicks Formula 44

Respiratory System Pharmacology

bronchodilator	relaxes bronchospasms; treats asthma	Proventil, Ventolin, Theo-Dur
corticosteroids	reduces inflammation of respiratory tract	Flonase, Nasonex, Azmacort
decongestant	reduces congestion in respiratory system	Afrin, Drixoral, Sudafed

Respiratory System Pharmacology

expectorant	improves ability to cough up mucus	Robitussin, Mucinex
mucolytic	liquefies mucus so it is easier to cough up	Mucomyst

Respiratory System Abbreviations

ABGs	arterial blood gases
ARDS	adult respiratory distress syndrome
Bronch	bronchoscopy
CO_2	carbon dioxide
COPD	chronic obstructive pulmonary disease
CPR	cardiopulmonary resuscitation
C&S	culture and sensitivity

Respiratory System Abbreviations

CTA	clear to auscultation
CXR	chest X-ray
DOE	dyspnea on exertion
DPT	diphtheria, pertussis, tetanus
ENT	ear, nose, and throat
ERV	expiratory reserve volume
FRC	functional residual capacity

Respiratory System Abbreviations

HMD	hyaline membrane disease
IC	inspiratory capacity
IPPB	intermittent positive pressure breathing
IRDS	infant respiratory distress syndrome
IRV	inspiratory reserve volume
LLL	left lower lung
LUL	left upper lung

Respiratory System Abbreviations

MDI	metered dose inhaler
O_2	oxygen
PCP	*Pneumocystis carinii* pneumonia
PFT	pulmonary function test
PPD	purified protein derivative
R	respiration
RA	room air

Respiratory System Abbreviations

RDS	respiratory distress syndrome
RLL	right lower lung
RML	right middle lobe
RRT	registered respiratory therapist
RV	residual volume
RUL	right upper lung
SARS	severe acute respiratory syndrome

Respiratory System Abbreviations

SIDS	sudden infant death syndrome
SOB	shortness of breath
TB	tuberculosis
TLC	total lung capacity
TPR	temperature, pulse, respiration
TV	tidal volume
URI	upper respiratory infection
VC	vital capacity