Chapter 8
Respiratory System

Learning Objectives
1. Recognize or write the functions of the respiratory system.
2. Recognize or write the meanings of Chapter 8 word parts and use terms to build and analyze terms.
3. Write terms for selected structures of the respiratory system or match them with their descriptions.
4. Write the names of the diagnostic terms and pathologies related to the respiratory system when given their descriptions or match terms with their meanings.
5. Match surgical and therapeutic interventions for the respiratory system or write the names of the interventions when given their descriptions.
6. Spell terms for the respiratory system correctly.

Functions of the Respiratory System
Breathing consists of inspiration and expiration of air into and out of the lungs.

- inspiration=inhalation
- expiration= exhalation

- pulmonologist- lung specialist
- pulmon/o=lung      logist=specialist

-pnea=breathing
- eupnea- normal respiration (eu- = normal)    15-20 bpm
- dyspnea- labored/difficult breathing (dys- = bad/difficult)
- apnea- temporary absence of breathing(a- = no/without)
- orthopnea- uncomfortable breathing in any position except sitting erect or standing (orth/o= straight)
- bradypnea- abnormally slow breathing (<12 bpm)
- tachypnea- fast rate of breathing which may lead to hyperventilation (tachy- = fast)
- hypoxia= below normal oxygen caused by high altitude, anemia, or both. Anoxia=without oxygen (extreme hypoxia)

spirometry-process of measuring of the amount of air taken into and expelled from the lungs
spirometer=instrument to measure air capacity of lungs

vital capacity - the largest volume of air taken into and expelled from the lungs

respiratory failure- inability of the lungs to perform → leading to hypoxia or anoxia.
Respiratory Tract

Upper respiratory tract:
- nose
- nasal cavity
- paranasal sinuses
- pharynx
- larynx

Lower respiratory tract:
- trachea
- bronchi
- bronchioles
- alveoli
- lungs

Structures of the Respiratory System

- pleura: membrane that surrounds each lung and the thoracic cavity
- nares: nostrils, the external opening of the nose
- nasal septum: the partition between the 2 nasal cavities
- paranasal sinuses: cavities that open into the nasal cavities
- para: means beside; paranasal = beside the nose

Structures of the Respiratory System, cont.

eustachian tube: auditory tube: otopharyngeal tube - connects the middle ear to the pharynx & helps the ears drain fluid
- eust occurring pharynx
- laryngopharynx: the lower part of the pharynx where it divides into the larynx and the esophagus
- larynx: air passes
- esophagus: food passes
- glottis: the vocal apparatus of the larynx
- epiglottis: the lidlike structure that covers the larynx during the swallowing of food.

Combining Forms: Respiratory Structures

- alveol/o: alveolus (pl. alveoli)
- bronch/o, bronchi/o: bronchus (pl. bronchi)
- bronchiol/o: bronchiole
- epiglott/o: epiglottis
- laryng/o: larynx

Quick Quiz!

The vocal apparatus of the larynx is

A. the pharynx
B. the glottis
C. the epiglottis
D. the alveolus
Combining Forms: Respiratory Structures, cont.

- **pneum/o, pneumon/o, pulm/o, pulmon/o** = lung
- **pneum/o** sometimes means air
- **trache/o** = trachea (windpipe)

Words formed from the combining forms:

- pneumatic
- pneumonitis
- pulm/oarctic
- bronchopulmonary
- pneumothorax—build up of air in space b/w lung and chest wall
- tracheotomy

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Diseases, Disorders, and Diagnostic Terms

- **pulmonologist**—a physician who specializes in the lungs.
- **Pneumon-ia, or pneumon-itis** means inflammation of the lungs. There are many causes of pneumonia, but it is caused primarily by bacteria, viruses, or chemical irritants

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Fig. 8.2 Select patterns of respiration.  
**Fig. 8.3** Spirometry.  
**Fig. 8.4** Two abnormal conditions of the chest cavity.  
**Fig. 8.5** Pulmonary embolism.
Diseases, Disorders, and Diagnostic Terms, cont.

- **pneumocentesis**—surgical puncture of the lung
- **pulmonary edema**—effusion (escape) of fluid which accumulates in the lungs.
- **edema** is the abnormal accumulation of fluid in tissue.
- **rhinorrhea**—runny nose

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Voice and Speech Disorders/Diseases

- **phon/o**= voice
- **laryngitis**—inflammation of the larynx (voice box)
- **dysphonia**—difficulty speaking or weak voice (hoarseness)
- **aphonia**—absence of voice

- **laryngalgia**
- **bronchitis, sinusitis, pharyngitis**
- **sputum**—material that is raised from inflamed mucous membranes of the respiratory tract and expelled by coughing.
- **shortness of breath (SOB)**
sputum — material that is raised from inflamed mucous membranes of the respiratory tract and expelled by cough

asthma — sudden, periodic attacks of dyspnea (difficult breathing) and wheezing (whistling sound) caused by spasm of the bronchial tubes or swelling of mucous membranes

asphyxiation — suffocation

atelectasis — incomplete stretching of a lung or part of it

ate/o = imperfect — ectasis = stretching

bronchiectasis — chronic dilation of the bronchus or the bronchi

lung cancer (carcinoma) — the leading cause of cancer-related deaths. Smoking plays a predominant role in the development of lung cancer. Don’t smoke!

emphysema — difficulty breathing due to destructive changes in alveoli

chronic obstructive pulmonary disease (COPD) — decrease in the lungs ability to perform their ventilatory function. Also called chronic obstructive lung disease (COLD)

influenza — acute contagious respiratory infection

pleuritis (pleurisy) — inflammation of the pleura causing sharp pain on inspiration

pleura — membrane that surrounds each lung and the thoracic cavity

pulmonary embolism — the blockage of a pulmonary artery by foreign matter (such as fat, air, tumor, or a blood clot).

sudden infant death syndrome (SIDS) — sudden unexpected death of an apparently normal and healthy infant that occurs during sleep and with no physical or autopsic evidence of disease.

tuberculosis (TB) — chronic infectious disease caused by the bacterium Mycobacterium tuberculosis

endotracheal intubation is the insertion of an airway tube through the mouth or nose into the trachea.

A, Orotracheal intubation for short-term airway management. (through mouth)

B, Nasotracheal intubation for short-term airway management. (through nose)

C, Tracheostomy — formation of an opening in the trachea. A tracheostomy tube is for long-term airway maintenance.
• A, Simple oxygen mask is used for short-term oxygen therapy or in an emergency.
• B, Nasal cannula delivers oxygen by way of two small tubes that are inserted into the nostrils and is frequently used for long-term oxygen maintenance.
• C, Transtracheal oxygen is a more efficient long-term method of delivering oxygen and is an alternative to the nasal cannula.

Quick Quiz!
The inability to communicate through speech is
A. aphasia
B. dysphasia
C. atelectasis
D. laryngalgia

Surgical and Therapeutic Interventions
• decongestants- reduce swelling or congestion (Sudafed)
• antitussives- relieve coughing (Robitussin DM)
• antihistamines- treat colds and allergies (Benadryl, Claritin)
• bronchodilators – used in asthma and COPD to cause dilation of the bronchi (Proventil)
• mucolytics- destroy or dissolve mucus (Mucinex)

Surgical and Therapeutic Interventions, cont.
lung biopsy-removal of small pieces of lung tissue for the purpose of diagnosis
pneumonectomy, pneumectomy-removal of all or part of the lung
pneumon/o, pneum/o=lung, -ectomy=surgical removal
lobectomy-a lobe of the lung is removed
rhinoplasty- plastic surgery of the nose.

Additional Word Parts
• atel/o imperfect
• coni/o dust
• embol/o embolus
• home/o sameness
• -ole little
• ox/o oxygen
• -pnea breathing
• silic/o silica
• spir/o to breath
Additional Word Parts, cont.

- ox/o  oxygen
- -pnea  breathing
- silic/o  silica
- spir/o  to breathe