The Respiratory System

Course
Medical Terminology

Unit VII
The Respiratory System

Essential Question
What are the medical terms associated with the Respiratory System?

TEKS
130.203 (c) (1) (A), (B), (E), 2(B), 4 (A), (B)

Prior Student Learning
None

Estimated time
3-5 hours

Rationale
Healthcare professionals must have a comprehensive medical vocabulary in order to communicate effectively with other health professionals. They should be able to use terminology of the Respiratory System to discuss common conditions and diseases.

Objectives
Upon completion of this lesson, the learner should be able to:

- Define and decipher common terms associated with the respiratory system
- Identify the basic anatomy of the respiratory system
- Analyze unfamiliar terms using the knowledge of word roots, suffixes and prefixes gained in the course
- Research diseases which involve the respiratory system

Engage
Have the students pinch their nostrils closed and seal their lips around a small straw. Ask them to breathe only through the straw for 2-3 minutes. Then ask them to breathe deeply without the obstruction of the straw or occlusion of the nose. Have several students describe the feeling of having no free air flow into and out of their lungs.

Key Points

I. Lungs and Air Passages
   A. Nose, pharynx, larynx, trachea, bronchi, alveoli and lungs
   B. Responsible for
      1. Taking in O_2 (needed by all body cells)
      2. Removing CO_2 (metabolic waste product)
   C. Body has 4-6 minute supply of O_2
   D. Must work continuously or death will occur

II. Nose
   A. Has 2 nostrils or nares
      1. Openings through which air enters
   B. Nasal septum
      1. Partition or wall of cartilage
      2. Divides the nose into 2 hollow spaces called nasal cavities

III. Nasal Cavities
   A. Lined with mucous membrane
   B. Rich blood supply
   C. As air enters it is warmed, filtered and moistened

D. Mucous also helps trap pathogens and dirt
E. Cilia: tiny hair-like structures which also trap dirt and pathogens, pushing them toward the esophagus to be swallowed
F. Olfactory receptors for the sense of smell
G. Nasolacrimal ducts drain tears from the eye into the nose to provide additional moisture for the air

IV. Paranasal Sinuses
A. Hollow air-containing spaces within the skull
B. Cavities in the skull around the nasal area
C. Connected to the nasal cavity by short ducts
D. Lined with mucous membrane that warms and moistens air
E. Provide resonance for the voice

V. Pharynx
A. The throat
B. Lies directly behind the nasal cavities
C. As air leaves the nose it enters the pharynx
D. Has three sections
1. Nasopharynx
a. Upper portion behind the nasal cavities
b. Contain the pharyngeal tonsils or adenoids (lymphatic tissue) and the auditory (eustachian) tube openings
2. Oropharynx
a. Middle section located behind the oral cavity
b. Contains the palatine tonsils (two rounded masses of lymphatic tissue)
c. Received both air from the nasopharynx and food and air from the mouth
3. Laryngopharynx
a. Bottom section of the pharynx
b. Branches into the trachea, which carries air to and from the lungs, and the esophagus – the tube that carries food to the stomach

VI. Epiglottis
A. A flap of cartilage attached to the root of the tongue
B. Prevents choking or aspiration of food
C. Acts as a lid over the opening of the larynx
D. During swallowing when food and liquid move through the throat, the epiglottis closes over the larynx

VII. Larynx
A. Voice box
B. Lies between the pharynx and trachea
C. Has a framework of cartilage commonly called the “Adam’s apple”
D. Contains two folds called vocal cords

1. Opening between the vocal cords is the glottis
2. As air leaves the lungs, the vocal cords vibrate and produce sound
3. Tongue and lips act on the sound to produce speech

VIII. Trachea
- A. Windpipe
- B. Tube extending from the larynx to the center of the chest (about 4.5" long)
- C. Carries air between the pharynx and bronchi
- D. Series of c-shaped cartilages, which are open on the dorsal or back surface, and help keep the trachea open

IX. Bronchi
- A. Two divisions of the trachea near the center of the chest
  1. Right and left bronchus (singular)
  2. Right bronchus is shorter, wider and extends more vertically than the left bronchus
- B. Each bronchus enters a lung and carries air from the trachea to the lungs
- C. In the lungs, the bronchi continue to divide into smaller and smaller bronchi
- **D.** Smaller branches are called **bronchioles**
- E. Smallest bronchioles, called terminal bronchioles; end in the air sacs called **alveoli**

X. Alveoli
- A. Air sacs that resemble a bunch of grapes
- B. Adult lung contains approximately 300 million alveoli
- C. Made of one layer of squamous epithelium tissue
- D. Contains a rich network of blood capillaries
- E. Capillaries allow O^2 and CO_2 to be exchanged between the blood and the lungs
- F. Inner surface of alveoli are covered with surfactant
  1. Lipid or fatty substance
  2. Helps prevent alveoli from collapsing

XI. Erythrocytes
- A. Carry oxygen to all parts of the body
- B. Carries carbon dioxide to the lungs for exhalation

XII. Lungs
- A. Organs that contain divisions of the bronchi and alveoli
- B. Right lung has 3 sections or **lobes**: superior, middle and inferior
- C. Left lung has only two lobes, superior and inferior
- D. Left lung is smaller because the heart lies more to the left side of the chest
- E. Both the lungs are located in the thoracic cavity
- F. Apex: uppermost part of the lung
- G. Base: lower part of the lung

H. Hilum: the midline region in which blood vessels, nerves, lymphatic tissue, and bronchial tubes enter and exit the lung
I. The lungs extend form the collarbone to the **diaphragm**

XIII. Diaphragm
- A. A muscular partition
- B. Separates the thoracic from the abdominal cavity
- C. Aids in the process of breathing
  1. Contracts
     a. Moves downward, enlarging the area in the thoracic cavity
     b. Decreasing internal air pressure, so that air flows into the lungs to equalize the pressure
  2. Relaxes
     a. When the lungs are full, the diaphragm relaxes and elevates
     b. Makes the area in the thoracic cavity smaller, thus increasing air pressure in the chest
     c. Air is expelled out of the lungs to equalize pressure

XIV. Pleura
- A. Consists of two layers
  1. Visceral pleura attached to surface of lung; inner layer closer to the lungs
  2. Parietal pleura attached to the chest wall; outer layer, closer to the ribs
- B. Pleural space
  1. Located between the two layers
  2. Filled with a thin layer of pleural fluid that lubricates the membranes and prevents friction as the lungs expand during breathing

XV. Pathway of Air
- A. Nose
- B. Nasal cavities and paranasal sinuses
- C. Pharynx (adenoids and tonsils)
- D. Larynx (epiglottis)
- E. Trachea
- F. Bronchi
- G. Bronchioles
- H. Alveoli
- I. Lung capillaries

XVI. Ventilation
- A. Process of breathing
- B. Respiration
- C. Two phases
  1. Inspiration or inhalation
     a. Process of breathing in air

b. Diaphragm contracts and enlarges the thoracic cavity

2. Expiration or exhalation
   a. Process where air leaves the lungs
   b. Diaphragm and intercostal muscles relax and air is forced out of the lungs

D. Inspiration + Expiration = Respiration
1. The mechanical process of breathing
2. The exchange of air between the lungs and the external environment
3. Process is controlled by the respiratory center in the medulla oblongata of the brain

E. Respiration is a Vital Sign
1. Normal adult respiration rate is 12-20 breaths/minute
2. How do we know if a person is breathing? We can see the chest rise and fall

XVII. Abnormal Breathing

A. Dyspnea: difficult or labored breathing
B. Apnea: absence of respiration
C. Tachypnea: breathing rate above 25/breaths/minute
D. Bradypnea: slow respirations, below 10 breaths/minute
E. Orthopnea: dyspnea in any position other than sitting erect or standing
F. Cyanosis: bluish discoloration of the skin, lips or nail beds as a result of decreased O_2

XVIII. External Respiration

A. Occurs between the outside environment and the capillary blood of the lungs
B. Exchange of O_2 and CO_2 between the lungs and bloodstream
C. O2 breathed in through the respiratory system, enters the alveoli
1. Concentration of O_2 in the alveoli higher than the concentration in the blood capillaries
2. O_2 leaves the alveoli and enters the capillaries or bloodstream

D. CO_2 a metabolic waste product is carried in the bloodstream
1. Concentrations of CO_2 is higher in the capillaries
2. It leaves the capillaries and enters the alveoli
3. Alveoli expel the CO_2 from the body during exhalation

XIX. Internal respiration

A. Exchange of CO_2 and O_2 between the tissue cells and the bloodstream
B. O_2 is carried to the tissue cells by the blood
1. Concentrations of O_2 is higher in the blood than in the tissue cells
2. O_2 leaves the blood capillaries and enters tissue cells

C. Tissue cells use the O_2 and nutrients to produce energy, water and CO_2, a process called **cellular respiration**
   1. Level of CO_2 is higher in cells
   2. CO_2 leaves the cells and enters the blood stream to be transported back to the lungs where external respiration takes place

XX. Respiration Vocabulary

A. Adenoids: lymphatic tissue in the nasopharynx; pharyngeal tonsils
B. Alveolus: (singular) air sac in the lung
C. Apex of the lung: tip or uppermost portion of the lung
D. Apical: pertaining to the apex
E. Base: lower portion of the lung
F. Basilar: pertaining to the base
G. Bronchus (singular) branch of the trachea that is a passageway into the lung
H. CO_2: carbon dioxide, produced by body cells when oxygen and food combine; exhaled through the lungs
I. Cilia: thin hairs attached to the mucous membrane epithelium lining of the respiratory tract; clear bacteria and foreign substances from the lung
J. Diaphragm: muscle separating the chest and abdomen
K. Epiglottis: lid-like piece of cartilage that covers the larynx when we swallow
L. Expiration: breathing out (exhalation)
M. Hilum: midline region where the bronchi, blood vessels, and nerves enter and exit the lungs
N. Inspiration: breathing in (inhalation)
O. Larynx: voice box; containing the vocal cords
P. Lobe: division of a lung
Q. Mediastinum: region between the lungs in the chest cavity
R. Nares: openings through the nose carrying air into the nasal cavities
S. O_2: oxygen
T. Palatine tonsil: one of a pair of almond-shaped masses of lymphatic tissue in the oropharynx (palatine means pertaining to the roof of the mouth)
U. Paranasal sinus: one of the air cavities in the bones near the nose
V. Parietal pleura: outer fold of pleura lying closer to the ribs and chest wall
W. Pharynx: throat, including the nasopharynx, oropharynx and laryngopharynx
X. Pleura: double-folded membrane surrounding each lung
Y. Pleural cavity: space between the fold of the pleura
Z. Pulmonary parenchyma: essential part of the lung, responsible

for respirations; bronchioles and alveoli

AA. Respirations: process of moving air into and out of the lungs (breathing)

BB. Trachea: windpipe

CC. Visceral pleura: inner fold of pleura lying closer to the lung tissue

XXI. Abbreviations

Abbreviation	Definition
ABGs	Arterial blood gases
AFB	Acid-fast bacillus (organism that causes tuberculosis
ARDS	Acute respiratory distress syndrome – a group of signs and symptoms associated with acute respiratory failure
BAL	Bronchioalveolar lavage
Bronch	Bronchoscopy
CF	Cystic fibrosis
CO_2	Carbon dioxide
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
C&S	Culture and sensitivity testing
CTPA	Computed tomography pulmonary angiography
CXR	Chest x-ray
DL_{co}	Diffusion capacity of the lung for carbon monoxide
DOE	Dyspnea on exertion
DPT	Diphtheria, Pertussis, Tetanus (vaccine)
FEV_1	Forced expiratory volume in 1 second
FVC	Forced vital capacity – amount of gas that can be forcibly and rapidly exhaled after a full inspiration
HCO_3	Bicarbonate- measured in blood to determine acidity or alkalinity
ICU	Intensive care unit
LLL	Left lower lobe (of lung)
LUL	Left upper lobe (of lung)
MDI	Metered-dose inhaler
NSCLC	Non-small cell lung cancer
O_2	Oxygen
OSA	Obstructive sleep apnea
$PaCO_2$	Carbon dioxide partial pressure – measure of the amount of carbon dioxide in arterial blood
PaO_2	Oxygen partial pressure – a measure of the amount of oxygen in arterial blood

PCP	Pneumocystic pneumonia
PE	Pulmonary embolism
PEP	Positive expiratory pressure – ventilator strategy in which patient takes a deep breath, and then exhales through a device that resists air flow
PEEP	Positive end expiratory pressure (ventilator setting in which airway pressure is maintained at about atmospheric pressure)
PFTs	Pulmonary function tests
PND	Paroxysmal nocturnal dyspnea
PPD	Purified protein derivative – substance used in a tuberculosis test
RDS	Respiratory distress syndrome
RLL	Right lower lobe (of the lung)
RSV	Respiratory syncytial virus
RUL	Right upper lobe (of the lung)
RV	Residual volume – amount of air remaining in lungs at the end of maximal expiration
SCLC	Small cell lung cancer
SOB	Shortness of breath
T B	Tuberculosis
TLC	Total lung capacity
URI	Upper respiratory infection
V_T	Tidal volume – amount of air inhaled and exhaled during a normal ventilation
VATS	Video-assisted thoracic surgery (thoracoscopy)
VC	Vital capacity – equals inspiratory reserve volume plus expiratory reserve volume plus tidal volume
V/Q scan	Ventilation-perfusion scan – radioactive test of lung ventilation and blood perfusion throughout the lung capillaries (ling scan)

- Suffixes

Suffix	Meaning
-ema	Condition
-osmia	Smell
-pnea	Breathing
-ptysis	Spitting
-sphyxia	Pulse
-thorax	Chest, pleural cavity

XXII. Combining Forms

Combining form	Meaning

Adenoid/o	Adenoids
Alveoli/o	Alveolus, air sac
Bronchi/o	Bronchus
Bronchiol/o	Bronchiole, small bronchus
Capn/o	Carbon dioxide
Coni/o	Dust
Cyan/o	Blue
Epiglott/o	Epiglottis
Laryng/o	Larynx, voice box
Lob/o	Lobe of the lung
Mediastin/o	Mediastinum
Nas/o	Nose
Orth/o	Straight, upright
Ox/o	Oxygen
Pector/o	Chest
Pharyng/o	Pharynx, throat
Phon/o	Voice
Phren/o	Diaphragm
Pleur/o	Pleura
Pneumon/o	Air, lung
Plumon/o	Lung
Rhin/o	Nose
Sinus/o	Sinus, cavity
Spir/o	Breathing
Tel/o	Complete
Thorac/o	Chest
Tonsil/o	Tonsils
Trache/o	Trachea, windpipe

XXIII. Diagnostic Terms

Word	Meaning
Auscultation	Listening to sounds within the body (using a stethoscope)
Percussion	Tapping on a surface to determine the difference in the density of the underlying structure
Pleural rub	Scratchy sound produced by pleural surfaces rubbing against each other
Rales (crackles)	Fine crackling sounds heard on auscultation (during inhalation) when there is fluid in the alveoli
Rhonchi (singular: rhonchus)	Loud rumbling sounds heard on auscultation of bronchi obstructed by sputum.
Sputum	Material expelled from the bronchi, lungs, or upper respiratory tract by spitting
Stridor	Strained, high-pitched sound heard on inspiration caused by obstruction in the pharynx or larynx

Wheezes	Continuous high-pitched whistling sounds produced during breathing

XXIV. Upper Respiratory Disorders

Croup	Acute viral infection of infants and children with obstruction of the larynx, barking cough, and stridor
Diphtheria	Acute infection of the throat and upper respiratory tract caused by the diphtheria bacterium
Epistaxis	Nosebleed
Pertussis	Whooping cough: highly contagious bacterial infection of the pharynx, larynx, and trachea caused by Bordetella Pertussis

XXV. Bronchial Disorders

Asthma	Chronic bronchial inflammatory disorder with airway obstruction due to bronchial edema and constriction with increased mucus production.
Bronchiectasis	Chronic dilation of bronchus secondary to infection
Chronic bronchitis	Inflammation of bronchi persisting over a long time; type of chronic obstructive pulmonary disease
Cystic fibrosis (CF)	Inherited disorder of exocrine glands resulting in thick mucus secretions in the respiratory tract that do not drain normally

XXVI. Lung Disorders

Atelectasis	Collapsed lung; incomplete expansion of alveoli
Emphysema	Hyperinflation of air sacs with destruction of alveolar walls
Lung cancer	Malignant tumor arising from the lungs and bronchi
Pneumoconiosis	Abnormal condition caused by dust in the lungs, with chronic inflammation, infection, and bronchitis
Pneumonia	Acute inflammation and infection of alveoli, which fill with pus or products of the inflammatory reaction
Pulmonary abscess	Large collection of pus (bacterial infection) in the lungs
Pulmonary edema	Fluid in the air sacs and bronchioles
Pulmonary embolism (PE)	Clot or other material lodges in vessels of the lung
Pulmonary fibrosis	Formation of scar tissue in the connective tissue of the lungs
Sarcoidosis	Chronic inflammatory disease in which small

	nodules (granulomas) develop in lungs, lymph nodes, and other organs
Tuberculosis (TB)	Infectious disease caused by Mycobacterium tuberculosis; lungs usually are involved, but any organ in the body may be affected

XXVII. Pleural Disorders

Mesothelioma	Rare malignant tumor arising in the pleura
Pleural effusion	Abnormal accumulation of fluid in the pleural space (cavity)
Pleurisy (pleuritis)	Inflammation of the pleura
Pneumothorax	Collection of air in the pleural space

XXVIII. Asthma

A. Chronic bronchial inflammatory disorder with airway obstruction due to bronchial edema and constriction with increased mucus production
B. Usually caused by a sensitively to an allergen such as dust, pollen, animals or foods
C. Stress, overexertion and infections can also cause an asthma attack
D. Symptoms
    1. Occur when bronchospasms narrow openings of bronchioles, mucus production increases, and edema develops in the mucosal lining
    2. Dyspnea and wheezing
    3. Coughing with expectoration of sputum
    4. Tightness in chest
E. Triggers
    1. Exercise
    2. Strong odors
    3. Cold air
    4. Stress
    5. Allergens (dust, pollen, animals, foods)
    6. Medications (aspirin, beta-blockers)
F. Treatment
    1. Anti-inflammatory agents inhaled (long-term control with glucocorticoids)
    2. Bronchodilators to enlarge the bronchioles
    3. Identification and elimination of or desensitization to allergens causing the problem

XXIX. Chronic Bronchitis

A. Inflammation of the bronchi and bronchial tubes persisting over a long time
B. Etiological factors: smoking, infection
C. Type of COPD

D. Occurs after frequent attacks of acute bronchitis and long-term exposure to pollutants or smoking
E. Characterized by chronic inflammation, damaged cilia, and enlarged mucous glands
F. Symptoms
    1. Excessive mucus resulting in productive cough
    2. Wheezing and dyspnea
    3. Chest pain
    4. Prolonged expiration of air
G. Treatment with antibiotics and bronchodilators and respiratory therapy
H. There is no cure

XXX. Chronic Obstructive Pulmonary Disease
A. COPD
B. Any chronic lung disease that results in obstruction of the airways
C. Disorders such as chronic asthma, chronic bronchitis, emphysema and tuberculosis lead to COPD
D. Smoking is the primary cause, but allergies and chronic respiratory infections are also factors

XXXI. Emphysema
A. Noninfectious chronic respiratory condition
B. Hyperinflation of air sacs with destruction of alveolar walls
C. Occurs when the walls of the alveoli deteriorate and lose their elasticity
    1. CO_2 remains trapped in the alveoli
    2. Poor exchange of gases
D. Most common causes are heavy smoking and prolonged exposure to air pollutants
E. Form of COPD

XXXII. Epistaxis
A. Nosebleed
B. Occurs when capillaries in the nose become congested and bleed
C. Causes
    1. Irritation of nasal mucous membranes
    2. Trauma
    3. Vitamin K deficiency
    4. Clotting abnormalities
    5. Hypertension

XXXIII. Laryngitis
A. Inflammation of the larynx and vocal cords
B. Frequently occurs with other respiratory infections
C. Symptoms
    1. Hoarseness or loss of voice
    2. Sore throat

3. Dysphasia or difficulty in swallowing

XXXIV. Pleurisy
- A. Inflammation of pleura or membranes of the lungs
- B. Usually occurs with pneumonia or other infections
- C. Symptoms
  1. Sharp stabbing pain while breathing
  2. Capitation or grating sounds in the lungs
  3. Dyspnea and fever

XXXV. Pneumonia
- A. Inflammation and infection of the alveoli with a buildup of fluid or exudates
- B. Usually caused by a bacteria, virus or chemicals
- C. Symptoms
  1. Chills
  2. Fever
  3. Chest pain
  4. Productive cough
  5. Dyspnea
  6. Fatigue

XXXVI. Tuberculosis
- A. Infectious disease of the lung caused by the bacterium Mycobacterium tuberculosis
- B. TB
- C. At times, white blood cells surround invading TB organisms, wall them off, creating a nodule called a tubercle
  1. Organisms remain dormant in the tubercle
  2. Can cause an active case of TB later if the body's resistance is lowered
- D. Signs and Symptoms
  1. Fatigue, chest pain, fever, night sweats, weight loss
  2. Hemoptysis (coughing up blood-tinged sputum)

XXXVII. Clinical Procedures

Word	Meaning
Chest x-ray (CXR)	Radiographic image of the thoracic cavity (chest film)
Computed tomography scan of the chest (CT)	Computer-generated series of x-ray images show thoracic structures in cross section and other planes
Magnetic resonance imaging of the chest (MRI)	Magnetic waves create detailed images of the chest in frontal, lateral, and cross-sectional planes
Positron emission tomography can of the lung (PET)	Radioactive glucose is injected and images reveal metabolic activity in the lungs
Ventilation-perfusion	Detection device records radioactivity in the lung

scan (V/Q)	after injection of a radioisotope or inhalation of small amount of radioactive gas (xenon)
Bronchoscopy	Fiberoptic endoscope examination of the bronchial tubes
Laryngoscopy	Visual examination of the voice box.
Endotracheal intubation	Placement of a tube through the mouth into the pharynx, and trachea to establish an airway
Lung biopsy	Removal of lung tissue followed by microscopic examination
Mediastinoscopy	Endoscopic visual examination of the mediastinum
Pulmonary function test (PFTs)	Tests that measure the ventilation mechanics of lung function, lung volume, and capacity of the lungs to exchange oxygen and carbon dioxide efficiently
Thoracentesis	Surgical puncture to remove fluid from the pleural space
Thoracotomy	Large surgical incision of the chest
Thoracoscopy (thorascopy)	Visual examination of the chest via small incisions and use of an endoscope
Tracheostomy	Surgical creation of an opening into the trachea through the neck
Tuberculin test	Determines past or present tuberculosis infection based on a positive skin reaction
Tube thoracotomy	Chest tube is passed through an opening in the chest to continuously drain a pleural effusion

Activity

I. Make flash cards of respiratory system terms and practice putting the terms together with prefixes and suffixes to make new terms.
II. Complete Respiratory System Terms Worksheet
III. Complete the Respiratory System Vocabulary Worksheet
IV. Review media terms with the students using review games such as the "Fly Swatter Game" or the "Flash Card Drill" (see the Medical Terminology Activity Lesson Plan - http://texashste.com/documents/curriculum/principles/medical_terminology_activities.pdf)
Research and report on diseases and disorders from the Respiratory system

Assessment

Successful completion of the activities

Materials

List of Respiratory Terms Worksheet and Key
Index cards

Markers
Respiratory Terminology Worksheet
Respiratory Terminology Key
Straws

Accommodations for Learning Differences
For reinforcement, the student will practice terms using flash cards of the female reproductive system.

For enrichment, the student will research and report on a respiratory disease using multimedia technology.

National and State Education Standards
National Healthcare Foundation Standards and Accountability Criteria:
Foundation Standard 2: Communications
2.21 Use roots, prefixes, and suffixes to communicate information
2.22 Use medical abbreviations to communicate information

TEKS
130.203 (c) (1) The student recognizes the terminology related to the health science industry. The student is expected to:
- (A) identify abbreviations, acronyms, and symbols;
- (B) identify the basic structure of medical words;
- (E) recall directional terms and anatomical planes related to the body structure

130.203 (c) (2) (B) employ increasingly precise language to communicate
130.203 (c) (4) The student interprets medical abbreviations. The student is expected to:
- (A) distinguish medical abbreviations used throughout the health science industry; and
- (B) translate medical abbreviations in simulated technical material such as physician progress notes, radiological reports, and laboratory reports

Texas College and Career Readiness Standards
English and Language Arts,
Understand new vocabulary and concepts and use them accurately in reading, speaking, and writing
1. Identify new words and concepts acquired through study of their relationships to other words and concepts
2. Apply knowledge of roots and affixes to infer the meanings of new words
3. Use reference guides to confirm the meanings of new words or concepts.
Cross-Disciplinary Standards
I. Key Cognitive Skills D. Academic Behavior: 1. Self-monitor learning needs and seek assistance when needed, 3. Strive for accuracy and precision, 4. Persevere to complete and master task. E. Work habits: 1. Work

independently, 2. Work collaboratively
II. Foundation Skills A. 2. Use a variety of strategies to understand the meaning of new words. 4. Identify the key information and supporting details

Respiratory Combining Forms

Combining form	Meaning
Adenoid/o	Adenoids
Alveoli/o	Alveolus, air sac
Bronchi/o	Bronchus
Bronchiol/o	Bronchiole, small bronchus
Capn/o	Carbon dioxide
Coni/o	Dust
Cyan/o	Blue
Epiglott/o	Epiglottis
Laryng/o	Larynx, voice box
Lob/o	Lobe of the lung
Mediastin/o	Mediastinum
Nas/o	Nose
Orth/o	Straight, upright
Ox/o	Oxygen
Pector/o	Chest
Pharyng/o	Pharynx, throat
Phon/o	Voice
Phren/o	Diaphragm
Pleur/o	Pleura
Pneumon/o	Air, lung
Plumon/o	Lung
Rhin/o	Nose
Sinus/o	Sinus, cavity
Spir/o	Breathing
Tel/o	Complete
Thorac/o	Chest
Tonsil/o	Tonsils
Trache/o	Trachea, windpipe

Suffixes

Suffix	Meaning
-ema	Condition
-osmia	Smell
-pnea	Breathing
-ptysis	Spitting
-sphyxia	Pulse
-thorax	Chest, pleural cavity

Abbreviations

Abbreviation	Meaning
ABGs	Arterial blood gases
AFB	Acid-fast bacillus (organism that causes tuberculosis
ARDS	Acute respiratory distress syndrome – a group of signs and symptoms associated with acute respiratory failure
BAL	Bronchioalveolar lavage
Bronch	bronchoscopy
CF	Cystic fibrosis
CO_2	Carbon dioxide
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
C&S	Culture and sensitivity testing
CTPA	Computed tomography pulmonary angiography
CXR	Chest x-ray
DL_{co}	Diffusion capacity of the lung for carbon monoxide
DOE	Dyspnea on exertion
DPT	Diphtheria, Pertussis, tetanus (vaccine)
FEV_1	Forced expiratory volume in 1 second
FVC	Forced vital capacity – amount of gas that can be forcibly and rapidly exhaled after a full inspiration
HCO_3	Bicarbonate- measured in blood to determine acidity or alkalinity
ICU	Intensive care unit
LLL	Left lower lobe (of lung)
LUL	Left upper lobe (of lung)
MDI	Metered-dose inhaler
NSCLC	Non-small cell lung cancer
O_2	Oxygen
OSA	Obstructive sleep apnea
$PaCO_2$	Carbon dioxide partial pressure – measure of the amount of carbon dioxide in arterial blood
PaO_2	Oxygen partial pressure – a measure of the amount of oxygen in arterial blood
PCP	Pneumocystic pneumonia
PE	Pulmonary embolism
PEP	Positive expiratory pressure – ventilator strategy in which pt takes a deep breath and then exhales through a device that resists air flow
PEEP	Positive end-expiratory pressure (ventilator setting in which airway pressure is maintained about atmospheric pressure
PFTs	Pulmonary function tests
PND	Paroxysmal nocturnal Dyspnea
PPD	Purified protein derivative – substance used in a tuberculosis test
RDS	Respiratory distress syndrome
RLL	Right lower lobe (of the lung)

RSV	Respiratory syncytial virus
RUL	Right upper lobe (of the lung)
RV	Residual volume – amount of air remaining in lungs at the end of maximal expiration
SCLC	Small cell lung cancer
SOB	Shortness of breath
T B	Tuberculosis
TLC	Total lung capacity
URI	Upper respiratory infection
V_T	Tidal volume – amount of air inhaled and exhaled during a normal ventilation
VATS	Video-assisted thoracic surgery (thoracoscopy)
VC	Vital capacity – equals inspiratory reserve volume plus expiratory reserve volume plus tidal volume
V/Q scan	Ventilation-perfusion scan – radioactive test of lung ventilation and blood perfusion throughout the lung capillaries (lung scan)

RESPIRATORY SYSTEM TERMINOLOGY
Worksheet

Write the meaning of each term in the spaces provided below

Term	Meaning
ox/o ox/i -	**oxia oxygen**
hypoxemia	
hypoxia, anoxia	
oximeter	
oximetry	
oxyhemoglobin	
-capnia	**carbon dioxide**
acapnia	
hypercapnia	
hypocapnia	
-pnea	**breathing**
apnea	
bradypnea	
dyspnea	
eupnea	
hyperpnea	
hypopnea	
orthopnea	
tachypnea	
nas/o	**Nose**
nasitis	
nasology	
nasopharyngitis	
nasoscope	
rhin/o	**nose**
rhinitis	
rhinocheiloplasty	
rhinomycosis	
rhinoplasty	
rhinorrhagia	
rhinorrhea	
rhinostenosis	
rhinovirus	

muc/o	mucus
mucopurulent	
mucous	
mucus	
sinus/o	**sinus**
paranasal sinuses	
sinusitis	
sinusotomy	
pharyng/o	**pharynx**
laryngopharynx	
nasopharynx	
oropharynx	
pharyngalgia	
pharyngectomy	
pharyngitis	
pharyngomycosis	
pharyngopathy	
pharyngoplasty	
pharyngorrhea	
pharyngoscope	
pharyngotomy	
pharyngoxerosis	
tonsill/o	**tonsil**
tonsillectomy	
tonsillitis	
tonsillotome	
adenoid/o	**adenoids (adeno=gland, oids=like/resembling)**
adenoid hypertrophy	
adenoidectomy	
adenoiditis	
adenotome	
laryng/	**larynx (voice box)**
laryngalgia	
laryngectomee	
laryngectomy	
laryngitis	
laryngocentesis	
laryngomalacia	
laryngopathy	

laryngoplasty	
laryngoplegia	
laryngoscope	
laryngoscopy	
laryngospasm	
laryngostenosis	
laryngoxerosis	
-phonia or voice	**pertaining to sound**
aphonia	
dysphonia	
epiglott/o epiglottid/o	**epiglottis**
epiglottitis	
epiglottidectomy	
trache/o	**trachea**
endotracheal intubation	
tracheitis	
tracheoplasty	
tracheostenosis	
tracheostoma	
tracheostomy	
tracheotomy	
bronch/i bronch/o bronchiol/o	**bronchi/bronchiole**
bronchiectasis	
bronchiostenosis	
bronchitis	
bronchodilator	
bronchoedema	
bronchogenic carcinoma	
bronchomycosis	
bronchopathy	
bronchoplasty	
bronchopneumonia	
bronchorrhagia	
bronchorrhea	
bronchoscope	
bronchoscopy	
bronchospasm	
bronchotomy	

alveol/o	**alveoli (air sacs in the lungs)**
alveolitis	
pulmon/o	**lung**
pulmonectomy	
pneum/o pneumat/o pneumon/o	**lung, air**
pneumatic	
pneumohemothorax	
pneumomalacia	
pneumonectomy	
pneumonia	
pneumometer	
thorac/o	**thorax (chest)**
thoracalgia	
thoracocentesis / thoracentesis	
thoracodynia	
thoracotomy	
-thorax	**chest**
hemothorax	
hydrothorax	
pneumothorax	
pyothorax	
pleur/o	**pleura**
pleurocentesis	
pleuropexy	
pleuralgia	
pleurisy	
lob/o	**lobe**
lobectomy	
lobitis	
atel/-	**imperfect**
atelectasis	

diaphragmat/o diaphragm/o	diaphragm (partition)
diaphragmatic	
phren/	**diaphragm**
phrenic nerve	
phrenoplegia	
Phrenospasm	
spir/o	**breathe**
spirometer	
spirometry	
spirograph	
spirogram	

Related Respiratory Terminology and Diseases	
ABG's	
adenoids	
apex	
ARDS	
asbestosis	
asphyxia	
aspirate	
asthma	
atelectasis	
bronchiectasis	
bronchioles	
carina	
Cheyne-Stokes	
chronic bronchitis	
cleft palate	
COPD	
cough	
cricoid cartilage	
croup	
cyanosis	
cystic fibrosis	
diaphragm	
diphtheria	
emphysema	
epiglottis	
epistaxis	
expiration	
FEV_1	

FVC	
glottis	
Heimlich maneuver	
hiccup	
hilum	
hilus	
hyaline membrane disease	
influenza	
inspiration	
IRV	
Kussmaul's	
Legionnaires'Disease	
palatine tonsils	
palliative	
parietal pleura	
patent rales	
PCP	
pertussis	
pleurisy	
pneumonia	
pneumothorax	
postural drainage	
purulent	
respiration	
rhonchi	
RV	
snoring	
stridor	
surfactant	
thyroid cartilage	
tuberculosis	
TLC	
uvula	
Vagus nerve	
Valsalva maneuver	
VC	
Visceral pleura	
V_T	
yawn	

RESPIRATORY SYSTEM TERMINOLOGY
Key

Term	Meaning
ox/o ox/i -	**oxia oxygen**
hypoxemia	Insufficient oxygenation of the blood
hypoxia, anoxia	Oxygen deficiency
oximeter	An electronic device for determining the oxygen concentration in arterial blood
oximetry	Use of oximeter to check oxygen saturation of blood
oxyhemoglobin	Combined form of hemoglobin and oxygen (found in arterial blood)
-capnia	**carbon dioxide**
acapnia	Absence of carbon dioxide
hypercapnia	Increased amount of carbon dioxide in the blood
hypocapnia	Decreased amount of carbon dioxide in the blood
-pnea	**breathing**
apnea	Without breath
bradypnea	Slow breathing
dyspnea	Difficulty breathing
eupnea	Normal breathing
hyperpnea	Increased respiratory rate of breathing
hypopnea	Decreased respiratory rate of breathing
orthopnea	Labored breathing while lying flat
tachypnea	Rapid breathing
nas/o	**nose**
nasitis	Inflammation of the nose
nasology	Study of the nose
nasopharyngitis	Inflammation of the nasopharynx
nasoscope	Instrument for examination of the nasal cavity
rhin/o	**nose**
rhinitis	Inflammation of the nasal mucosa
rhinocheiloplasty	Plastic surgery of nose and upper lip
rhinomycosis	Fungi in the mucus membrane of the nose
rhinoplasty	Repair of the nose
rhinorrhagia	Epistaxis (bleeding of the nose)
rhinorrhea	Thin watery discharge from the nose
rhinostenosis	Obstruction of the nasal passages

rhinovirus	Virus that caused the common cold
muc/o	**mucus**
mucopurulent	Mucus and pus
mucous	Having the nature of or resembling mucous; secreting mucus
mucus	Viscid fluid secreted
sinus/o	**sinus**
paranasal sinuses	Assessor nasal sinuses
sinusitis	Inflammation of a sinus
sinusotomy	The incising of a sinus
pharyng/o	**pharynx**
laryngopharynx	The lower part of the pharynx
nasopharynx	The part of the pharynx situated above the soft palate
oropharynx	The central portion of the pharynx lying in the middle of the soft palate
pharyngalgia	Pain in the pharynx
pharyngectomy	Partial excision of the pharynx to remove growths
pharyngitis	Inflammation of the mucous membranes and lymphoid tissues of pharynx
pharyngomycosis	Disease of the pharynx caused by fungi
pharyngopathy	Any disorder of the pharynx
pharyngoplasty	Reparative surgery of the pharynx
pharyngorrhea	Discharge of mucous from the pharynx
pharyngoscope	An instrument for visual examination of the pharynx
pharyngotomy	Incision of the pharynx
pharyngoxerosis	Dryness of the pharynx
tonsill/o	**tonsil**
tonsillectomy	Incision of the tonsils
tonsillitis	Inflammation of a tonsil or tonsils
tonsillotome	A surgical instrument used in tonsillectomy
adenoid/o	**adenoids (adeno=gland, oids=like/resembling)**
adenoid hypertrophy	Enlargement of the pharyngeal tonsil
adenoidectomy	Excision of the adenoids
adenoiditis	Inflammation of adenoid tissue
adenotome	Device for excising a gland
laryng/	**larynx (voice box)**
laryngalgia	Laryngeal pain
laryngectomee	An individual whose larynx has been removed
laryngectomy	Removal of part of the larynx
laryngitis	Inflammation of larynx
laryngocentesis	Incision/puncture of larynx

laryngomalacia	Softening of the tissue of the larynx
laryngopathy	Any disease of the larynx
laryngoplasty	Plastic reparative surgery of larynx
laryngoplegia	Paralysis of laryngeal muscles
laryngoscope	Instrument consisting a blade and light to examine larynx
laryngoscopy	Visual examination of interior larynx
laryngospasm	Spasm of larynx muscles
laryngostenosis	Structure of the larynx
laryngoxerosis	Abnormal dryness of larynx
-phonia or voice	**pertaining to sound**
aphonia	Loss of speech
aysphonia	Difficulty speaking: hoarse
epiglott/o epiglottid/o	**epiglottis**
epiglottitis	Inflammation of the epiglottis
epiglottidectomy	Excision of the epiglottis
trache/o	**trachea**
endotracheal intubation	Placement of a tube through the mouth into the pharynx larynx and the trachea to establish an airway
tracheitis	Inflammation of trachea
tracheoplasty	Surgical repair of the trachea
tracheostenosis	Constriction or narrowing of the lumen of the trachea
tracheostoma	Opening into the trachea via the neck
tracheostomy	The surgical opening of the trachea to provide and secure and open airway
tracheotomy	The surgical opening of the trachea to provide and secure an open airway
bronch/i bronch/o bronchiol/o	**bronchi/bronchiole**
bronchiectasis	Chronic dilation of bronchus or bronchi
bronchiostenosis	Narrowing of bronchial tubes
bronchitis	Inflammation of the mucous membranes of the bronchial airways
bronchodilator	A drug that expands the bronchi by releasing bronchial muscles
bronchoedema	Edematous swelling of the mucous of the bronchial tubes
bronchogenic carcinoma	Cancer in bronchus
bronchomycosis	Any fungal infection of the bronchi or bronchial tubes
bronchopathy	Any pathetical condition involving the bronchi or bronchioles
bronchoplasty	Surgical repair of bronchial defect
bronchopneumonia	A type of pneumonia marked by scattered consolidation
bronchorrhagia	A bronchial hemorrhage
bronchorrhea	An abnormal secretion from the bronchial mucous membranes
bronchoscope	An endoscope designed to pass through the trachea for visual

	inspection
bronchoscopy	Examination of the bronchi through a bronchoscope
bronchospasm	An abnormal narrowing with partial obstruction of lumen of the bronchi
bronchotomy	Surgical incision of a bronchus, larynx, or trachea
alveol/o	**alveoli (air sacs in the lungs)**
alveolitis	Inflammation of the alveoli
pulmon/o	**lung**
pulmonectomy	Removal of all or part of the lung's tissue
pneum/o pneumat/o pneumon/o	**lung, air**
pneumatic	Concertning gas or air
pneumohemothorax	Gas or air and blood collected in the pleural cavity
pneumomalacia	Abnormal softening of lungs
pneumonectomy	Excision of the lung
pneumonia	Inflammation of the lungs
pneumometer	Instrument for measuring the volume of air moved in and out of the lungs during respiration
thorac/o	**thorax (chest)**
thoracalgia	Thoracic pain
thoracocentesis/ thoracentesis	Surgical puncture of chest wall to remove fluids
thoracodynia	Pain in the thorax
thoracotomy	Surgical incision of the chest wall
-thorax	**chest**
hemothorax	Blood or bloody fluid in the pleural cavity
hydrothorax	Noninflammatory collection of fluid in the pleural cavity
Pneumothorax	Air or gas in pleural cavity
Pyothorax	Pus in the pleural cavity
pleur/o	**pleura**
pleurocentesis	thoracentesis
pleuropexy	fixation of the pleura
pleuralgia	Pain in pleura or on the side
pleurisy	Inflammation of the pleura
lob/o	**lobe**
lobectomy	Surgical removal of a lobe of any organ or gland
lobitis	Inflammation of the lobe

atel/-	imperfect
atelectasis	Collapsed or airless condition of the lungs
diaphragmat/o diaphragm/o	**diaphragm (partition)**
diaphragmatic	Pertaining to the diaphragm
phren/	**diaphragm**
phrenic nerve	Nerve passing through the diaphragm
phrenoplegia	Pain in the diaphragm
phrenospasm	Spasm of the diaphragm
spir/o	**breathe**
spirometer	An apparatus used to measure lung volumes and airflow
spirometry	Measurement of air flow and lung volumes
spirograph	Graphic record of respiratory movements
spirogram	Record made by spirograph
Related Respiratory Terminology and Diseases:	
ABG's	Arterial blood gas
adenoids	Pharyngeal tonsils
apex	Tip of uppermost portion if the lung
ARDS	Acute respiratory distress syndrome
asbestosis	Asbestos particles accumulated in the lungs
asphyxia	Condition caused by insufficient intake of oxygen
aspirate	To draw in or out by suction
asthma	Disease caused by increase responsiveness of the trachea bronchia to various stimuli
atelectasis	Collapsed lung
bronchiectasis	Chronic dilation of a bronchus secondary to infection
bronchioles	The smallest divisions of the bronchial tubes
carina	A structure a projecting central ridge
Cheyne-Stokes	Breathing pattern marled by a period of apnea lasting 10 to 60 sec.
chronic bronchitis	Inflammation of bronchi persisting over a long time
cleft palate	Divided roof of the mouth
COPD	Chronis Obstructive Pulmonary disease
cough	Forceful and sometimes violent expiratory effort
cricoid cartilage	C-shaped rings of cartilage separated by fibrous connected tissue
croup	Active viral infection of infants and children with barking cough and stridor

cyanosis	Blue, gray, slate or dark purple discoloration of the skin
cystic fibrosis	C F; inherited disorder of exocrine glands resulting in thick mucus secretions in the respiratory tract that do not drain normally
diaphragm	Muscle separating the chest and abdomen
diphtheria	An acute infection of the upper respiratory tract
emphysema	Chronic pulmonary disease; loss of the normal elastic properties of the lung; pathological distention of interstitial tissue by gas or air
epiglottis	Lid-like piece of cartilage that covers the larynx during swallowing
epistaxis	Hemorrhage from the nose
expiration	Expulsion of air from the lungs in breathing
FEV_1	Forced expiratory volume in the first second of respiration
FVC	Forced tidal capacity; amount of gas that can be forcibly and rapidly exhaled after a full inspiration
glottis	Slit-like opening to the larynx
Heimlich maneuver	Artificial cough
hiccup	Spasmodic periodic closure of the glottis
hilum	Midline region of the lung where the bronchi, blood vessels, & nerves enter/exit lungs
hilus	Hilum
hyaline membrane disease	Respiratory distress syndrome of the new born
influenza	An acute contagious respiratory infection
inspiration	Drawing air into lungs
IRV	Inspiratory reserve volume
Kussmaul's	Very deep gasping type respiration associated with diabetic acidosis and coma
Legionnaires' Disease	A severe/ fatal disease characterized by pneumonia
Palatine tonsils	In the oropharynx, two hundred masses of lymphatic tissue
palliative	Relieving symptoms, but no curing of the disease
parietal pleura	Outer fold of pleura lying closer to the lung tissue
patent rales	Cracking sound heard on auscultation
PCP	Pneumocystic carinii pneumonia; a type of pneumonia seen in AIDS patients
pertussis	Whooping cough, highly contagious
pleurisy	Inflammation of the pleura
pneumonia	Acute inflammation and infection of alveoli
pneumothorax	Collection of air in the pleural space
postural drainage	Passive airway clearance technique
purulent	Containing pus
respiration	The interchange of gases between an organism & medium in which lives
rhonchi	Wheezing, snoring, or squeaking sound heard during auscultation

RV	Residual volume; amount of air remaining in lungs at the end of maximal expiration
snoring	Noise produced while breathing through the mouth during sleep
stridor	High pitched harsh sound occurring during inspiration
surfactant	A lipoprotein secreted by alveolar cells, helps keep alveoli from collapsing; surface active agent that lowers surface tension
thyroid cartilage	Principal cartilage of the larynx
tuberculosis	Infectious disease caused by mycobacterium tuberculosis
TLC	Total lung capacity
uvula	Free edge of the soft palate that hangs at the back of the throat
Vagus nerve	10^{th} cranial nerve, has branches to many organs
Valsalva maneuver	An attempt to forcibly exhale the glottis, nose, and mouth closed
VC	Vital capacity; equals inspiratory reserve volume plus expiratory reserve volume plus tidal volume
visceral pleura	Inner fold of pleura lying closer to the lung tissue
V_T	Tidal volume; amount of air inhaled and exhaled during a normal ventilation
yawn	Opening the mouth widely and involuntarily to take a deep breath

Respiratory Diagnostic Terms Worksheet

Write the meaning of each term in the spaces provided below

Word	Meaning
Auscultation	
Percussion	
Pleural rub	
Rales (crackles)	
Rhonchi (singular: rhonchus)	
Sputum	
Stridor	
Wheezes	

Upper Respiratory Disorders

Word	Meaning
Croup	
Diphtheria	
Epistaxis	
Pertussis	

Bronchial Disorders

Word	Meaning
Asthma	
Bronchiectasis	
Chronic bronchitis	
Cystic fibrosis (CF)	

Lung Disorders

Word	Meaning
Atelectasis	
Emphysema	
Lung cancer	
Pneumoconiosis	
Pneumonia	
Pulmonary abscess	
Pulmonary edema	
Pulmonary embolism (PE)	
Pulmonary fibrosis	
Sarcoidosis	
Tuberculosis (TB)	

Pleural Disorders

Word	Meaning
Mesothelioma	
Pleural effusion	
Pleurisy (pleuritis)	
Pneumothorax	

Clinical Procedures

Word	Meaning
Chest x-ray (CXR)	
Computed tomography scan of the chest (CT)	
Magnetic resonance imaging of the chest (MRI)	
Positron emission tomography can of the lung (PET)	
Ventilation-perfusion scan (V/Q)	
Bronchoscopy	
Laryngoscopy	
Endotracheal intubation	
Lung biopsy	
Mediastinoscopy	
Pulmonary function test (PFTs)	
Thoracentesis	
Thoracotomy	
Thoracoscopy (thorascopy)	
Tracheostomy	
Tuberculin test	
Tube thoracostomy	

Respiratory Diagnostic Terms - Key

Word	Meaning
Auscultation	Listening to sounds within the body (using a stethoscope)
Percussion	Tapping on a surface to determine the difference in the density of the underlying structures
Pleural rub	Scratchy sound produced by pleural surfaces rubbing against each other
Rales (crackles)	Fine crackling sounds heard on auscultation (during inhalation) when there is fluid in the alveoli
Rhonchi (singular: rhonchus)	Loud rumbling sounds heard on auscultation of bronchi obstructed by sputum
Sputum	Material expelled from the bronchi, lungs, or upper respiratory tract by spitting
Stridor	Strained, high-pitched sound heard on inspiration caused by obstruction in the pharynx or larynx
Wheezes	Continuous high-pitched whistling sounds produced during breathing

Upper Respiratory Disorders

Word	Meaning
Croup	Acute viral infection of infants and children with obstruction of the larynx, barking cough, and stridor
Diphtheria	Acute infection of the throat and upper respiratory tract caused by the diphtheria bacterium
Epistaxis	Nosebleed
Pertussis	Whooping cough; highly contagious bacterial infection of the pharynx, larynx, and trachea caused by Bordetella pertussis

Bronchial Disorders

Word	Meaning
Asthma	Chronic bronchial inflammatory disorder with airway obstruction due to bronchial edema and constriction, and increased mucus production
Bronchiectasis	Chronic dilation of a bronchus secondary to infection
Chronic bronchitis	Inflammation of bronchi persisting over a long time; type of chronic obstructive pulmonary disease
Cystic fibrosis (CF)	Inherited disorder of exocrine glands resulting in thick mucous secretions in the respiratory tract that do not drain normally

Lung Disorders

Word	Meaning
Atelectasis	Collapsed lung; incomplete expansion of alveoli
Emphysema	Hyperinflation of air sacs with destruction of alveolar walls
Lung cancer	Malignant tumor arising from the lungs and bronchi

Pneumoconiosis	Abnormal condition caused by dust in the lungs, with chronic inflammation, infection, and bronchitis
Pneumonia	Acute inflammation and infection of alveoli, which fill with pus or products of the inflammatory reaction
Pulmonary abscess	Large collection of pus (bacterial infection) in the lungs
Pulmonary edema	Fluid in the air sacs and bronchioles
Pulmonary embolism (PE)	Clot or other material lodges in vessels of the lung
Pulmonary fibrosis	Formation of scar tissue in the connective tissue of the lungs
Sarcoidosis	Chronic inflammatory disease in which small nodules (granulomas) develop in lungs, lymph nodes, and other organs
Tuberculosis (TB)	Infectious disease caused by Mycobacterium tuberculosis; lungs usually are involved, but any organ in the body may be affected

Pleural Disorders

Word	Meaning
Mesothelioma	Rare malignant tumor arising in the pleura
Pleural effusion	Abnormal accumulation of fluid in the pleural space (cavity)
Pleurisy (pleuritis)	Inflammation of the pleura
Pneumothorax	Collection of air in the pleural space

Clinical Procedures

Word	Meaning
Chest x-ray (CXR)	Radiographic image of the thoracic cavity (chest film)
Computed tomography scan of the chest (CT)	Computer-generated series of x-ray images show thoracic structures in cross section and other planes
Magnetic resonance imaging of the chest (MRI)	Magnetic waves create detailed images of the chest in frontal, lateral, and cross-sectional planes
Positron emission tomography scan of the lung (PET)	Radioactive glucose is injected and images reveal metabolic activity in the lungs
Ventilation-perfusion scan (V/Q)	Detection device records radioactivity in the lung after injection of a radioisotope or inhalation of small amount of radioactive gas (xenon)
Bronchoscopy	Fiberoptic endoscope examination of the bronchial tubes
Laryngoscopy	Visual examination of the voice box.
Endotracheal intubation	Placement of a tube through the mouth into the pharynx, and trachea to establish an airway
Lung biopsy	Removal of lung tissue followed by microscopic examination
Mediastinoscopy	Endoscopic visual examination of the mediastinum
Pulmonary function test (PFTs)	Tests that measure the ventilation mechanics of the lungs function, lung volume, and capacity of the lungs to exchange oxygen and carbon dioxide efficiently

Thoracentesis	Surgical puncture to remove fluid from the pleural space
Thoracotomy	Large surgical incision of the chest
Thoracoscopy (thorascopy)	Visual examination of the chest via small incisions and use of an endoscope
Tracheostomy	Surgical creation of an opening into the trachea through the neck
Tuberculin test	Determines past or present tuberculosis infection based on a positive skin reaction
Tube thoracostomy	Chest tube is passed through an opening in the chest to continuously drain a pleural effusion