

Hartman's Medical Terminology The Basics

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Notice to Readers

Though the guidelines and procedures contained in this text are based on consultations with healthcare professionals, they should not be considered absolute recommendations. The instructor and readers should follow employer, local, state, and federal guidelines concerning healthcare practices. These guidelines change, and it is each reader's responsibility to be aware of these changes and of the policies and procedures of their healthcare facility.

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Gender Usage

This textbook uses gender pronouns interchangeably to denote healthcare team members and patients.

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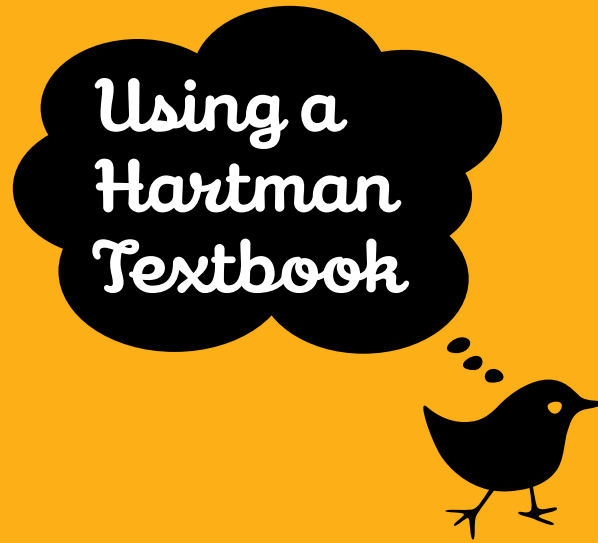
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Understanding how this book is organized and what its special features are will help you make the most of this resource!

We have assigned each chapter its own colored tab. Located on the side of every page, each colored tab contains the chapter number and title.



1. Describe anatomical terms of location and direction

Everything in this book and the instructor's teaching material is organized around learning objectives. A learning objective is a very specific piece of knowledge or a very specific skill. After reading the text, if you can do what the learning objective says, you know you have mastered the material.

DISEASES, DISORDERS, AND GENERAL TERMS		
TERM	WORD PARTS	MEANING
cutane ous (kyoo-TAY-nee-uhs)	cutane/o = skin -ous = pertaining to	pertaining to the skin

Throughout this book, medical terms are summarized in tables. Tables include a column for the term, word parts (if the term is built from word parts), and the meaning of the term. Medical terms built from word parts are color coded to show **prefixes**, **roots** or **combining forms**, and **suffixes**.

Guidelines: Plural Forms

Guidelines are colored green for easy reference.

Terminology Tip

Finding the Meaning of Medical Terms

Blue Terminology Tip boxes give extra information about medical terminology topics.

Knowledge Checkpoint

After each learning objective, Knowledge Checkpoint exercises give you a chance to practice what you have learned before you move on.

Case Study

Each chapter includes a case study. This allows you to practice using medical terminology as it applies to patient care.

Chapter Review

Chapter-ending questions test your knowledge of the information found in the chapter. If you have trouble answering a question, you can return to the text and reread the material.

Phonetic spelling key for medical terminology tables

In phonetic spelling, a term is spelled exactly the way it sounds. This type of spelling is used in the terminology tables in this book when each term is introduced. It is shown in parentheses.

Here are our rules for phonetic spellings:

Long vowels

ay = long *a* as in *day*
 ee = long *e* as in *see*
 y = long *i* as in *pie*
 oh = long *o* as in *low*
 oo = long *u* as in *blue*

Short vowels

a = short *a* as in *cat*
 e = short *e* as in *bet*
 i = short *i* as in *sip*
 ah = short *o* as in *not*
 u = short *u* as in *put*
 uh = the short vowel sound in *above*, *chicken*, *complete*, *stadium* (This sound, called a *schwa*, can be made by any vowel.)

Blended vowel sounds

ai = the sound in *air*
 ar = the sound in *car*
 aw = the sound in *fawn*
 or = the sound in *floor*
 ow = the sound in *crowd*
 oy = the sound in *oil*
 ur = the sound in *germ*
 yoo = the sound in *cute*

Special consonant sounds

j = *j* or soft *g* (as at the beginning of *gentle*)
 k = *k* or hard *c* (as at the beginning of *cut*)
 ks = *x* (as at the end of *wax*)
 kw = *qu* (as at the beginning of *quit*)
 s = *s* or soft *c* (as at the beginning of *city*)
 sh = *sh* (as at the beginning of *show*)
 th = *th* (as at the beginning of *this* or the end of *path*)
 zh = the sound in *measure* or *illusion*

Capital letters are used to show which part or parts of the word should be emphasized (spoken most strongly). For example, the word *jaundice* is pronounced JAWN-dis. The emphasis is on the first syllable. The word *echocardiogram* is pronounced EK-oh-KAR-dee-oh-gram. The first and third syllables are both emphasized.

Note: Pronunciations in this book are based on pronunciations listed in reputable medical dictionaries. There may be additional correct pronunciations that are not included in this book. Check with your instructor if you are not sure about a pronunciation.

Term 3

4. List medical terms and abbreviations related to the respiratory system

Table 7-1 lists combining forms used to build medical terms related to the structure and function of the respiratory system.

ROOT WORDS	
COMBINING FORM	MEANING
aer/o	air, gas
alveol/o	alveolus
bronchiol/o	bronchiole
bronch/o, bronchi/o	bronchus
epiglott/o	epiglottis (structure that covers the larynx during swallowing so that food and drink do not enter the airway)
laryng/o	larynx
lob/o	lobe

muc/o	mucus
nas/o	nose
or/o	mouth
ox/i, ox/o	oxygen
pharyng/o	pharynx
phon/o	voice, sound
pleur/o	pleura
pneum/o, pneumon/o	air, lung
pulm/o, pulmon/o	lung
rhin/o	nose
sinus/o	sinus
spir/o	to breathe, breathing
thorac/o	chest (thorax)
trache/o	trachea

Table 7-1. Combining forms of roots related to the respiratory system.

Table 7-2 lists diseases, disorders, and general terminology related to the respiratory system. It includes terms from this chapter and extra terms you may wish to learn or your teacher may assign for you. In general, if a word part can be considered either a prefix or a root/combining form, these tables show the **root** color coding. Terms that are not built from word parts, or that cannot be clearly understood based on their parts, do not have word parts listed.

DISEASES, DISORDERS, AND GENERAL TERMS		
TERM	WORD PARTS	MEANING
acute respiratory distress syndrome		a life-threatening condition in which the lungs fill with fluid, and oxygen and carbon dioxide cannot be exchanged effectively; also called ARDS
anosmia (a-NAHZ-mee-uh)	an- = not, without -osmia = smell	lacking the ability to smell; loss of the sense of smell
anoxia (a-NAHK-see-uh)	an- = not, without ox/o = oxygen -ia = condition	a condition in which there is no oxygen received from the air inhaled; complete oxygen deprivation
aphonia (ay-FOH-nee-uh)	a- = not, without -phonia = voice, sound	lacking the ability to produce sound; having no voice
apnea (AP-nee-uh)	a- = not, without -pnea = breathing	the absence of breathing

DISEASES, DISORDERS, AND GENERAL TERMS		
TERM	WORD PARTS	MEANING
asphyxia (as-FIK-see-uh)		a condition in which there is a lack of oxygen intake; can lead to unconsciousness or death if not treated promptly; also called <i>suffocation</i>
aspiration (as-pi-RAY-shun)		the inhalation of food, drink, or foreign material into the lungs
asthma (AZ-muh)		a chronic inflammatory disease that makes it difficult to breathe and causes coughing and wheezing
atelectasis (AT-uhl-EK-tuh-sis)	atel/o = incomplete -ectasis = dilation, expansion	the collapse of one or more lobes of a lung
bradypnea (BRAYD-ip-NEE-uh or BRAD-ip-NEE-uh)	brady- = slow -pnea = breathing	slow respirations
bronchiectasis (brahn-kee-EK-tuh-sis)	bronchi/o = bronchus -ectasis = dilation, expansion	a condition in which the bronchial tubes are abnormally enlarged, causing chronic coughing, thick sputum, recurrent pneumonia, and weight loss
bronchitis (brahn-KYT-is)	bronch/o = bronchus -itis = inflammation	an irritation and inflammation of the lining of the bronchi
bronchospasm (BRAHN-koh-spazm)	bronch/o = bronchus -spasm = sudden, involuntary movement	narrowing of the bronchi caused by sudden, involuntary contractions of the smooth muscle tissue within the bronchi
Cheyne-Stokes (chayn stohks) respiration		alternating periods of slow, irregular breathing and rapid, shallow respirations, along with periods of apnea
chronic obstructive pulmonary disease		a chronic, progressive, and incurable lung disease that causes difficulty breathing, weakness, and a high risk of lung infections
clubbing		a condition in which the tips of the fingers or toes are rounded and enlarged and the nails turned downward due to chronic low blood oxygen
COVID-19/coronavirus disease		a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and transmitted through droplets and airborne particles produced by an infected person; often characterized by respiratory symptoms
croup (kroop)		an infection of the upper airway usually caused by a virus that causes problems with breathing and a barking cough
cyanosis	cyan/o = blue -osis = abnormal condition	a blue or gray discoloration of skin or mucous membranes caused by lack of oxygen
cystic fibrosis (SIS-tik fy-BROH-sis)		a hereditary disease in which the body produces thick mucus resulting in severe congestion within the lungs, pancreas, and intestines
diphtheria (dif-THEER-ee-uh)		a highly contagious bacterial infection causing inflammation and the formation of false mucous membranes in the throat, making swallowing and breathing difficult

DISEASES, DISORDERS, AND GENERAL TERMS		
TERM	WORD PARTS	MEANING
infant respiratory distress syndrome		a disorder almost always affecting premature newborns and caused by lack of a substance called <i>surfactant</i> , which is needed to keep the lung airways open; also called <i>hyaline membrane disease</i>
influenza (IN-floo-EN-zuh)/flu		a respiratory illness caused by a virus; common in the fall and winter months
laryngitis (lair-in-JYT-is)	laryng/o = larynx -itis = inflammation	inflammation of the larynx caused by infection, irritation, or overuse of the voice
Legionnaires (lee-juhn-AIRZ) disease		a type of pneumonia spread through the inhalation of water droplets containing a type of bacteria called <i>Legionella</i>
lung cancer		the growth of abnormal cells or tumors in the lungs
nasopharyngitis (NAY-zoh-fair-in-JY-tis)	nas/o = nose pharyng/o = pharynx -itis = inflammation	inflammation of the nasal passages and the pharynx, as in the common cold
obstructive sleep apnea	a- = not, without -pnea = breathing	a breathing disorder in which a person repeatedly stops breathing during sleep
orthopnea (or-THAHP-nee-uh)	orth/o = straight -pnea = breathing	shortness of breath when lying down that is relieved by sitting up straight
pertussis (pur-TUHS-is)		a contagious bacterial infection, usually affecting children, that first causes cold-like symptoms and later causes prolonged, sometimes violent, coughing fits; also called <i>whooping cough</i>
pharyngitis (fair-in-JYT-is)	pharyng/o = pharynx -itis = inflammation	inflammation of the pharynx; also called a <i>sore throat</i>
pleural effusion (PLOOR-uhle-FYOO-zhuhn)	pleur/o = pleura -al = pertaining to	a condition in which excess fluid accumulates in the pleural space
pleural friction rub	pleur/o = pleura -al = pertaining to	an abnormal rasping or grating sound during respiration that is caused by the layers of the pleura rubbing together
pleurisy (PLOOR-ris-ee)	pleur/o = pleura -isy = condition	inflammation of the pleurae; also called <i>pleuritis</i>
pneumoconiosis (NOO-moh-koh-nee-OH-sis)	pneum/o = air, lung coni/o = dust -osis = abnormal condition	a disease caused by inhalation of dust or other irritants; it is one type of a condition called <i>interstitial lung disease</i>
<i>Pneumocystis jirovecii</i> pneumonia (noo-moh-SIS-tis jir-OH-ve-sy noo-MOHN-yuh)	pneumon/o = air, lung -ia = condition	a fungal infection of the lungs that most commonly affects people who are immunocompromised
pneumonia	pneumon/o = air, lung -ia = condition	a bacterial, viral, or fungal infection that causes acute inflammation in lung tissue, causing fever, chills, cough, greenish sputum, chest pains, and rapid pulse
pneumothorax (noo-moh-THOR-aks)	pneum/o = air, lung -thorax = chest	a condition in which air is in the pleural space

DISEASES, DISORDERS, AND GENERAL TERMS		
TERM	WORD PARTS	MEANING
tachypnea (TAK-ip-NEE-uh)	tachy- = fast -pnea = breathing	rapid respirations
tonsillitis (TAHN-sil-Y-tis)	tonsill/o = tonsil -itis = inflammation	inflammation of the tonsils
tuberculosis (too-bur-kyoo-LOH-sis)		a highly contagious disease caused by a bacterium, <i>Mycobacterium tuberculosis</i> , that is carried on tiny particles suspended in the air
upper respiratory infection		a viral or bacterial infection of the nose, sinuses, or throat; a cold is one example
wheeze (hweez)		an abnormal, high-pitched, whistling lung sound; occurs most often during expiration, but severe wheezes are heard during both inspiration and expiration

Table 7-2. Conditions and general terminology related to the respiratory system.

Table 7-3 lists treatments and procedures related to the respiratory system. It includes terms from

this chapter and extra terms you may wish to learn or your teacher may assign for you.

DIAGNOSTIC AND THERAPEUTIC PROCEDURES		
TERM	WORD PARTS	MEANING
arterial (ar-TEER-ee-uhl) blood gas	arteri/o = artery -al = pertaining to	a test that checks levels of carbon dioxide and oxygen in arterial blood; it also checks the acidity (pH level) of the blood
artificial airway		any tube inserted into the respiratory tract to maintain or promote breathing
bilevel positive airway pressure device		a machine that assists with breathing and prevents episodes of apnea by delivering pressurized air at two different pressures—one for when a person is inhaling and one for exhaling; also called <i>BiPAP</i>
bronchodilator (BRAHN-koh-DY-layt-uhr)	bronch/o = bronchus -dilator = something that enlarges or expands	a medication that expands the passages of the lungs
bronchoplasty (BRAHN-koh-PLAS-tee)	bronch/o = bronchus -plasty = surgical repair	surgical repair of the bronchus/bronchi
bronchoscopy (brahn-KAHS-kuh-pee)	bronch/o = bronchus -scopy = process of visually examining	examination of the bronchus/bronchi using a bronchoscope, or a thin tube with a light and video camera, inserted through the nose or mouth and into the lungs
chest tube		a hollow drainage tube that is inserted into the chest to drain air, blood or other fluid, or pus that has collected inside the pleural cavity
continuous positive airway pressure device		a machine that assists with breathing and prevents episodes of apnea by delivering a stream of pressurized air; also called <i>CPAP</i>

DIAGNOSTIC AND THERAPEUTIC PROCEDURES		
TERM	WORD PARTS	MEANING
rhinoplasty (RY-noh-plas-tee)	rhin/o = nose -plasty = surgical repair	the surgical repair of the nose, often for cosmetic purposes; the cosmetic procedure is often called a <i>nose job</i>
septoplasty (SEP-toh-plas-tee)	sept/o = wall -plasty = surgical repair	the surgical repair of the nasal septum, or the wall between the nasal passages, to correct a deviated septum
sinuplasty (SY-nyoo-plas-tee)	sinu- = sinus -plasty = surgical repair	the surgical repair of the sinuses
spirometry (spy-RAHM-e-tree)	spir/o = to breathe, breathing -metry = process of measuring	the measurement of a person's breathing, including how much air enters and leaves the lungs
sputum specimen		a sample of thick mucus coughed up from the lungs, collected to test for pathogens or to monitor chronic illnesses such as tuberculosis
suctioning		the removal of respiratory excretions using a suction tube or device
thoracotomy (thoh-rak-AHT-uh-mee)	thorac/o = chest -tomy = surgical incision	a surgical incision in the chest wall
throat culture		a test performed on a specimen taken from the back of the oropharynx to check for the presence of pathogens such as streptococci
tracheostomy (tray-kee-AHS-tuh-mee)	trache/o = trachea -stomy = surgical creation of an opening in the body	a surgically created opening through the neck into the trachea
tuberculin skin test (too-BUR-kyoo-lin)		the intradermal injection of tuberculin purified protein derivative (PPD) to determine if a person has been exposed to tuberculosis; also called the <i>Mantoux test</i>

Table 7-3. Procedures related to the respiratory system.

Table 7-4 includes common abbreviations related to the respiratory system. Abbreviations often vary between facilities and providers. They must always be used with care. Misunderstood abbreviations can cause medical errors. If ever there is any question about the meaning of an abbreviation, it should be confirmed with a supervisor.

COMMON ABBREVIATIONS	
ABBREVIATION	MEANING
ABG	arterial blood gas
ARDS	acute respiratory distress syndrome
BiPAP	bilevel positive airway pressure

BVM	bag valve mask
C&S	culture and sensitivity (a test to identify microorganisms in a specimen)
CAP	community-acquired pneumonia
CF	cystic fibrosis
CO ₂	carbon dioxide
COPD	chronic obstructive pulmonary disease
COVID-19	coronavirus disease 2019
CPAP	continuous positive airway pressure
CPR	cardiopulmonary resuscitation
CXR	chest x-ray

COMMON ABBREVIATIONS	
ABBREVIATION	MEANING
DTaP	diphtheria, tetanus, pertussis vaccine (infants and young children)
ENT	ear, nose, and throat
ET	endotracheal
IRDS	infant respiratory distress syndrome
LPM	liters per minute
MDI	metered-dose inhaler (used for asthma treatment)
MDR-TB	multidrug-resistant tuberculosis
O ₂	oxygen
OSA	obstructive sleep apnea
PE	pulmonary embolism
PFTs	pulmonary function tests
PJP	<i>Pneumocystis jirovecii</i> pneumonia
PPD	purified protein derivative (test for tuberculosis)
RR	respiratory rate
RRT	registered respiratory therapist
RSV	respiratory syncytial virus
SARS	severe acute respiratory syndrome
SIDS	sudden infant death syndrome
SOB	shortness of breath
TB	tuberculosis
Tdap	tetanus, diphtheria, and pertussis (older children and adults)
URI	upper respiratory infection
VAP	ventilator-acquired pneumonia

Table 7-4. Abbreviations related to the respiratory system.

Knowledge Checkpoint

1. Define each combining form. Then list a medical term that includes the combining form.

laryng/o

nas/o

thorac/o

pulmon/o

bronchi/o

2. Match the following terms with their definition.

___ dyspnea

___ aphonia

___ eupnea

___ hypoxia

___ anoxia

___ anosmia

___ bradypnea

___ epistaxis

___ hypercapnia

___ asphyxia

___ dysphonia

___ hemoptysis

(A) medical term for a nosebleed

(B) coughing up blood

(C) slow respiratory rate

(D) lack of oxygen in the blood

(E) lacking the ability to, or sense of, smell

(F) lacking the ability to produce sound;
having no voice

Case Study

Connie is studying to become a medical assistant. She has an exam about the respiratory system next week. She must learn normal respiratory rate ranges, the names of different lung sounds, and the different swabs used for diagnostic testing.

1. Connie is reviewing swabs and notes that there is a nasal swab, a nasopharyngeal swab, and a throat swab taken from the oropharynx. Draw lines to divide each of the terms for swabs into parts. Define each word part, then describe where each swab is used.

nasal

nasopharyngeal

oropharynx

2. What diseases/conditions are each of the swab types used to test for?

nasal

nasopharyngeal

oropharynx

3. Connie's review sheet asks which patient is more likely to have a respiratory rate faster than 20 breaths per minute, a middle-aged man or a 2-year-old girl. Which answer is correct?

What is the normal respiratory rate for an adult?

4. Connie's review also includes auscultation of lung sounds. What tool does a provider use to auscultate lung sounds?

Describe each of the abnormal lung sounds a provider may ask Connie to document during auscultation.

crackles or rales

rhonchi

wheezes

Chapter Review

1. List two functions of the respiratory system.

2. What are the medical terms for the nostrils, the throat, and the voice box?

3. Which two chronic lung diseases are grouped under the term *COPD*?

4. Write the medical term for a collapsed lung.

Draw lines to divide the term you wrote above. Define each word part, then define the term.

5. Define the following procedures:

laryngoscopy

pulmonary function tests

postural drainage

mechanical ventilation

tracheostomy

sion is used to check for air or fluid in the abdomen. A rectal exam may also be performed.

Imaging and Diagnostic Tests

An *abdominal ultrasound* uses sound waves to produce images of the inside of the abdomen. It is a noninvasive way to visualize organs and structures and to assess blood flow in the abdominal cavity (Fig. 9-3).



Fig. 9-3. An abdominal ultrasound is a noninvasive way to view the organs and structures in the abdominal cavity, as well as to assess blood flow.

Barium studies are a type of x-ray that may create still or video images. They allow the provider to see the upper or lower GI system at work. The patient either drinks a thick beverage or is given an enema (a solution introduced into the rectum) containing barium. This chemical makes it easier to see the digestive tract in the x-ray.

Endoscopy is a general term for the visual examination of structures inside the body. The term is also often used to refer to a procedure in which a scope is inserted through the mouth into the esophagus and stomach to view the structures and lining of the digestive tract. This may also be called an *upper endoscopy*. For a *colonoscopy*, the scope is inserted through the anus into the rectum and colon to visually examine the lower digestive tract.

Proctoscopy is another form of visual examination. A *proctoscope* is not the kind of scope used

for an upper endoscopy or colonoscopy. Instead, it is a short, hollow tube with a light and a viewing lens. During proctoscopy, air is pushed into the colon and the proctoscope is inserted in the anus. This allows the provider to view the rectum.

Stool specimens are sometimes collected to test for blood, pathogens, fat (an indication that nutrients are not being absorbed properly), and for other things, such as worms or amoebas. *Fecal occult blood testing* is used to detect blood in the stool, which indicates bleeding in the digestive tract. Bleeding may be caused by colon cancer. Worms (also called *helminths*) and amoebas can be detected with an ova and parasites test. This is sometimes called an *O&P* test.

Terminology Tip

Endoscopy

The suffix **-scopy** means *process of visually examining*. The visual examination of the gastrointestinal system often involves the use of different types of endoscopes. An *endoscope* is a thin, usually flexible tube with a light and camera that can be inserted into the body. For GI system procedures, it is usually inserted through the mouth, nose, or anus.

Terms to describe different forms of endoscopy can be built using roots for the body systems that are viewed. A *colonoscopy*, **colon/o** + **-scopy**, is a common test to examine the colon. A *sigmoidoscopy* only examines the sigmoid colon, which is the lower part of the colon.

Sometimes more than one part of the gastrointestinal system is examined. *Esophagogastroduodenoscopy* examines the esophagus (**esophag/o**), the stomach (**gastr/o**), and the duodenum (**duoden/o**), which is the first part of the small intestine. Because this term is so long and difficult to say, the procedure is often called *EGD* or *upper endoscopy*. Sometimes it is simply called an *endoscopy*.

Treatment Procedures

Injury, illness, or inactivity may cause a loss of normal bowel function. *Bowel retraining* is a process that helps a patient reestablish normal bowel function.