

Building a Medical Vocabulary

with Spanish Translations

NINTH EDITION

Peggy C. Leonard

ELSEVIER



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with Spanish Translations

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Peggy C. Leonard, MT, MEd

Fort Myers, Florida

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BUILDING A MEDICAL VOCABULARY WITH SPANISH TRANSLATIONS,
NINTH EDITION

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PRONUNCIATION GUIDE

Pronunciation of medical terms is located in an alphabetical list at the end of each chapter.

Phonetic spelling with few marks is used for simplicity.

There are three basic rules:

1. The syllable that gets the greatest stress is **boldfaced**. Single syllable words have no stress mark.
2. Long vowels are marked with a straight line above them.
3. Short vowels are unmarked.

See to the right for consonant sounds, and individual and combined vowel sounds.

PRONUNCIATION GUIDE

Vowels

ā	mate	a	bat
ē	beam	e	met
ī	bite	i	bit
ō	home	o	got
ū	fuel	u	but
uh	sofa	aw	all
oi	boil	ou	fowl
oo	boom	oo	book

Consonants

b	book	m	mouse	ch	chin
d	dog	n	new	ks	six
f	fog	p	park	kw	quote
g	get	r	rat	ng	sing
h	heat	s	sigh	sh	should
j	jewel, gem	t	tin	th	thin, than
k	cart, pick	w	wood	zh	measure
l	look	z	size, phase		

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The production of this book would not be possible without the producers, editors, proofreaders, and all others whose expertise has produced a book that I am sure will be valuable to students in their search for understanding of the medical language. Linda Woodard, Content Strategist, has provided excellent oversight and major decision making. Diane Chatman, Senior Content Development Specialist, has coordinated the many areas that are involved in publish-

ing a textbook, patiently finding what is needed, and keeping us all where we need to be at the right time. Designer, Paula Catalano, has provided a functional, as well as a beautiful book. After all of the material, illustrations, and design were finalized, Senior Project Manager, Celeste Clingan, coordinated the efforts of producing an attractive and valuable book to which students will refer for years to come!

Words cannot adequately express my gratitude to instructional consultant, Carolyn Kruse, who has provided humor, steadfast encouragement, and herculean efforts during the preparation of many editions of this book, as well as *Quick and Easy Medical Terminology*.

Family members are often the only ones who fully understand the time and labor dedicated by the author and others involved in producing a textbook, so not only to my own family but also to the other families, I extend deep appreciation.

Peggy C. Leonard, MT, MEd



DEDICATED TO
the instructors and students
whose enthusiasm and influence
have helped shape this book
and to my family
who support me in so many ways

How To Use This Book

The ninth edition of *Building a Medical Vocabulary* is now even more interactive! It can be used in a medical terminology course or as self-paced material for anyone pursuing a career in the health professions.

The Most Interactive Text on the Market!

After learning the meaning of word parts and how they are combined using a logical, step-by-step learning method, you begin recognizing and writing new terms in the first chapter! *Immediate involvement and feedback* within the programmed method provide motivation not found in other systems.

Text Organization

Strong Foundation: Chapters 1 through 4

Chapters 1 through 4 provide a foundation for chapters about the body systems. Be sure to study the first four chapters *in sequence*, because each chapter builds on the material learned in the previous chapter.

Body Systems (Chapters 5 through 14) Can Be Studied in Any Sequence

Because you can easily change the sequence of the body systems chapters, the book adapts well for use in conjunction with anatomy, physiology, or introductory medical science courses. *The organization of systems chapter material reflects the medical process: anatomy and physiology, diagnostic tests and procedures, pathologies, and surgical and therapeutic interventions.*

Review: Comprehensive Review Chapter and Comprehensive Glossary/Index

Use the Index/Glossary to review terms for the big exams. To prepare for the final, complete the Self Test after Chapter 14; it reviews the entire text!

Appendices

Appendices include abbreviations, word parts, Spanish translations, and exercise answers.

Chapter Features

Key Point Boxes

Key points help you focus on the most important material.



KEY POINT Two important types of circulation occur each time the heart beats:

- **Systemic circulation:** The general circulation that carries oxygenated blood from the heart to the tissues of the body and returns the blood with much of its oxygen exchanged for carbon dioxide back to the heart
- **Pulmonary circulation:** The circuit that the blood makes from the heart to the lungs for the purpose of ridding the body of carbon dioxide and picking up oxygen

systemic

The general circulation that transports oxygen to all tissues of the body is _____ circulation.

5-4 All tissues of the body, including heart tissue and lung tissue, receive oxygen via the systemic circulation. However, you will need to remember that pulmonary circulation provides the means for the blood to take on oxygen from air that we take into our lungs.



KEY POINT The naming of pulmonary arteries and veins is different from that of other arteries and veins in the

body. In general, arteries transport blood rich in oxygen, and veins transport blood that has had much of its oxygen removed.

Beyond the Blueprint

Information beyond the usual realm helps anchor word memory.

cardiopulmonary

irreversible cerebral and cardiac damage resulting from anoxia. CPR is an abbreviation for _____ resuscitation.

► **BEYOND THE BLUEPRINT** Compression-only (or hands-only) CPR is accepted by the American Heart Association as an alternative for responders who are unwilling, unable, or untrained (or no longer able) to perform full CPR.

pacemaker

5-45 You learned earlier that the SA node is called the pacemaker of the heart. A second meaning of pacemaker is an artificial **cardiac pacemaker**, a small battery-powered device that is generally used to increase the heart rate by electrically stimulating the heart muscle. Depending on the patient's need, a cardiac pacemaker may be permanent or temporary and may fire only on demand or at a constant rate (Figure 5-21). Severe bradycardia may indicate the need for an artificial cardiac _____.

Caution: Students at Work

Caution boxes help you distinguish between terms that look alike but have different meanings.



Be Careful with These!

bradycardia vs. tachycardia
diastole vs. systole

hypertension vs. hypotension
vasodilation vs. vasoconstriction

lymphang(o) vs. lymphaden(o)

More, More, More Exercises

Know if you understand a section before moving ahead. "Chunking" exercises chop material into manageable pieces.

SELECT IT!

EXERCISE 2

Write either combining form or word root after each of the following word parts: (Number 1 is done as an example.)

- | | |
|--|-------------------|
| 1. aden(o) _____ <i>combining form</i> | 5. duoden _____ |
| 2. bil(i) _____ | 6. electr _____ |
| 3. cyan _____ | 7. gloss(o) _____ |
| 4. derm(a) _____ | 8. hemat _____ |

(Use Appendix IV to check your answers.)

BUILD IT!

EXERCISE 5

Use the rule you just learned to build terms, knowing that ot(o) means ear.

Combining Form + Suffixes

1. ot(o) + -ic = _____
2. ot(o) + -itis = _____
3. ot(o) + -logy = _____
4. ot(o) + -plasty = _____
5. ot(o) + -rrhea = _____
6. ot(o) + -tomy = _____

Term and Meaning

- | | |
|-------|------------------------------|
| _____ | , pertaining to the ear |
| _____ | , inflammation of the ear |
| _____ | , study of the ear |
| _____ | , plastic surgery of the ear |
| _____ | , discharge from the ear |
| _____ | , incision of the ear |

CIRCLE IT!

EXERCISE 9

Circle the eponyms in the following list.

- | | |
|---|--|
| 1. Alzheimer disease vs. wasting disease | 4. cardiac catheter vs. Foley catheter |
| 2. Beckman thermometer vs. oral thermometer | 5. electronic fetal monitor vs. Holter monitor |
| 3. _____ vs. _____ | |

Making Connections, Describing Differences, Opting for Opposites

Compare-and-contrast exercises improve your ability to communicate in the specialized language of health care.

Making Connections

XIII. Describe the relationship of these terms.

1. myelocytes and myeloblasts _____
2. vertebrosteral and sternovertebral _____

Describing Differences

XIV. In addition to spelling, describe at least one difference in the following:

1. diaphysis and epiphysis _____
2. ligaments and tendons _____

Opting for Opposites

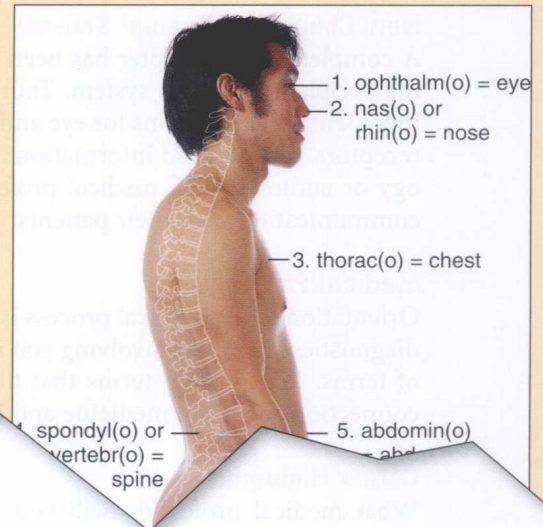
NEW! Expanded Art Program Has Even More Full-Color Illustrations and Photos

Full-color art and photos enhance learning and make difficult concepts easier to understand.

Combining forms for six body structures are shown. Write the word root for each body structure that is labeled. (Number 1 is done as an example.)

1. ophthalm(o) _____ *ophthalm*
2. nas(o) _____, rhin(o) _____
3. thorac(o) _____
4. spondyl(o) _____, vertebr(o) _____
5. abdomin(o) _____
6. chir(o) _____

(Use Appendix IV to check your answers.)



WRITE IT!

EXERCISE 1

Mini-Glossaries

Rapid-fire recall of word parts in condensed “bytes” change the pace plus reinforce earlier learning.

Infections

Infections of the CNS include the following diseases:

botulism An often fatal form of food poisoning, most often from improperly canned food, caused by the toxin of a bacterium, *Clostridium botulinum*, which is toxic to nervous tissue and causes paralysis of both voluntary and involuntary motor activity. Symptoms usually appear 12 to 36 hours after eating contaminated food.

cerebellitis Inflammation that is confined to the cerebellum

encephalitis Inflammation of the brain tissue, often caused by a virus, usually having gained access to the blood-

poliomyelitis An acute viral disease that attacks the gray matter of the spinal cord and parts of the brain; can be asymptomatic, mild, or paralytic; can be prevented by immunization; informally called *polio* (G. *polios*, gray)

rabies An acute, often fatal, disease of the CNS transmitted to humans by infected animals. Without medical intervention and possibly the use of vaccine, coma and death are likely; obsolete name is **hydrophobia**, the name given after observation that rabid animals avoid water (because paralysis prevents them from being able to

NEW! Expanded Index/Glossary

Now with more terms than ever, the Index/Glossary serves as a concise dictionary of medical terms. It is a concise study tool for a final exam and an excellent reference once you have completed the text.

antipruritic (an-tē-prō-rit-ik) relieving or preventing itching; an agent that relieves or prevents itching. 524	arthroclasia (ahr-thrō-klā-zuh) the surgical breaking down of an ankylosis to secure free movement. 428
antipsychotic (an-tē-sī-kot-ik) drugs that are effective in the treatment of psychosis. 471	arthrodesis (ahr-thrō-dē-sis) the surgical fixation of a joint. 427
antipyretic (an-tē-pī-ret-ik) relieving or reducing fever; an agent that relieves or reduces fever. 112, 470	arthrodynia (ahr-thrō-din-ē-uh) pain in a joint. 422
antiseptic (an-ti-sep-tik) pertaining to asepsis; a substance that inhibits the growth and development of microorganisms without necessarily killing them. 68, 524	arthrogram (ahr-thrō-gram) a radiographic record after introduction of opaque contrast material into a joint. 411
antisocial behavior (an-tē-sō-shul bē-hāv-yur) acts against the rights of others. 467	arthrography (ahr-throg-ruh-fē) radiography of a joint after injection of opaque contrast material. 411
antispasmodic (an-te-spaz-mod-ik) relieving spasm, usually of smooth muscle; an agent that relieves muscle spasms. 314	arthrolysis (ahr-throl-i-sis) destruction of a joint; the operative loosening of adhesions in an ankylosed joint. 428
antithyroid drug (an-tē-thī-roid drug) medication that counteracts the functioning of the thyroid. 558	arthropathy (ahr-throp-uh-thē) any joint disease. 422
antitussive (an-tē-tus-iv) relieving or preventing cough; an agent that relieves or prevents cough. 230	arthroplasty (ahr-thrō-plas-tē) plastic surgery of a joint or joints. 427
anuria (an-ū-rē-uh) complete suppression of urinary secretion by the kidneys. 302	arthrosclerosis (ahr-thrō-skluh-rō-sis) hardening of the joints. 422
anuric (an-ū-rik) less than 100 mL of urine output per day. 302	arthroscope (ahr-thrō-skōp) an endoscope for examining the interior of a joint and for carrying out diagnostic and therapeutic procedures within the joint. 412, 412f
anus (ā-nus) the distal or terminal opening of the alimentary canal. 247	arthroscopy (ahr-thros-kuh-pē) examination of the interior of a joint with an arthroscope. 412f
aorta (ā-or-tuh) the main trunk from which the systemic arterial system proceeds. 163, 168f	arthrotomy (ahr-throt-uh-mē) surgical incision of a joint. 427

New Chapter on Special Senses!

A completely new chapter has been added to this edition, featuring the special senses as part of the peripheral nervous system. Thorough coverage of anatomy, diagnostic tests, pathologies and therapeutic interventions for eye and ear are included—plus explanations of touch, taste, and smell receptors. The detailed information is especially important for students interested in ophthalmology or audiology. All medical professionals will use this terminology about sensory issues for communication with their patients.

Medical Process

Orientation to the medical process is your reality check on how terms fit into patient presentation, diagnostics, and care, involving you in the center of the medical arena by understanding its world of terms. Recognizing terms that fit into each part of the medical process helps you make the connections between medicine and its terminology.

Career Highlights

What medical profession will you choose? Possible health-career options and related website resources are included.

A Career as an Echocardiographer



Meet Marsha Brown, an echocardiographer who works at a cardiologist's office. Marsha is a radiologic technologist who has specialized in echocardiography (echo). Echo is a type of ultrasonography that can show "moving" pictures of the heart during contractions. An ECG is done at the same time as the echo examination, and the results are coordinated to compare heart, Marsha

Boldfaced Terms and Pronunciation

Boldfaced terms are listed at the end of each chapter with their pronunciations; these lists coordinate with the audio files on the Student Evolve web site, so you master pronunciation.

Spanish Terms

Every chapter presents related Spanish terms and Appendix II summarizes all the Spanish terms presented in the text.

End-of-Chapter Self-Tests

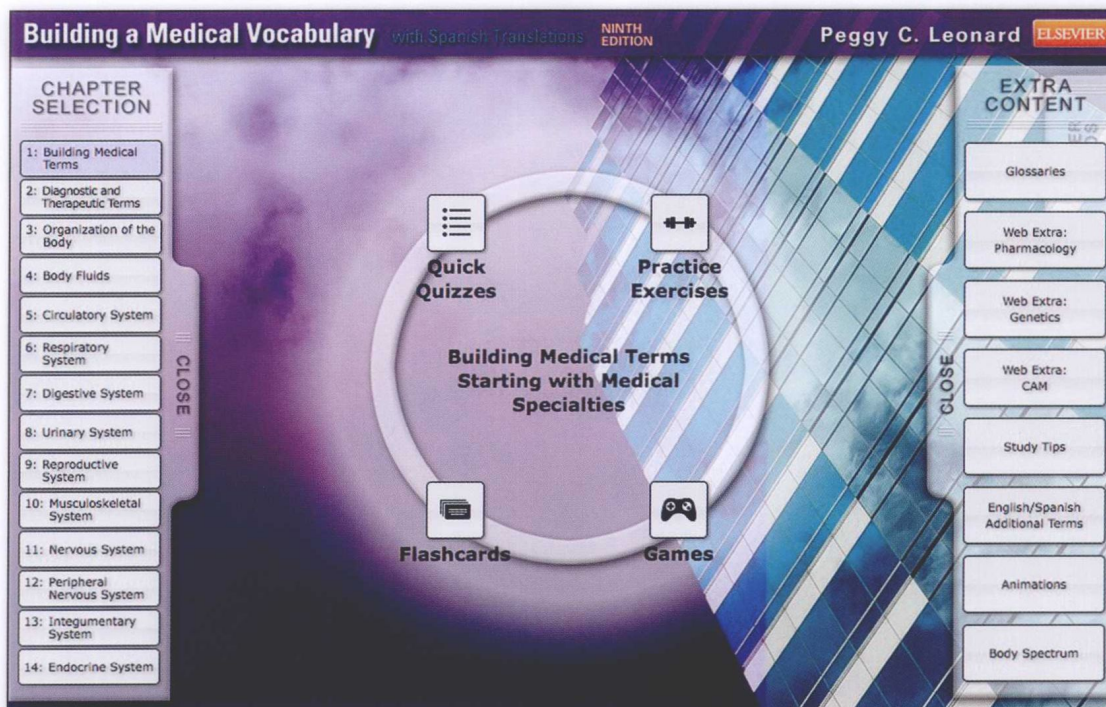
Complete the end-of-chapter self-test and check your answers in Appendix IV to ensure that you understand the material.

Health Care Reports

Practice with real-life documents helps you gain confidence.

Student Evolve Website Features

Games help you rehearse and rapidly recall word parts and term meanings. Additional exercises offer practice. Now you can quiz yourself and study word parts on the go with new mobile-optimized Quick Quizzes and Flash Cards!



The student Evolve website also includes audio terms for each chapter, electronic flashcards, animations of disorders and therapies, Spanish audio glossary, anatomy coloring book, genetics terminology, complementary and alternative medicine glossary, study tips, and additional links.

Don't Be Intimidated by Long Drug Names

Pharmacology material for each chapter is found on the student website.

Instructor Evolve Website Features

TEACH Materials Including the Instructor's Curriculum Resource

A comprehensive curriculum resource is available to instructors by contacting Elsevier Health Sciences. It includes access to over 2000 questions that can be used to produce your own chapter tests, mid-term exams, and final exams.

The instructor Evolve website includes PowerPoint slides with review questions (quizzes), classroom exercises and handouts, lesson plans, a 2,100-question test bank, and image collection.

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Pharmacology is available on the student Evolve website.

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Building Medical Terms Starting with Medical Specialties



You'll find a career highlight in every chapter, introducing you to professions in which medical terminology is commonly used.

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BLUEPRINT FOR LEARNING MEDICAL TERMINOLOGY

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BMV LIST

ENHANCING SPANISH COMMUNICATION

OBJECTIVES

Basic Understanding

In this chapter you will learn to do the following:

1. Identify the roles of word roots, prefixes, suffixes, and combining forms.
2. Identify examples of combining forms, prefixes, suffixes, and word roots, and recognize them in medical terms.
3. Demonstrate correct usage of the combining vowel by correctly joining word parts to write medical terms.
4. Use the rules in this chapter to write singular and plural forms and to identify eponyms, acronyms, and abbreviations.
5. Use the rules in this chapter to pronounce medical terms correctly.
6. Write the meanings of selected word parts and use them to build and analyze terms.
7. Match the terms for medical specialists with the areas in which they specialize, or write the medical specialties when given the area of expertise.
8. Identify the specialty associated with various medical conditions.
9. List five categories for classifying medical terms that are used in this book.

Greater Comprehension

10. Spell medical terms accurately.
11. Write the meanings of the abbreviations, including those in a health report presented in this chapter.
12. Identify terms as a medical specialty, a specialist, another type of noun, or an adjective.

FUNCTION FIRST

The material in this chapter provides a blueprint for learning medical vocabulary. Using medical specialties (many of which you already recognize) as a foundation, you begin building new terms.

It is important to study material in the order in which it is presented within a chapter. It is also important

to study Chapters 1 through 4 in sequential order, because these early chapters form the foundation for learning material about the body systems in Chapters 5 through 14. Be sure to work all of the exercises, because this helps you retain the material and often provides greater understanding.



KEY POINT You may wonder, "Why are medical words different than everyday language?" Extensive borrowing of medical words from Latin and Greek began about 1500 AD during the Renaissance. As new diseases or treatments were recognized, scientists and physicians often used Greek or Latin to describe the new discoveries, so now the two languages are the origin of more than 90% of the medical terms. Experience has shown that learning Greek and Latin is not necessary if you learn word parts and use them to build a medical vocabulary.

BLUEPRINT FOR LEARNING MEDICAL TERMINOLOGY

1-1 Programmed learning consists of blocks of information, often containing blanks in which you will write answers. After writing an answer, you will check to see if it is correct by comparing your answer with that in the left column, called the *answer column*.

1-2 A frame is a block of information preceded by a number, such as the one you're reading. Each frame is given a separate number, and most frames contain at least one blank in which you will write an answer. After writing your answer in a blank, you will check to see if it is correct.

KEY POINT **Cover the answer column while you are filling in the blanks.** To do this, position the bookmark so that it covers only the answer column. After writing your answer in a blank, check it by sliding the bookmark down just enough to see the answer. (Most are just one word.) When you are not using the bookmark to cover the answer column, use it to mark your place in the book.

frame

1-3 You have just read two frames. Information contained in frames throughout this book will help you learn medical terms. A block of information with a number is called a _____.

Write the answer in the preceding blank, and check it immediately. It is important to write your answer, because writing it will help you to remember it better than if you just think of the answer (Figure 1-1). Always check your answer immediately, and say it aloud if possible. This is especially helpful when you are not familiar with the term. Saying an answer aloud helps you remember it. If you make an error, look back at previous frames to see where you went wrong. Otherwise, you may repeat the error without realizing why it is incorrect.

1-4 This text provides frequent exercises to reinforce what you are learning. Answers are located in Appendix IV. If you are uncertain about pronunciation, check the BMV List at the end of the chapter. When you've completed the material in the chapter, a Self-Test helps integrate what you've learned. (Those answers are also found in Appendix IV.)

**TOOL
TIP!**

Be sure to complete all of the exercises! If you can't complete a blank, you'll see the correct response when you check your answers.

FOUNDATIONS OF WORD BUILDING

building

1-5 Word building is a system of learning the meaning of various word parts to understand and write new words. Because it is impractical to memorize the medical dictionary, you will use a system of word _____ to learn medical terms.

1-6 Pay close attention to spelling. For example, cyt(o) means cell, but cyst(o) means a bladder or sac; incision means to cut into, but excision means to cut out or remove. (When using a computer, be careful with Spell Check, because many medical terms aren't included in its program.) If you mistakenly say, "I sent an electrocardiograph to Dr. Gomez," you are saying that you sent a machine rather than a heart tracing (an electrocardiogram).

KEY POINT **A change of only one letter can result in a different term.** Be careful when writing a term. Example: the ilium is a pelvic bone, and the ileum is part of the small intestine; hydr(o) means water, and hidr(o) means perspiration.

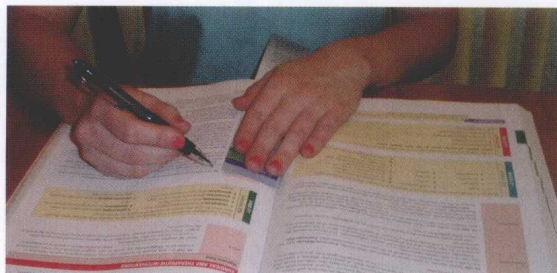



Figure 1-1 It is always important to write your answer because that helps you remember it.

Word Roots, Combining Forms, Prefixes, and Suffixes

1-7 Many medical terms are composed of word parts that have their origins in Greek or Latin. But don't worry; you need only to learn the English translation of Greek or Latin word parts used in medical terms, and you already know some of them (for example, tonsillectomy, tonsillitis, mammogram, appendectomy, arthritis, cardiology, anatomy, physiology, dentist, biology, orthodontist, and chiropractor).

 **KEY POINT** **Word roots, combining forms, prefixes, and suffixes are word parts.** Learning the meaning of these word parts eliminates the necessity of memorizing each new term you encounter. It is important to learn to recognize combining forms, prefixes, and suffixes in terms and how to combine them to write medical terms.

parts

Word roots, combining forms, prefixes, and suffixes are called word _____.

Word Roots

root

1-8 Most words, even ordinary words, have a word root. The word root is the main body of the word. It is usually accompanied by a prefix or suffix or both. Word roots are the building blocks for many terms related to anatomy, diagnosis, and medical procedures. You see by reading this information that most words have a word _____.

TOOL TIP!

Beyond the Blueprint features give extra information to help you anchor your learning with interesting tidbits.

► **BEYOND THE BLUEPRINT** Occasionally you will encounter a word that doesn't seem to fit the rules because it isn't composed of word roots that make sense to you. For example, a cataract, which is an eye condition characterized by loss of transparency of the lens, is named for a Greek word that means waterfall. Perhaps the first physician who observed the condition thought it resembled looking through a waterfall.

WORD ORIGIN

Watch for this clue to tell you the origin of words.
D. German (Deutsch)
G. Greek
I. Italian
L. Latin

Look at the Greek and Latin words and their associated word roots in Table 1-1. By adding prefixes and suffixes, you will soon begin writing medical terms. (Don't be concerned about learning the meaning of the word parts in the early part of Chapter 1 just yet; however, you're expected to remember the word parts beginning with those on page 12. (Don't worry. You'll be reminded!)

1-9 You will sometimes learn two word roots that have the same meaning. Table 1-1 shows both the Greek word root *nephr* for kidney and the Latin word root *ren* for kidney. As a general rule, Latin roots are used to write words naming and describing structures of the body, whereas Greek roots are used to write words naming and describing diseases, conditions, diagnosis, and treatment.

Use this as a guideline only, because you will quickly learn exceptions. For example, both dermal and cutaneous mean *pertaining to the skin* (Figure 1-2). Likewise, both nephric and renal mean *pertaining to the kidney*.

When two medical terms have the same meaning but look very different, it is probably because the origins of the word roots are from two different languages, Greek and _____.

Latin

Table 1-1 Origin of Word Roots

Word Root	Greek or Latin Origin	Use in a Word
nephr	<i>nephros</i> (G., kidney)	nephritis
psych	<i>psyche</i> (G., mind)	psychology
caud	<i>cauda</i> (L., tail)	caudal
or	<i>oris</i> (L., mouth)	oral
ren	<i>renes</i> (L., kidney)	renal
pharmac	<i>pharmakon</i> (G. drug)	pharmacist

Combining Forms

1-10 A vowel (usually “o”) is often inserted between word roots to make the word easier to pronounce. This vowel is called a *combining vowel*. A word root with a vowel attached is called a *combining form* and looks like this: speed(o).

KEY POINT Combining forms will be recognized in this book as word parts that end in an enclosed vowel. In thermometer, the combining form therm(o) is joined with another part of the word, meter. The parentheses are not included when the combining form joins other word parts. In cardiology and gastrology, cardi(o) and gastr(o) are the combining forms.

form

Study Table 1-2 and observe that a combining vowel is added to a word root to write a combining _____.

Table 1-2 Examples of Word Roots and Combining Forms

Word Root	Combining Form	Meaning	Use in a Word
blephar	blephar(o)	eyelid	blepharospasm
cephal	cephal(o)	head	cephalometry
fung	fung(i)	fungus	fungicide
or	or(o)	mouth	oropharynx
path	path(o)	disease	pathology

1-11 Some compound words are composed of two word roots or words. The term *cephalometer* is composed of a word root and a word, cephal and meter. Write the combining form for cephal: _____.

Collarbone and eyelid are examples of two words joined to form a new term.

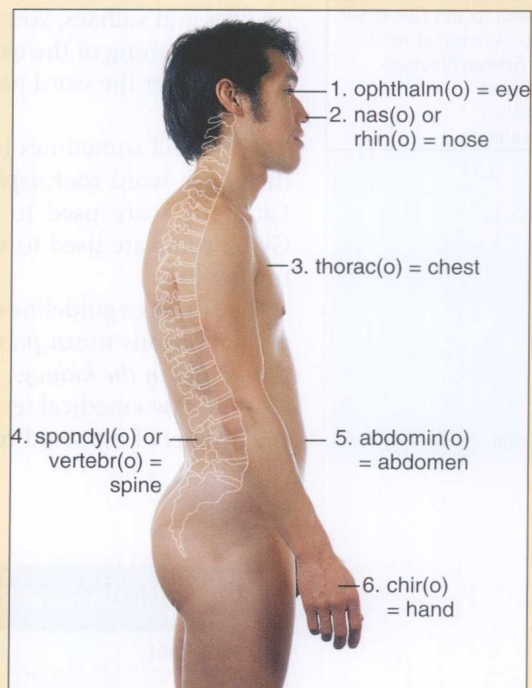
You will learn the combining form for word roots, because word roots are often combined with other word parts. Combining forms act as the foundation for most terms. There are combining forms for all body structures and other nouns.

cephal(o)

Combining forms for six body structures are shown. Write the word root for each body structure that is labeled. (Number 1 is done as an example.)

- ophthalm(o) ophthalm
- nas(o) _____, rhin(o) _____
- thorac(o) _____
- spondyl(o) _____, vertebr(o) _____
- abdomin(o) _____
- chir(o) _____

(Use Appendix IV to check your answers.)



WRITE IT!

EXERCISE 1