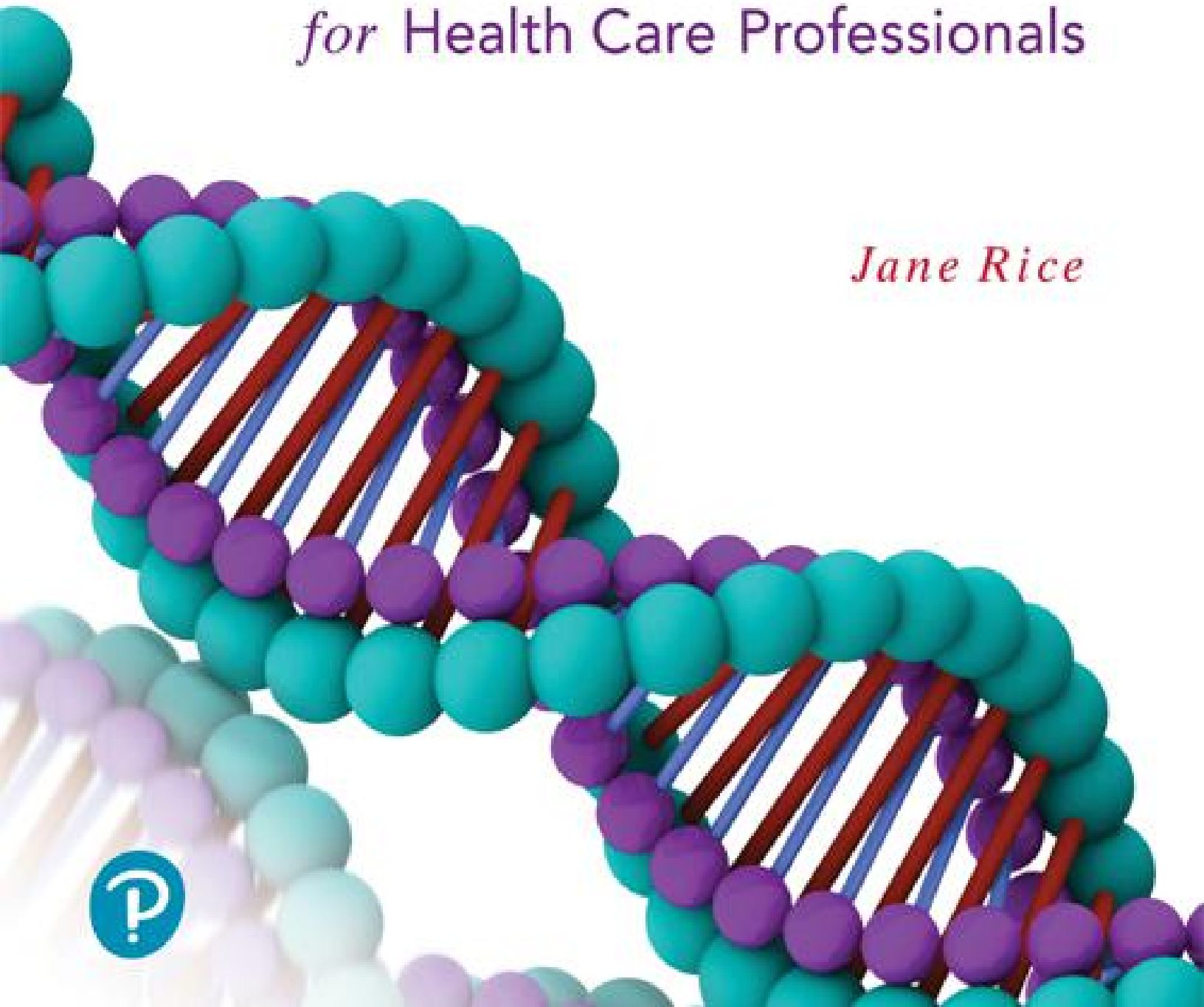
TENTH EDITION

Medical Terminology

for Health Care Professionals

Jane Rice



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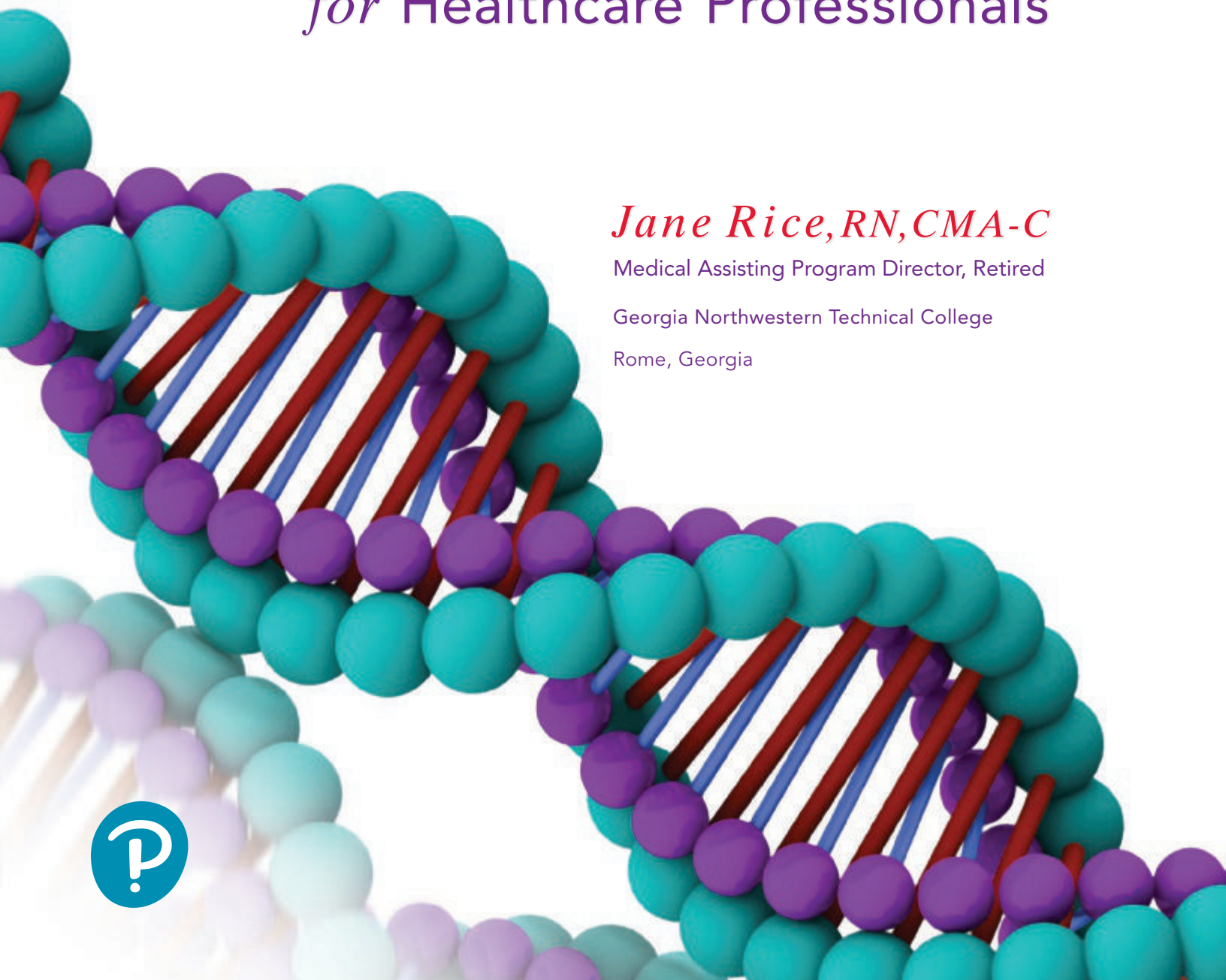

Jane Rice, RN, CMA-C

Medical Assisting Program Director, Retired

Georgia Northwestern Technical College

Rome, Georgia

Dedication

To Charles Larry Rice, my husband and partner in life. In special memory of my parents, Warren Galileo and Elizabeth Styles Justice, and my sister, Betty Sue Nelson.

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Contents *in* Brief

Preface

The 10th edition of *Medical Terminology for Healthcare Professionals* introduces the vocabulary of the art and science of medicine. Chapter 1 shows how to build medical words by using their component parts and how to spell, pronounce, and define medical words. Chapter 2 presents essential suffixes and prefixes that link with word roots and combining forms to build and expand the medical vocabulary. In Chapter 3, the organization of the amazing human body is introduced. In Chapters 4–17, the body systems are presented, working from the outside (skin) to the inside, and from less complex to more complex. Chapter 18 discusses aspects of mental health; it follows the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5), which is the standard classification of mental disorders used by mental health professionals in the United States. Every chapter is built around an alphabetical word list showing how word parts are built, pronounced, and defined. In these Building Your Vocabulary sections, a table of combining forms and word roots that pertain to the chapter being studied are included to assist in learning new component parts.

The text's strengths include:

1. **The Rice Method.** The ease with which students learn medical terminology using the Rice approach has made this text a popular seller, with over 780,000 books in print. It is written in a clear, concise style that focuses on the learner and provides a solid foundation for developing an understanding of the technical language of medicine. All of the information concerning each medical word that you will be introduced to is included in one place: **Building Your Medical Vocabulary**. The medical terminology words are in alphabetical order with a pronunciation guide found beneath the word. Word parts are identified and defined and then the general meaning of the term is described. Prefixes and suffixes are repeated throughout the text while word roots and combining forms are presented according to the system or specialty area to which they relate. To build a medical vocabulary, all you have to do is to recall the word parts that have been learned and link them with the new component parts presented in the next chapter. The word-building technique is unique to this text and, while not complicated, is the key to the classic design and popularity of *Medical Terminology for Healthcare Professionals*.
2. **Accurate and complete coverage of human anatomy and physiology.** This text presents concise coverage of all major body structures and functions, organized by body system. The anatomy and physiology sections have been reviewed by many medical and healthcare professionals and updated according to the offered suggestions.
3. **Study and Review.** These sections, which appear multiple times in each chapter, have been expanded to provide learners with the opportunity to "review as they go." The revised format and types of questions are placed to follow a segment of information so that learners may check their progress before moving on to the next section.

4. **Visually appealing with new art and photos.** In this edition the art collection has increased to approximately 470 images with an updating of corresponding material. Included in the new artwork are examples of "Building Blocks" for the component parts of words. Also a number of new medical photographs have been provided by Jason Smith, MD, a longtime contributor to this text. We are so pleased and excited about supplying more art to enhance the written word. If the statement "a picture is worth a thousand words" can be counted on, then we might say that we have added about 470,000 words to the learning experience!

A Special Feature New to This Edition:

GOOD TO KNOW

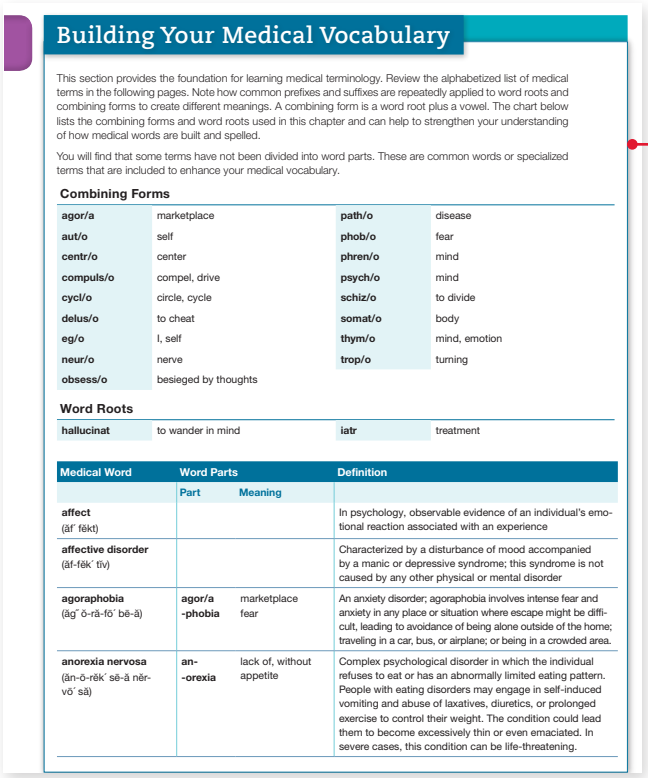
A Note from the Author

A new feature, **GOOD TO KNOW**, brings to light some interesting information about current happenings concerning health and medicine. With the advent of the surge in infectious diseases affecting the United States and the world, it is very good to know and be aware of these conditions. During my lifetime I have seen many infectious diseases all but eliminated, and when they began to appear again, I became most concerned. I was sure it would be **GOOD** for students to know about what is happening in the United States and worldwide with infectious diseases and how to protect themselves and others, and so this new feature was created.

— Jane Rice

Features at a Glance

Let's take a look at what makes *Medical Terminology for Healthcare Professionals* so appealing and reliable as a learning resource.



Building Your Medical Vocabulary

This section provides the foundation for learning medical terminology. Review the alphabetized list of medical terms in the following pages. Note how common prefixes and suffixes are repeatedly applied to word roots and combining forms to create different meanings. A combining form is a word root plus a vowel. The chart below lists the combining forms and word roots used in this chapter and can help to strengthen your understanding of how medical words are built and spelled.

You will find that some terms have not been divided into word parts. These are common words or specialized terms that are included to enhance your medical vocabulary.

Combining Forms

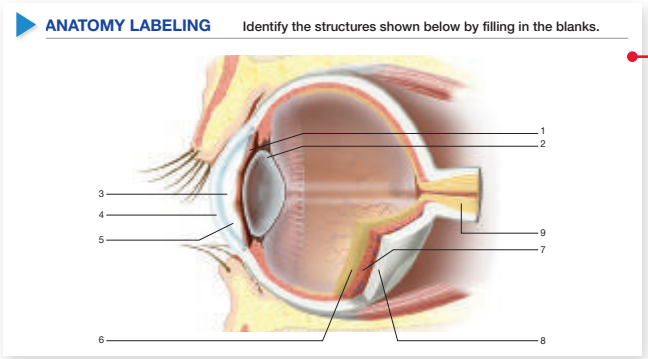
agor/a	marketplace	**path/o**	disease
aut/o	self	**phob/o**	fear
centr/o	center	**phren/o**	mind
compuls/o	compel, drive	**psych/o**	mind
cycl/o	circle, cycle	**schiz/o**	to divide
delus/o	to cheat	**somat/o**	body
eg/o	I, self	**thym/o**	mind, emotion
neur/o	nerve	**trop/o**	turning
obsess/o	besieged by thoughts		

Word Roots

hallucinat	to wander in mind	**iatr**	treatment

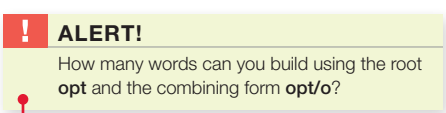
Medical Word	Word Parts		Definition
	Part	Meaning	
affect (ăf´ fĕkt)			In psychology, observable evidence of an individual's emotional reaction associated with an experience
affective disorder (ăf-fĕk´ tiv)			Characterized by a disturbance of mood accompanied by a manic or depressive syndrome; this syndrome is not caused by any other physical or mental disorder
agoraphobia (ăg˝ ŏ-rā-fō´ bē-ă)	**agor/a** **-phobia**	marketplace fear	An anxiety disorder; agoraphobia involves intense fear and anxiety in any place or situation where escape might be difficult, leading to avoidance of being alone outside of the home; traveling in a car, bus, or airplane; or being in a crowded area.
anorexia nervosa (ăn-ŏ-rĕk´ sē-ă nĕr-vō´ să)	**an-** **-orexia**	lack of, without appetite	Complex psychological disorder in which the individual refuses to eat or has an abnormally limited eating pattern. People with eating disorders may engage in self-induced vomiting and abuse of laxatives, diuretics, or prolonged exercise to control their weight. The condition could lead them to become excessively thin or even emaciated. In severe cases, this condition can be life-threatening.

Building Your Medical Vocabulary—Think of this section as being like having a blueprint to build a house, but in this case the blueprint can be used to construct a solid and well-designed medical vocabulary. Progressing through each chapter, a solid foundation in the art of medical word building is acquired and understanding medical terminology becomes much easier. The design is simple and easy to follow. The same format is used for each chapter. Knowledge builds and accumulates as the learning process becomes comfortable and familiar. The learning process can be taken to any level desired because, in the medical field, learning never stops.



ANATOMY LABELING Identify the structures shown below by filling in the blanks.

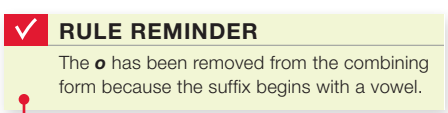
Designed for Visual Learners—Most pages are highlighted by a vibrant and instructive image. Examples include anatomically precise diagrams, authentic medical photographs, and engaging labeling activities.



ALERT!

How many words can you build using the root **opt** and the combining form **opt/o**?

ALERT!—Designed to help in the identification, building, and spelling of medical words, as well as the formation of plural endings and in the recall of word parts.



RULE REMINDER

The ***o*** has been removed from the combining form because the suffix begins with a vowel.

RULE REMINDER—Helps to reinforce the rules that govern medical terminology and includes helpful hints.

fyi

The use of dichoptic therapy (simultaneous training of both eyes), which presents different images to each eye separately, using popular children's movies, has produced improved visual acuity in young children. Dichoptic techniques combined with perceptual-learning tasks or certain video games have been shown to improve visual acuity significantly in people with amblyopia.

FYI—Contains interesting medical information that will broaden knowledge and pique interest.

GOOD TO KNOW

According to the American Society of Plastic Surgeons, regenerative medicine is the science of using adipose-derived stem cells harvested from fat to regenerate cells and tissues in the human body. Fat tissue is an important source of adult mesenchymal stem cells. (The term *mesenchymal* refers to the diffuse network of cells forming the embryonic mesoderm and giving rise to connective tissue, blood and blood vessels, the lymphatic system, and cells of the mononuclear phagocyte system.) Discovered by plastic surgeons, adipose-derived stem cells are easy to isolate from fat tissue and hold tremendous promise for treating many disorders across the body.

A significant advance in surgical regenerative medicine has been the development and refinement of techniques to transfer fat tissue in a minimally invasive manner, using a patient's own extra fat tissue, thus allowing the regeneration of fat tissue in other parts of the body. This technique is revolutionizing many reconstructive procedures, such as breast reconstruction.

Good to Know—Spotlights new research, current trends, and other medical issues in healthcare and medicine.

Drug Highlights

Classification of Drug	Description and Examples
antacids	Neutralize hydrochloric acid in the stomach; classified as nonsystemic and systemic.
nonsystemic	EXAMPLES: Amphojel (aluminum hydroxide), Tums (calcium carbonate), Riopan (magaldrate), and Milk of Magnesia (magnesium hydroxide)
systemic	EXAMPLE: sodium bicarbonate
antacid mixtures	Products that combine aluminum (may cause constipation) and/or calcium compounds with magnesium salts (may cause diarrhea). By combining the antacid properties of two single-entity agents, these products provide the antacid action of both yet tend to counter the adverse effects of each other. EXAMPLES: Gaviscon, Gelusil, Maalox Plus, and Mylanta
histamine H_2-receptor antagonists	Inhibit both daytime and nocturnal basal gastric acid secretion and inhibit gastric acid stimulated by food, histamines, caffeine, and insulin used in the treatment of active duodenal ulcer. EXAMPLES: Tagamet (cimetidine), Pepcid (famotidine), Axid (nizatidine), and Zantac (ranitidine)

Drug Highlights—Presents essential pharmacology information that relates to the subject of the chapter. The trade names of drugs and their availability were verified at the time of this text's publication, in order to provide the most up-to-date information possible.

Diagnostic *and* Laboratory Tests

Test	Description
color vision tests	Use of polychromatic (multicolored) charts or an *anomaloscope* (a device for detecting color blindness) to assess an individual's ability to recognize differences in color. A person who is color blind will not see the number 27 in the circle in Figure 15.21.

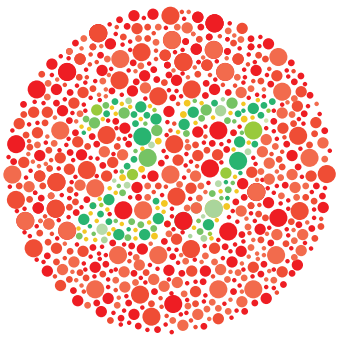


FIGURE 15.21 Color vision chart. Color-blind individuals cannot see the number 27 in the circle.

Diagnostic *and* Laboratory Tests—Provides an overview of current tests and procedures that are used in the physical assessment and diagnosis of certain conditions/diseases.

Abbreviations *and* Acronyms

Abbreviation/ Acronym	Meaning	Abbreviation/ Acronym	Meaning
Abd, abd	abdomen	**HIV**	human immunodeficiency virus
A&P	anatomy and physiology	**kg**	kilogram
ADE	adverse drug event	**LAT, lat**	lateral
ADR	adverse drug reaction	**LLQ**	left lower quadrant
ATC	Anatomical Therapeutic Chemical Classification System	**LUQ**	left upper quadrant
BMI	body mass index	**N_2**	nitrogen
BP	blood pressure	**NIH**	National Institutes of Health
CaO	calcium oxide	**O or O_2**	oxygen
CDC	Centers for Disease Control and Prevention	**O_3**	ozone
$C_6H_{12}O_6$	glucose	**OTC**	over-the-counter (drugs)
CO_2	carbon dioxide	**RLQ**	right lower quadrant
		RUQ	right upper quadrant

Abbreviations *and* Acronyms—Provides commonly used abbreviations and acronyms, specific to each chapter's content, with their meanings in an at-a-glance table format.

Study *and* Review II

Word Parts

Prefixes Give the definitions of the following prefixes.

1. a- _____
2. bi- _____
3. en- _____
4. em- _____
5. eso- _____
6. hyper- _____
7. intra- _____
8. tri- _____
9. ex(o)- _____
10. hemi- _____
11. an- _____
12. retro- _____

Combining Forms Give the definitions of the following combining forms.

1. ambly/o _____
2. anis/o _____
3. blephar/o _____
4. choroid/o _____
5. conjunctiv/o _____
6. cor/o _____
7. corne/o _____
8. cry/o _____
9. cycl/o _____
10. dacry/o _____
11. dipl/o _____
12. irid/o _____
13. kerat/o _____
14. lacrim/o _____
15. lent/o _____
16. mi/o _____
17. ophthalm/o _____
18. opt/o _____
19. orth/o _____
20. phac/o _____
21. phot/o _____
22. retin/o _____
23. xen/o _____
24. xer/o _____

Suffixes Give the definitions of the following suffixes.

1. -al _____
2. -ar _____
3. -ary _____
4. -blast _____

Study *and* Review—Self-paced study guide sections featuring a wide variety of exercises, including **Case Snapshots**, which are case study vignettes that provide an opportunity to relate medical terminology to specific patient care presentations.

Practical Application

Medical Record Analysis

This exercise contains information, abbreviations/acronyms, and medical terminology from an actual medical record or case study that has been adapted for this text. The names and any personal information have been created by the author. Read and study each form or case study and then answer the questions that follow. You may refer to Appendix III, *Abbreviations, Acronyms, and Symbols*.

INSTRUCTIONS FOR OUTPATIENT CATARACT SURGERY

Task Edit View Time Scale Options Help Date: 17 July 2021

Before Surgery

1. Your surgery has been scheduled for Tuesday, August 2, 2021, as an outpatient at: Dewdrop Surgery Center.
2. Report to the center the day of surgery at 7:10 A.M.
3. The afternoon before surgery and the morning of surgery, use the antibiotics Vigamox and Zymar drops in the right eye to help prevent a bacterial infection. Afternoon and evening before surgery, 1 drop at 3:00, 5:00, 7:00, and 9:00 P.M.
4. Do not eat or drink anything the morning of surgery, except a sip of water to take your medications.
5. Do not wear makeup, fingernail polish, or jewelry to the center.
6. If you are normally taking any medications in the morning, especially heart or blood pressure medications, be sure to take them before you come to the center for surgery. However, if you take insulin or diabetes medication, do not take it until you get home from surgery.
7. Go by the outpatient surgery department at Dewdrop Surgery Center to pre-admit any time before the day of surgery.

After Surgery

1. You may go home shortly after surgery. Be sure to bring someone to drive you home. You may resume normal activities but do not engage in vigorous exercise on the day of surgery. Be careful not to have a fall.
2. The shield may be removed 6 hours after surgery. **DO NOT PUT ANY PRESSURE ON YOUR EYE AND DO NOT RUB YOUR EYE**. Put the Vigamox/Zymar drops in 3 times before you go to bed.
3. Return to Dr. Cedric Emmanuel's office on Wednesday, August 3, 2021, at 10:25 A.M. and further instructions will be given. Bring all your eyedrops to the office with you.
4. Continue any medications that you are taking unless otherwise instructed. Resume your usual diet.
5. If you have mild pain, take Tylenol regular-strength (325 mg) acetaminophen: two tablets every 4–6 hours as needed, not to exceed 12 tablets in 24 hours. If the pain is severe, call Dr. Cedric Emmanuel: Office & beeper (123) 456-7890.

Practical Application—Real-world medical practice sections that challenge readers to apply their understanding of each chapter while interacting with medical records.

MyLab Medical Terminology™

WHAT IS MYLAB MEDICAL TERMINOLOGY?

MyLab Medical Terminology is a comprehensive online testing program that gives you, the student, the opportunity to test your understanding of information, concepts, and medical language to see how well you know the material. From the test results, MyLab Medical Terminology builds a self-paced, personalized study plan unique to your needs. Remediation in the form of exercises, audio segments, and video clips is provided for those areas in which you may need additional instruction, review, or reinforcement. You can then work through the program until your study plan is complete and you have mastered the content. MyLab Medical Terminology is available with an embedded etext.

MyLab Medical Terminology is organized to follow the chapters and learning outcomes in ***Medical Terminology for Healthcare Professionals***, **Tenth Edition**. With MyLab Medical Terminology, you can track your own progress through your entire medical terminology course.

HOW DO STUDENTS BENEFIT?

Here's how MyLab Medical Terminology helps you:

- Keep up with information presented in the text and lectures.
- Save time by focusing your study to review just the content you need.
- Increase your understanding of difficult concepts with study material that is appropriate for different learning styles.
- Remediate in areas in which you need additional review.

KEY FEATURES OF MYLAB MEDICAL TERMINOLOGY

Pre-Tests and Post-Tests. Using questions aligned to the learning outcomes in ***Medical Terminology for Healthcare Professionals*** multiple tests measure your understanding of topics.

Personalized Study Material. Based on the topic pre-test results, you receive a personalized study plan, highlighting areas where you may need improvement. It includes these study tools:

- Images for review
- Interactive exercises
- Animations and video clips
- Access to full Personalized Study Material.

HOW DO INSTRUCTORS BENEFIT?

- Save time by providing students with a comprehensive, media-rich study program.
- Track student understanding of course content in the program gradebook.
- Monitor student activity with viewable student assignments.

About the Author

Source: Jane Rice

Source: Jane Rice

The year is 1947 and I am a little girl with brown hair that is braided into pigtails. I am very shy and afraid, for, you see, I am in the second grade and I cannot read. Not one little word. The teacher discovered this and made me sit on a tall metal stool in front of the classroom with a dunce cap on my head. Still to this day, I get very nervous when I have to get up in front of a crowd of people.

My mother taught me to read because back then, there were no special classes for children with learning disabilities. I did not learn "phonetics" but memorized everything. I still have trouble pronouncing words, but I can tell you all you want to know about a medical word.

After the death of two brothers, my father, and the impending death of my mother, I prayed for something else to do, something that would help take away the pain and the hurt. In 1982, my prayers were answered with a most precious gift: *Medical Terminology with Human Anatomy*, which was first published in September 1985, and is now titled *Medical Terminology for Healthcare Professionals*.

I owe so much to God and my best friend and husband, Charles Larry Rice. God continues to guide me in my writing. He provides me the knowledge and ability to organize, research, develop, and then to write. Larry, my husband of 54 years, is supportive and gives me the freedom to be an author. He is my love and hero.

I had a wonderful teaching career, and I am forever beholden to the many wonderful students who taught me so much and touched my life with their unique qualities. I hope and pray that this 10th edition of *Medical Terminology for Healthcare Professionals* will enable you, the learner, to become the professional that you choose to be.

— Jane Rice, RN, CMA-C

Acknowledgments

First, I would like to offer my warmest thanks to all of the individuals who have accepted my medical terminology text as their book of choice. Over the past 34 years, I have been blessed with the gift of writing. It is my desire for this edition to make learning a wonderful experience for you, the learner and educator.

I want to express my gratitude to each person who worked so hard on this project and provided his or her unique talents to create and develop this edition. A sincere thank you to all the exceptional people at Pearson, especially John Goucher, Derril Trakalo, Melissa Bashe, Cara Schaurer, and Rachele M. Strober. To Lynda Hatch—you are still with me all the way. Through your guidance and excellent work, this 10th edition of my "dream" has reached a new dimension. To Garnet Tomich—for your expert work in making sure that all the *t*'s are crossed and the *i*'s are dotted. To Jason Smith, MD, and Kristi Ware, CMA, Northwest Georgia Dermatology, Rome, Georgia—a special thank you for providing new photographs for this edition.

Editorial Development Team

The content and format of *Medical Terminology for Healthcare Professionals* are the result of an incredible collaboration of expert educators from all around. This book represents the collective insights, experience, and thousands of hours of work performed by members of this development team. Their influence will continue to have an impact for decades to come. Let us introduce the members of our team.

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A Commitment to Accuracy

As a learner embarking on a career in healthcare you probably already know how critically important it is to be precise in your work. Patients and coworkers will be counting on you to avoid errors on a daily basis. Likewise, we owe it to you—the reader—to ensure accuracy in this book. We have gone to great lengths to verify that the information provided in *Medical Terminology for Healthcare Professionals* is complete and correct.

While our intent and actions have been directed at creating an error-free text, we have established a process for correcting any mistakes that may have slipped past our editors. Pearson takes this issue seriously and therefore welcomes any and all feedback that you can provide along the lines of helping us enhance the accuracy of this text. If you identify any errors that need to be corrected in a subsequent printing, please send them to:

Pearson Health Science Editorial
Medical Terminology Corrections
221 River Street
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Thank you for helping Pearson reach its goal of providing the most accurate medical terminology textbooks available.

Detailed Contents

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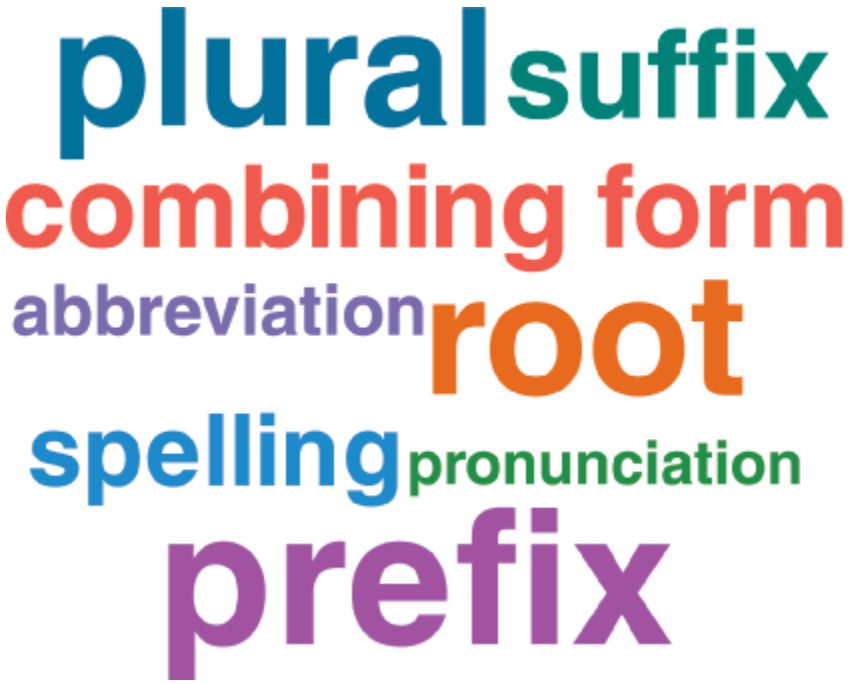
CHAPTER

1

Introduction to Medical Terminology



Learning Outcomes

On completion of this chapter, you will be able to:

1. Describe the fundamental elements that are used to build medical words.
2. List four guidelines that will assist you with the building and spelling of medical words.
3. State the importance of correct spelling in medical terminology.
4. Explain the use of abbreviations when writing and documenting data.
5. Analyze, build, spell, and pronounce medical words.
6. Describe the general components of a patient's medical record.
7. List and describe the four parts of the SOAP chart note record.
8. State the meaning and purpose of the communication tools AIDET® and SBAR.
9. Identify and define selected abbreviations and acronyms.

Comprehension of Fundamental Word Structure

Medical terminology is the study of terms that are used in the art and science of medicine. It is a specialized language with its origin arising from the Greek influence on medicine. Hippocrates was a Greek physician who lived from 460 to 377 BC and whose vital role in medicine is still recognized today. He is called the "Father of Medicine" and is credited with establishing early ethical standards for physicians. Because of advances in scientific computerized technology, many new terms are coined daily; however, most of these terms are composed of word parts that have their origins in ancient Greek or Latin. Because of this foreign origin, it is necessary to learn the English translation of terms when learning the fundamentals of word structure.

Fundamentals of Word Structure

The fundamental elements in medical terminology are the component parts used to build medical words. The abbreviations used for component parts in this text are **P (prefix)**, **R (root)**, **CF (combining form)**, and **S (suffix)**. The key to learning medical terminology is through the word-building technique used in this text. Combining forms and word roots are integrated into each chapter of the text, according to body system or specialty area. Suffixes and prefixes are presented in Chapter 2 and then will continue to be repeated throughout the text. To build your medical vocabulary, all you have to do is recall the word parts that you have learned and then link them with the new component parts presented in each chapter.

Presented throughout the Building Your Medical Vocabulary sections, which are the heart of every chapter, are special boxes designed to make your learning process the best it can be. These boxes include **Rule Reminder**, **Alert**, **fyi**, and **Good to Know**. The Rule Reminder boxes reinforce the rules that govern medical terminology and include helpful hints. The Alert boxes are designed to help you in the identification, building, and spelling of medical words. You will be assisted in the formation of plural endings and in the recall of word parts. The fyi boxes (fyi is an acronym meaning *for your information*) are filled with interesting medical information that will broaden your knowledge. The Good to Know boxes spotlight medical issues in healthcare and medicine. Through researching current trends, happenings, and just plain interesting material, we found so many things that we wanted to share with you, so we did. Of particular interest is the resurgence of infectious diseases that in the past were all but eliminated in the United States and many parts of the world.

Prefix

The term *prefix* means *to fix before* or *to fix to the beginning* of a word. A prefix can be a syllable or a group of syllables. Prefixes are united with or placed at the beginning of words to alter or modify their meanings or to create entirely new words. For example, the word ***ex / cis / ion*** means *the process of cutting out; surgical removal*. Note its component parts:

ex-	**P** (prefix) meaning *out*
cis	**R** (root) meaning *to cut*
-ion	**S** (suffix) meaning *process*

Word Root

A *root* is a word or word element from which other words are formed. It is the foundation of the word. The root conveys the central meaning of the word and forms the base to which prefixes and suffixes are attached for word modification.

For example, the word ***mal / format / ion*** means *the process of being badly shaped; deformed*. Note its component parts:

mal-	**P** (prefix) meaning *bad*
format	**R** (root) meaning *shaping*
-ion	**S** (suffix) meaning *process*

Combining Form

A *combining form* is a word root to which a vowel has been added. A combining vowel (*a*, *e*, *i*, *o*, *u*, and sometimes *y*) links the root to the suffix or the word root to another root. The combining vowel does not have a meaning of its own. The vowel *o* is used more often than any other to make combining forms. Combining forms can be found at the beginning of a word or within the word.

For example, the word ***chem / o / therapy*** means *treatment of disease by using chemical agents*. Note the relationship of its component parts:

chem/o	**CF** (combining form) meaning *chemical*
-therapy	**S** (suffix) meaning *treatment*

Suffix

The term *suffix* means *to fasten on, beneath, or under*. A suffix can be a syllable or group of syllables united with or placed at the end of a word to alter or modify the meaning of the word or to create a new word. Please note that sometimes a medical word is formed by attaching a suffix directly to a prefix, such as in the example words below, *centigrade* and *centimeter*. When you break down a word to understand it or when you give the meaning of the word or read its definition, you usually begin with the meaning of the suffix.

For example, the word ***centi / grade*** means *having 100 steps or degrees; unit of temperature measurement* (Celsius scale), and the word ***centi / meter*** means *unit of measurement in the metric system; one hundredth of a meter*:

centi-	**P** (prefix) meaning *one hundred, one hundredth*
-grade	**S** (suffix) meaning *a step*
centi-	**P** (prefix) meaning *one hundred, one hundredth*
-meter	**S** (suffix) meaning *measure*

Word roots and combining forms, together with their definitions, are included in each chapter according to the cell, tissue, organ, system, or element they describe. This arrangement makes it possible for you to form associations between medical terms and the various body systems. To reinforce the learning process, the text provides a general anatomy and physiology overview for each of the body systems.

This text presents an alphabetical listing of each chapter's medical words within the Building Your Medical Vocabulary sections. The alphabetical format groups together those terms with the same prefix, word root, and/or combining form, thereby reinforcing the ease of learning medical terminology using the Rice approach.

Principles of Component Parts

As you learn definitions for prefixes, roots, combining forms, and suffixes, you will discover that some component parts have the same meanings as others. This occurs most often with words that relate to the organs of the body and the diseases that affect them. The existence of more than one component part for a particular meaning can be traced to differences in the Greek or Latin words from which they originated. Most of the terms for the body's organs originated from Latin words, whereas terms describing diseases that affect these organs have their origins in Greek. For example:

- **Uterus.** Latin word for one of the organs of the female reproductive system, the womb
- **Metr/i.** Greek **CF** (combining form) for uterus (womb)
- **Endometriosis.** Pathological condition in which endometrial tissue has been displaced to various sites in the abdominal or pelvic cavity: **endo- (P)**, meaning *within*; **metr/i (CF)**, meaning *uterus*; and **-osis (S)**, meaning *condition*

In this text, definitions are worded in an attempt to establish a relationship with the meanings given for each word part. For example, the medical term **adhesion** is divided

into two word parts: **adhes (R)**, meaning *stuck to*, and **-ion (S)**, meaning *process*. The definition given is *process of being stuck together*.

Identification of Medical Words

When identifying medical words, you learn to distinguish among and select the appropriate component parts for the meaning of the word. For example, the word **microscope** means *an instrument for examining small objects*. Note the following: *micro- + -scope*; not *-scope + micro*. With the proper placement of component parts (**P** + **S**) the definition translates **micro-** (*small*) and **-scope** (*instrument for examining*).

Vocabulary Words

You will find that some terms have not been divided into word parts. These are common words or specialized terms that are included to enhance your medical vocabulary. These terms were selected because of their usage in medical records/reports, case studies, and in various medical and surgical specialty areas. For example, **abate**, which means *to lessen, decrease, or cease*. This term is used to note the lessening of pain or the decrease in severity of symptoms. *The patient's arthritic pain did not* abate, *even though she followed the prescribed treatment plan*.

Spelling

Medical words of Greek origin are often difficult to spell because many of them begin with a silent letter or have a silent letter within the word. The following are examples of words that begin with silent letters:

Silent Beginning	Pronounced	Medical Term	Pronunciation Guide
gn	n	**g**nathic	(năth´ ĭk)
kn	n	**k**nuckle	(nŭk´ ĕl)
mn	n	**m**nemonic	(nĭ-mŏn´ ĭk)
pn	n	**p**neumonia	(nū-mō´ nē-ă)
ps	s	**p**sychiatrist	(sī-kī´ ă-trĭst)
pt	t	**p**tosis	(tō´ sĭs)

The following example is a medical term that contains a silent letter within the word:

Silent Letter	Medical Term	Pronunciation Guide
g	phle**g**m	(flĕm)

Correct spelling is extremely important in medical terminology because the addition or omission of a single letter can change the meaning of a word to something entirely different. The following examples illustrate this point:

Term/Letter Change	Meaning of Term	Term/Letter Change	Meaning of Term
ab**d**uct	To lead **away** from the middle	arte**r**itis	Inflammation of an **artery**
ad**d**uct	To lead **toward** the middle	arth**r**itis	Inflammation of a **joint**

Prefixes and Suffixes That Are Frequently Misspelled

Following are some of the prefixes and suffixes that often contribute to spelling errors:

Prefix	Meaning	Suffix	Meaning
ante-	before, forward	**-poiesis**	formation
anti-	against	**-ptosis**	prolapse, drooping, sagging, falling down
ecto-	out, outside, outer	**-ptysis**	spitting
endo-	within, inner	**-rrhage**	to burst forth, bursting forth
hyper-	above, beyond, excessive	**-rrhagia**	to burst forth, bursting forth
hypo-	below, under, deficient	**-rrhaphy**	suture
inter-	between	**-rrhea**	flow, discharge
intra-	within	**-rrhexis**	rupture
para-	beside, alongside, abnormal	**-scope**	instrument for examining
per-	through	**-scopy**	visual examination, to view, examine
peri-	around	**-tome**	instrument to cut
pre-	before, in front of	**-tomy**	incision
pro-	before	**-tripsy**	crushing
super-	above, beyond	**-trophy**	nourishment, development
supra-	above, beyond		

! ALERT!

Suffixes such as **-ectomy, -stomy**, and **-tomy** look very much alike, but have different meanings. For example, **-ectomy** means *surgical excision, surgical removal, resection*; **-stomy** means *new opening*; and **-tomy** means *incision*. For example words with these suffixes, *vasectomy*, *ileostomy*, and *myringotomy*, refer to Chapter 2, Table 2.6. Note how these words are divided into their component parts and their word definitions.

Building and Spelling Medical Words

Follow these guidelines for building and spelling medical words.

1. If the suffix begins with a vowel, drop the combining vowel from the combining form and add the suffix. For example, **necr/*o*** (*death*) + **-osis** (*condition*) becomes *necrosis* when we drop the ***o*** from **necr/*o***.
2. If the suffix begins with a consonant, keep the combining vowel and add the suffix to the combining form. For example, **cardi/*o*** (*heart*) + **-logy** (*study of*) becomes *cardiology*; we keep the ***o*** on the combining form **cardi/*o***.
3. Keep the combining vowel between two or more roots in a term. For example, **gastr/*o*** (*stomach*) + **enter/*o*** (*intestine*) + **-logy** (*study of*) becomes *gastroenterology* and we keep the two combining vowels.
4. When the medical word has two combining forms, drop the combining vowel from the second combining form and add the suffix. For example, **psych/*o*** (*mind*) + **somat/*o*** (*body*) + **-ic** (*pertaining to*) becomes *psychosomatic*, when we drop the ***o*** from **somat/*o***. If the medical word has more than two combining forms, drop the combining vowel