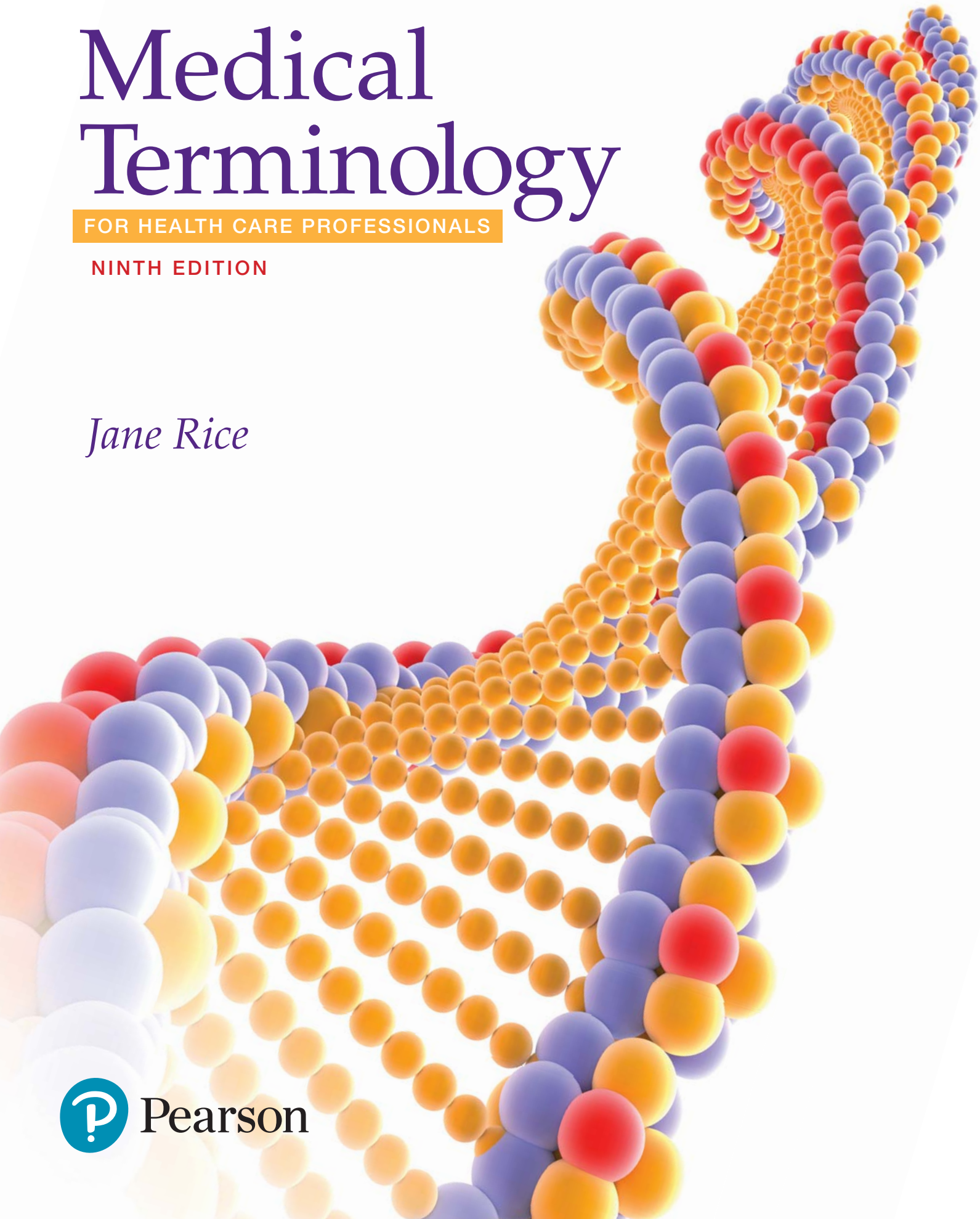
Medical Terminology

FOR HEALTH CARE PROFESSIONALS

NINTH EDITION

Jane Rice



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Jane Rice, RN, CMA-C

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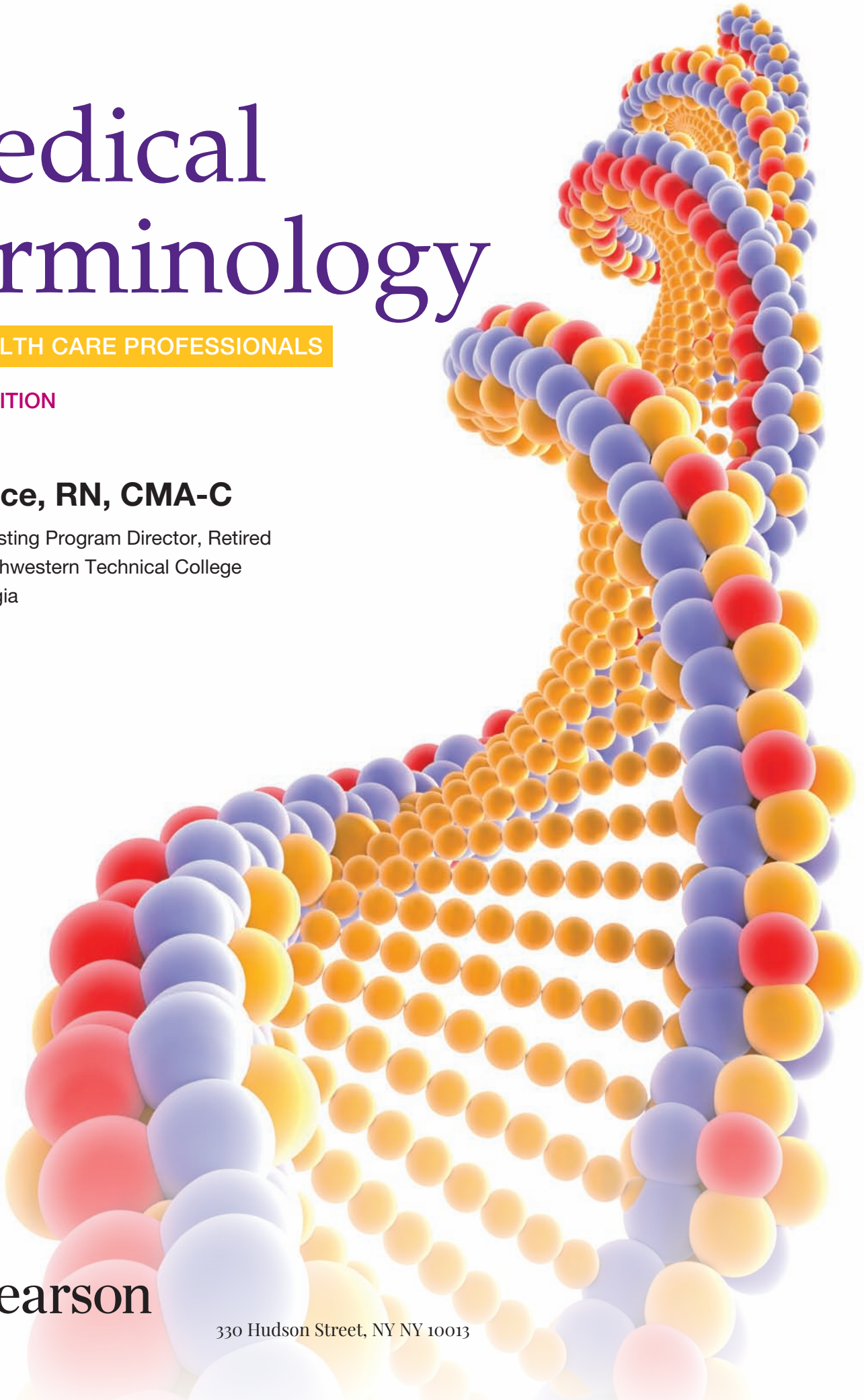

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DEDICATION

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 ease with which students learn component parts directly associated with a body system or specialty area is the key to the time-proven approach found in *Medical Terminology for Health Care Professionals*, now in its ninth edition. Suffixes and prefixes are presented in Chapters 2 and 3, and reinforced throughout the text as they become integrated with combining forms and roots to form the medical words of the featured body system or specialty area.

The text's strengths include:

1. **A word-building approach.** Learn medical terminology by building medical terms from commonly used word parts. **Combining Forms Tables** with meanings are included in the **Building Your Medical Vocabulary** sections in each body system chapter. This makes it easier and faster for students to learn the foundations of key terms pertaining to each system.
2. **The Rice Method.** The Building Your Medical Vocabulary sections present all words in alphabetical order. This format shows those terms with the same prefix, word root, and/or combining form together, thereby reinforcing the ease of learning medical terminology using the Rice approach.
3. **Accurate and complete coverage of human anatomy.** Presents concise coverage of all major body structures and functions, organized by body system.
4. **Study and Review** sections include the following:
   - ***Study and Review I*** covers all questions relating to the anatomy and physiology of the chapter and includes an anatomy labeling exercise.
   - ***Study and Review II*** covers word parts, identifying medical terms, and matching exercises. It includes exercises for **Medical Case Snapshots**, case study vignettes that provide an opportunity to relate the medical terminology to a precise patient care presentation.
   - ***Study and Review III*** consists of an array of learning exercises, such as *Building Medical Terms*, *Combining Form Challenge*, and *Select the Right Term*. Also included in this section are the questions relating to *Diagnostic and Laboratory Tests*, *Abbreviations*, and the *Practical Application* exercise.
   - ***Practical Application*** exercises include a variety of medical record analyses and ICD-10-CM terminology questions.
5. **Visually appealing with new art and photos.**

The ninth edition builds upon this framework and presents an exciting blend of fresh ideas merged with proven methods.

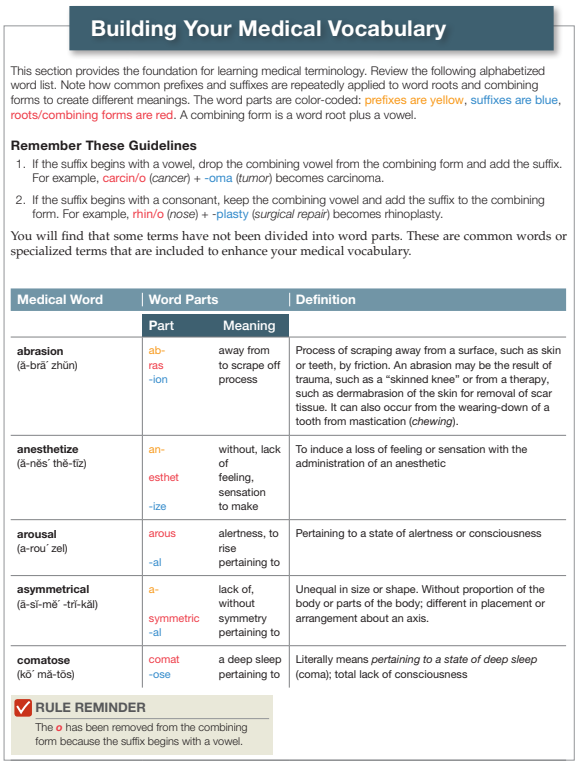
A Special Feature New to this Edition: Insights

A Note from the Author

Insights is a new feature that brings to light some of the latest medical coding terminology being used in *The Complete Official Codebook ICD-10-CM, 2016*. When planning the revision of this text many peer reviewers and instructors gave valuable input. One subject kept coming up, the ICD-10-CM, which had recently been revised and is now being used in all United States healthcare treatment settings. I found the concept of updating the terminology of my book to correspond with the ICD-10-CM compelling. The addition of coding information and terminology from the ICD-10-CM in the **Insights** feature will be extraordinarily helpful to many of the students who desire a career in healthcare. I believe that this new feature is so distinctive and helpful that it sets apart this terminology book from others. —*Jane Rice*

Features At A Glance

Here is a sneak peek at what makes *Medical Terminology for Health Care Professionals* so dynamic and trusted as a learning resource.



Building Your Medical Vocabulary

This section provides the foundation for learning medical terminology. Review the following alphabetized word list. Note how common prefixes and suffixes are repeatedly applied to word roots and combining forms to create different meanings. The word parts are color-coded: prefixes are yellow, suffixes are blue, roots/combining forms are red. A combining form is a word root plus a vowel.

Remember These Guidelines

1. If the suffix begins with a vowel, drop the combining vowel from the combining form and add the suffix. For example, carcin/o (*cancer*) + -oma (*tumor*) becomes carcinoma.
2. If the suffix begins with a consonant, keep the combining vowel and add the suffix to the combining form. For example, rhin/o (*nose*) + -plasty (*surgical repair*) becomes rhinoplasty.

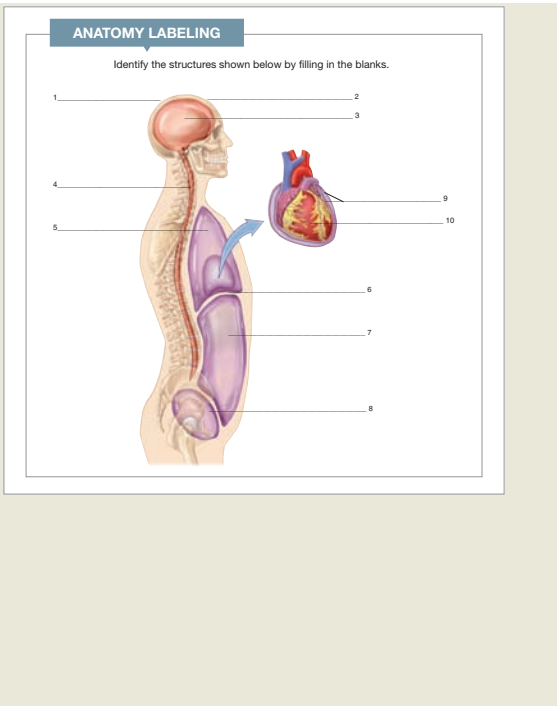
You will find that some terms have not been divided into word parts. These are common words or specialized terms that are included to enhance your medical vocabulary.

Medical Word	Word Parts		Definition
	Part	Meaning	
abrasion (ă-brā´ zhŭn)	ab- ras -ion	away from to scrape off process	Process of scraping away from a surface, such as skin or teeth, by friction. An abrasion may be the result of trauma, such as a "skinned knee" or from a therapy, such as dermabrasion of the skin for removal of scar tissue. It can also occur from the wearing-down of a tooth from mastication (*chewing*).
anesthetize (ă-nĕs´ thĕ-tīz)	an- esthet -ize	without, lack of feeling, sensation to make	To induce a loss of feeling or sensation with the administration of an anesthetic
arousal (a-rou´ zel)	arous -al	alertness, to rise pertaining to	Pertaining to a state of alertness or consciousness
asymmetrical (ă-sĭ-mĕ´ -trĭ-kăl)	a- symmetric -al	lack of, without symmetry pertaining to	Unequal in size or shape. Without proportion of the body or parts of the body; different in placement or arrangement about an axis.
comatose (kō´ mă-tōs)	comat -ose	a deep sleep pertaining to	Literally means *pertaining to a state of deep sleep* (coma); total lack of consciousness

RULE REMINDER

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

- **Building Your Medical Vocabulary**—The heart of every chapter, this section is an alphabetized word list that shows how word parts are built, pronounced, and defined. The word parts are color-coded with prefixes in yellow, roots and combining forms in red, and suffixes in blue. Also included is a table of combining forms with definitions.



- **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!

Be sure that you see the difference: ***-stomy*** means *new opening* and ***-tomy*** means *incision*.

- **ALERT!**—Offers singular to plural spelling and other tips.

RULE REMINDER

Here is an exception to the general rule. This combining form keeps the ***i*** even though the suffix begins with a vowel.

- **Rule Reminder**—Reinforces the rules that govern medical terminology.

fyi

Acne fulminans is a rare type of acne in teenage boys, marked by inflamed, tender, ulcerative, and crusting lesions of the upper trunk and face. It has a sudden onset and is characterized by fever, leukocytosis (elevated white blood cells), and an elevated sedimentation rate. About 50% of the cases have inflammation of several joints. See Figure 5.5.

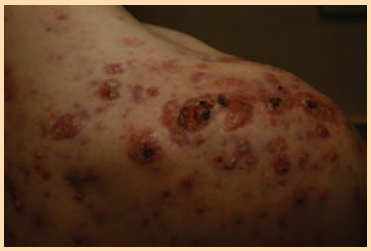


Figure 5.5 Acne fulminans.
(Courtesy of Jason L. Smith, MD)

- **FYI—**Contains interesting medical information to broaden knowledge and pique interest.

- **INSIGHTS—**Familiarizes the reader with some of the latest coding terminology being used in *The Complete Official Codebook ICD-10-CM, 2016*.

insights

Laterality (side of the body affected) is a new coding convention added to relevant ICD-10-CM codes to increase specificity. Designated codes for conditions such as fractures, burns, ulcers, and certain neoplasms will require documentation of the side/region of the body where the condition occurs. In ICD-10-CM, laterality code descriptions include right, left, bilateral, or unspecified designations. Over one-third of the expansion of ICD-10-CM codes is due to the addition of laterality.

Example:

Physician office documentation: "patient complains of hearing loss (right); large right cerumen impaction"
ICD-10-CM code: H61.21—impacted cerumen, right ear

Drug Highlights

Type of Drug	Description and Examples
emollients	Substances that are generally oily in nature. These substances are used for dry skin caused by aging, excessive bathing, and psoriasis. EXAMPLE: Desitin
keratolytics	Agents that cause or promote loosening of horny (keratin) layers of the skin. These agents may be used for acne, warts, psoriasis, corns, calluses (hardened skin), and fungal infections. EXAMPLES: Duofilm, Keralyt, and Compound W
local anesthetic agents	Agents that inhibit the conduction of nerve impulses from sensory nerves and thereby reduce pain and discomfort. These agents may be used topically to reduce discomfort associated with insect bites, burns, and poison ivy. EXAMPLES: Solarcaine and Xylocaine
antihistamine agents	Agents that act to prevent the action of histamine. Used to help relieve symptoms, such as itching, in allergic responses and contact dermatitis. EXAMPLE: Benadryl (diphenhydramine)
antipruritic agents	Agents that prevent or relieve itching EXAMPLES: Topical—tripelennamine HCl; Oral—Benadryl (diphenhydramine HCl) and hydroxyzine HCl
antibiotic agents	Agents that destroy or stop the growth of microorganisms. These agents are used to prevent infection associated with minor skin abrasions and to treat superficial skin infections and acne. Several antibiotic agents are combined in a single product to take advantage of the different antimicrobial spectrum of each drug. EXAMPLES: Neosporin, Polysporin, and Mycitracin
antifungal agents	Agents that destroy or inhibit the growth of fungi and yeast. These agents are used to treat fungus and/or yeast infection of the skin, nails, and scalp. EXAMPLES: Equate antifungal cream (clotrimazole) and Lamisil (terbinafine)
antiviral agents	Agents that combat specific viral diseases. EXAMPLE: Zovirax (acyclovir) is used in the treatment of herpes simplex virus types 1 and 2, varicella zoster, Epstein–Barr, and cytomegalovirus
anti-inflammatory agents	Agents used to relieve the swelling, tenderness, redness, and pain of inflammation. Topically applied corticosteroids are used in the treatment of dermatitis and psoriasis. EXAMPLES: Carmol HC (hydrocortisone acetate; urea) and Temovate (clobetasol propionate) Oral corticosteroids are used in the treatment of contact dermatitis, such as in poison ivy, when the symptoms are severe. EXAMPLE: prednisone 12-day unipak

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

Diagnostic and Laboratory Tests

Test	Description
tuberculosis skin tests (tū-bĕr′kū-lō′sĭs)	Performed to identify the presence of the *Tubercle bacilli*. The tine, Heaf, or Mantoux test are used. The tine and Heaf tests are intradermal tests performed using a sterile, disposable, multiple-puncture lancet. The tuberculin is on metal tines that are pressed into the skin. A hardened raised area at the test site 48–72 hours later indicates the presence of the pathogens in the body. In the Mantoux test, 0.1 mL of purified protein derivative (PPD) tuberculin is injected intradermally. Test results are read 48–72 hours after administration. The Mantoux is the preferred test for tuberculosis. See Figure 5.46.

Figure 5.46 Mantoux tuberculin skin test.

Abbreviations

Abbreviation	Meaning	Abbreviation	Meaning
abd	abdomen	**GI**	gastrointestinal
A&P	anatomy and physiology	**H_2O**	water
BMI	body mass index	**LAT, lat**	lateral
BP	blood pressure	**LLQ**	left lower quadrant
CO_2	carbon dioxide	**LUQ**	left upper quadrant
DNA	deoxyribonucleic acid	**O or O_2**	oxygen
ER	endoplasmic reticulum (as used in this chapter); also means emergency room	**OTC**	over-the-counter (drugs)
		RLQ	right lower quadrant
		RUQ	right upper quadrant
FDA	Food and Drug Administration	**T**	temperature

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

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

Study and Review III

Building Medical Terms

Using the following word parts, fill in the blanks to build the correct medical terms.

de-	xanth	-ic
melan	xanth/o	-rrhea
pachy	xer	
onych	-logy	

Definition	Medical Term
1. An area of skin and tissue that becomes broken down	_____ cubitus
2. Study of the skin	dermato_____
3. Pertaining to jaundice	icter_____
4. Cancer that develops in the pigment cells of the skin	_____ oma
5. Inflammation of the nail	_____ itis
6. Thick skin	_____derma
7. Excessive flow of oil from the sebaceous glands	sebo _____
8. Yellowness of the skin	_____ derma
9. Literally means yellow tumor	_____ oma
10. Abnormal dryness of skin	_____osis

Combining Form Challenge

Using the combining forms provided, write the medical term correctly.

albin/o	cutane/o	erythr/o
caus/o	dermat/o	integument/o

1. Genetic condition in which there is a partial or total absence of pigment in skin, hair, and eyes: _____ ism

2. Intense burning pain associated with trophic skin changes in the hand or foot after trauma to the part: _____ algia

3. Pertaining to the skin: _____ ous

4. Inflammation of the skin: _____ itis

5. Abnormal redness of the skin occurring over widespread areas of the body: _____derma

6. Covering; the skin, consisting of the dermis and epidermis: _____ ary

- **Study and Review I, II, and III**—Self-paced study guide sections featuring a wide variety of exercises, including Case Studies.

Practical Application

Medical Record Analysis

This exercise contains information, abbreviations, 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 and Symbols*.

SOUTH SIDE PATHOLOGY, PC

Task Edit View Time Scale Options Help Date: 17 May 2017

315 West Eighth Street • Rome, GA 30165
Phone: 123-456-7890
Frank Jones Smith, MD, Laboratory Director

Surgical Pathology Report

Patient: Frances Marie Melton
DOB: 1/31/45
Gender: Female
Age: 72
Signed: Scott Parker, MD
Northside Dermatology
103 John Maddox Drive
Rome, GA 30165

Case Number: 104589
Collected: 02/11/2017
Received: 02/12/2017

Clinical Information:

1. Hemorrhagic papule Dx: BCC
2. Translucent papule with telangiectasia Dx: BCC

Diagnosis:
1. Skin of left nasal dorsum, shave biopsy—actinic keratosis.
2. Skin of right mid back, shave biopsy—basal cell carcinoma.

Gross Description:
1. Two containers, the first labeled "left nasal dorsum," have within a brown and white 4 × 5 mm superficial skin shave. With margins inked, this is bisected and entirely submitted.
2. The second, labeled "right mid back," has within a 0.5 × 0.7 cm superficial skin shave. With margins inked, this is trisected and entirely submitted.

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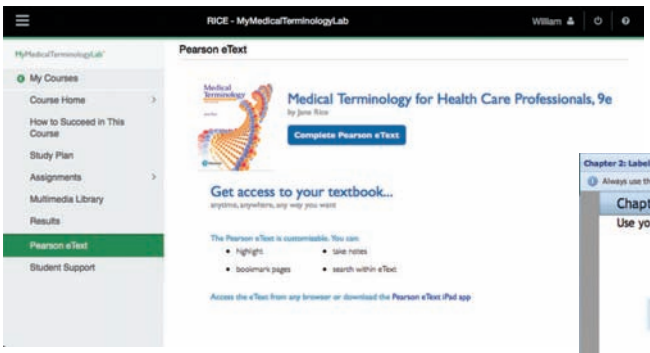

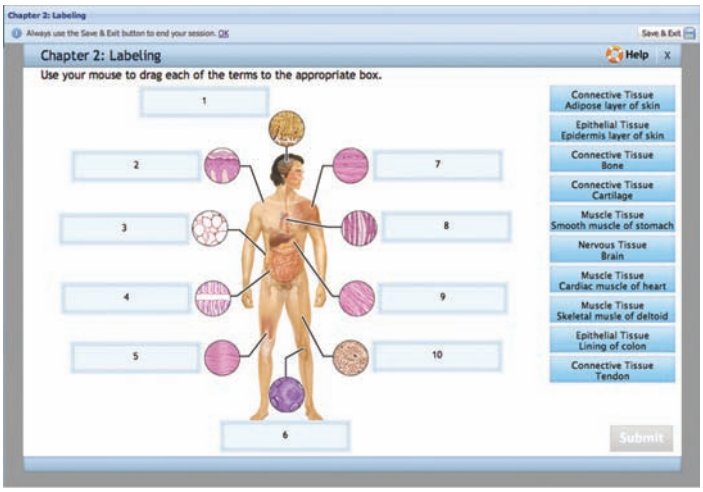

COMPREHENSIVE INSTRUCTIONAL PACKAGE

Perhaps the most gratifying part of an educator's work is the "aha" learning moment when the light bulb goes off and a student truly understands a concept—when a connection is made. Along these lines, Pearson is pleased to help instructors foster more of these educational connections by providing a complete battery of resources to support teaching and learning. Qualified adopters are eligible to receive a wealth of materials designed to help instructors prepare, present, and assess. For more information, please contact your Pearson sales representative or visit **www.pearsonhighered.com/educator**.

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 Health Care 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 50 years, is supportive and gives me the freedom to be an author. He is my love and hero. Also, I express my love to the flowers in my life: Melissa Rice-Noble, Doug Noble, and our grandchildren: Zachary, Benjamin, Jacob, Mary Katherine, Elizabeth Ann, and Emily Sarah.

Although I am now retired, I had a wonderful teaching career. 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 ninth edition of *Medical Terminology for Health Care 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 31 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, Portfolio Manager—Health Professions. To Lynda Hatch—you were with me all the way. Through your guidance and excellent work, this ninth edition of my "dream" has reached a new dimension. To Jason Smith, MD, and Kristi Ware, CMA, Northwest Georgia Dermatology, Rome, Georgia—A special thank you for providing me with much of the art used for this text.

Editorial Development Team

The content and format of *Medical Terminology for Health Care 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 health care 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 Health Care Professionals* is complete and correct. To this end, here are the steps we have taken:

1. **Editorial review.** We have assembled a large team of developmental consultants to critique every word and every image in this book. No fewer than 12 content experts have read each chapter for accuracy. In addition, some members of our developmental team were specifically assigned to focus on the precision of each illustration that appears in the book.
2. **Medical illustrations.** A team of medically trained illustrators was hired to prepare each piece of art that graces the pages of this book. These illustrators have a higher level of scientific education than the artists for most textbooks, and they worked directly with the author and members of our development team to make sure that their work was clear, correct, and consistent with what is described in the text.
3. **Accurate ancillaries.** The teaching and learning ancillaries are often as important to instruction as the textbook itself. Therefore we took steps to ensure accuracy and consistency of these components by reviewing every ancillary component.

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:

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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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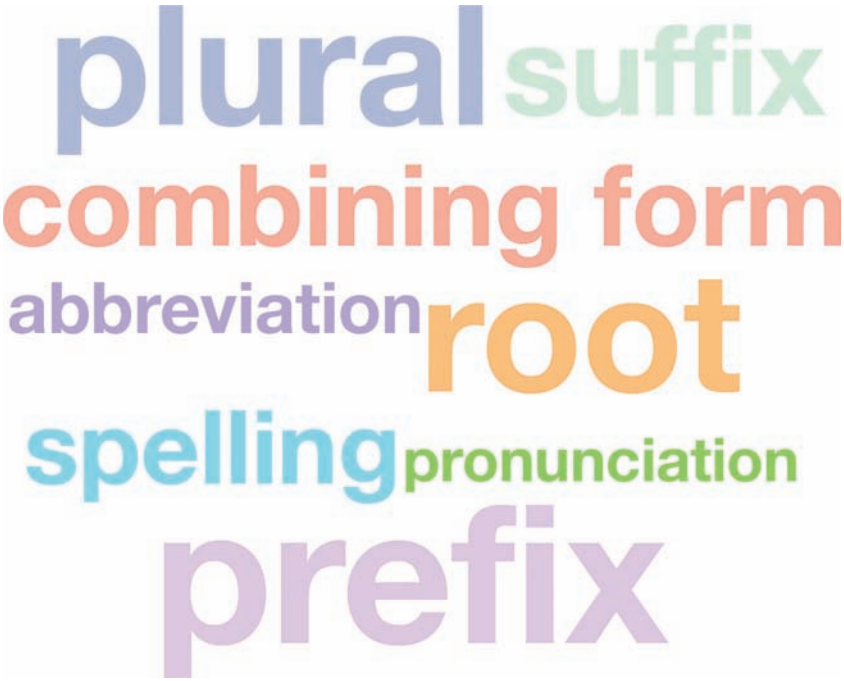
Chapter

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 three 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 purpose of medical coding and the ICD-10-CM, and identify the terminology related to it.
7. Understand the general components of a patient's medical record.
8. List and describe the four parts of the SOAP chart note record.
9. Identify and define selected abbreviations.
10. Apply your acquired knowledge of medical coding terminology by successfully completing the *Practical Application* exercise.

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 word parts are color-coded to make identification easier.) 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 Chapters 2 and 3 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, is a feature called **Alert!** It is 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. These short tidbits of information will draw your attention to interesting learning concepts. A new feature, **Insights**, brings to light some of the terminology of the ICD-10-CM and is included in the vocabulary sections and throughout the text. The purpose and use of the ICD-10-CM is explained later in the chapter in the section titled "Medical Coding."

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 *a 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. 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 you a general anatomy and physiology overview for each of the body systems.

This text presents an alphabetical listing of the 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 will 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´ nĭ-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
a**b**duct	To lead **away** from the middle	ar**te**ritis	Inflammation of an **artery**
a**d**duct	To lead **toward** the middle	ar**th**ritis	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		

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.
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.

As a way to help you remember "how to" build and spell medical words, **Rule Reminder** is a feature designed to draw your attention to terms in the Building Your Medical Vocabulary sections that follow specific rules. We hope you find this feature to be beneficial to your learning process!

Formation of Plural Endings

To change the following singular endings to plural endings, substitute the plural endings as illustrated:

Singular Ending	Plural Ending	Singular Ending	Plural Ending
a as in bursa	to **ae** as in bursae	**ix** as in appendix	to **ices** as in appendices
ax as in thorax	to **aces** as in thoraces or **es** as in thoraxes	**nx** as in phalanx	to **ges** as in phalanges
en as in foramen	to **ina** as in foramina	**on** as in spermatozoon	to **a** as in spermatozoa
is as in crisis	to **es** as in crises	**um** as in ovum	to **a** as in ova
is as in iris	to **ides** as in irides	**us** as in nucleus	to **i** as in nuclei
is as in femoris	to **a** as in femora	**y** as in artery	to **i** and add **es** as in arteries

Use of Abbreviations

An **abbreviation** is a process of shortening a word or phrase into appropriate letters. It is used as a form of communication in writing and documenting data. The Institute for Safe Medication Practices (ISMP) and The Joint Commission (TJC) developed a list of abbreviations considered to be dangerous because of the potential for misinterpretation. It is recommended that facilities using abbreviations for documentation keep a list of approved and unapproved abbreviations on hand and readily accessible.

fyi To view the list of unapproved abbreviations from the ISMP and TJC, go to *www.ismp.org/Tools/errorproneabbreviations.pdf* or *www.jointcommission.org/facts_about_do_not_use_list*.

When using abbreviations, caution must be exercised. Many have more than one meaning, such as ***ER***, which means *emergency room* and *endoplasmic reticulum*, and ***PA***, which means *physician assistant*, *posteroanterior*, and *pernicious anemia*. It is essential that you use or translate the correct meaning for the abbreviation being used. If there is any question about which abbreviation to use, it is best to spell out the word or phrase and not use an abbreviation.

An **acronym** is a word formed by the combining of initial letters, or syllables and letters, of a series of words or a compound term. Any shortened form of a word is an

abbreviation, but an acronym is a special type of abbreviation that can be pronounced as a word. For example: HIPAA is an acronym for Health Insurance Portability and Accountability Act.

An **initialism** is another type of abbreviation. It is formed by the initial letters of a series of words or a compound term, but is not pronounced as a word. Example: DOB (date of birth), each letter is pronounced.

In each chapter of this text, you will find selected abbreviations with their meanings. These abbreviations are in current use and are directly associated with the subject of the chapter. In the appendices, you will find an expanded alphabetical list of commonly used abbreviations and symbols. The abbreviations are presented using capital letters without periods except in those cases where lowercase letters and periods represent the norm or preferred method.

fyi

An **eponym** is a disease, structure, operation, or procedure named for the person who discovered or described it first. For example: Alzheimer disease is named for Alois Alzheimer, a neuropathologist who in 1906 identified an unusual disease of the cerebral cortex and described the amyloid plaques and neurofibrillary tangles that are its characteristics.

Pronunciation

Pronunciation of medical words may seem difficult; however, it is very important to correctly pronounce medical words with the same or very similar sounds in order to convey their correct meanings. As in spelling, one mispronounced syllable can change the meaning of a medical word. The following guide will help you to pronounce each medical word in this text correctly.

PRONUNCIATION GUIDE

This text uses a *phonetic* type of pronunciation guide adapted from *Taber's Cyclopedic Medical Dictionary*. This system uses symbols called *diacritics* (shown in the table below) to help you pronounce the word correctly. You should practice speaking each term aloud when working with the various lists of medical terms or vocabulary words.

ACCENT MARKS	Marks used to indicate stress on certain syllables. *Example:* an″ tə -sep´ tik (antiseptic)
Single ´	Used to indicate stress on certain syllables; a single accent mark is called a *primary accent* and is used with the syllable that has the strongest stress (primary syllable).
Double ″	Used to indicate syllables that are stressed less than primary syllables; a double accent mark is called a *secondary accent*.
DIACRITICS	Marks placed over or under vowels to indicate the long or short sound of the vowel.
Macron ¯	Indicates the long sound of the vowel. *Example:* mī´ krō-skōp (microscope)
Breve ˘	Indicates the short sound of the vowel. *Example:* măks´ ĭ-măl (maximal)
Schwa ə	Indicates the central vowel sound of most unstressed syllables. *Example:* bou´əl (bowel)

Building Your Medical Vocabulary

This section provides the foundation for learning medical terminology. Review the following alphabetized word list. Note how common prefixes and suffixes are repeatedly applied to word roots and combining forms to create different meanings. The word parts are color-coded: prefixes are yellow, suffixes are blue, roots/combining forms are red.

Remember These Guidelines

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.
2. If the suffix begins with a consonant, keep the combining vowel and add the suffix to the combining form. For example, chem/o (*chemical*) + -therapy (*treatment*) becomes chemotherapy.

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.

Medical Word	Word Parts		Definition
	Part	Meaning	
abate (ă-bāt´)			To lessen, ease, decrease, or cease. Used to note the lessening of pain or the decrease in severity of symptoms.
abnormal (ăb-nōr´ măl)	ab- norm -al	away from rule pertaining to	Pertaining to away from the norm or rule. A condition that is considered to be not normal.
abscess (ăb´ sĕs)			Localized collection of pus, which may occur in any part of the body
acute (ă-cūt´)			Sudden, sharp, severe; used to describe a disease that has a sudden onset, severe symptoms, and a short course
adhesion (ăd´ hē-zhŭn)	adhes -ion	stuck to process	Literally means *a process of being stuck together*. An abdominal adhesion usually involves the intestines and is caused by inflammation or trauma. This type of adhesion may cause an intestinal obstruction and require surgery.
afferent (ăf´ ĕ rĕnt)			Carrying impulses toward a center
ambulatory (ăm´ bū-lăh-tōr˝ ē)			Condition of being able to walk, not confined to bed
antidote (ăn´ tĭ-dōt)			Substance given to counteract poisons and their effects

Medical Word	Word Parts		Definition
	Part	Meaning	
antipyretic (ăn″ tĭ-pī-rĕt′ ĭk)	anti- pyret -ic	against fever pertaining to	Pertaining to an agent that is used to lower an elevated body temperature (fever)
antiseptic (ăn″ tə-sĕp′ tĭk)	anti- sept -ic	against putrefaction pertaining to	Pertaining to an agent that works against sepsis (*putrefaction*); a technique or product used to prevent or limit infections
antitussive (ăn″ tĭ-tŭs′ ĭv)	anti- tuss -ive	against cough nature of, quality of	Pertaining to an agent that works against coughing
apathy (ăp′ ă-thē)			Condition in which one lacks feelings and emotions and is indifferent
asepsis (ā-sĕp′ sĭs)	a- -sepsis	without decay	Without decay; *sterile*, free from all living microorganisms
axillary (ax) (ăks′ ĭ-lār-ē)	axill -ary	armpit pertaining to	Pertaining to the armpit
biopsy (Bx) (bī′ ŏp-sē)	bi(o) -opsy	life to view	Surgical removal of a small piece of tissue for microscopic examination; used to determine a diagnosis of cancer or other disease processes in the body

ALERT!

To change biops**y** to its plural form, you change the ***y*** to ***i*** and add ***es*** to make *biopsies*.

cachexia (kă-kĕks′ ē-ă)	cac- -hexia	bad condition	Condition of ill health, malnutrition, and wasting. It may occur in chronic diseases such as cancer and pulmonary tuberculosis.
centigrade (C) (sĕn′ tĭ-grād)	centi- -grade	one hundred, one hundredth a step	Literally means *having 100 steps* or *degrees*; unit of temperature measurement (Celsius scale) with a boiling point at 100° and a freezing point at 0°. Each degree of temperature change is 0.01 (1/100) of the scale.
centimeter (cm) (sĕn′ tĭ-mē-tĕr)	centi- -meter	one hundred, one hundredth measure	Unit of measurement in the metric system; one hundredth of a meter