Medical Terminology Systems

A Body Systems Approach

8TH EDITION

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This Book Is Dedicated with Love

To my best friend, colleague, and husband, Dr. Julius A. Gylys, and to my children, Regina Maria and Dr. Julius Anthony, and to my grandchildren, Andrew Masters, Dr. Julia Halm, Caitlin Masters, Anthony Bishop-Gylys, Matthew Bishop-Gylys, and the little ones, Liam, Harrison, and Emmett Halm

B.A.G.

To my loving grandchildren, Andrew Arthur Kurtz, Katherine Louise Kurtz, Daniel Keith Wedding II, Carol Ann Estelle Wedding, Jonathan Michael Kurtz, Donald Keith Wedding III, Emily Michelle Wedding, Katelyn Christine Wedding, and David Michael Wedding

M.E.W.

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Preface

Building on the success of previous editions, *Medical Terminology Systems,* 8th edition, continues its well-established record of presenting medical word building principles based on competency-based curricula. Because of the pedagogical success of previous editions, the 8th edition continues its structural design as a textbook–workbook that complements all teaching formats, including traditional lecture, distance learning, and independent or self-paced study. The 8th edition continues to present eponyms without showing the possessive form, such as *Bowman capsule, Cushing syndrome,* and *Parkinson disease*. Medical dictionaries as well as the American Association for Medical Transcription and the American Medical Association support these changes.

The popular basic features of the previous edition have been enhanced and expanded. The updated body systems chapters include diseases and conditions, current medical and diagnostic procedures, treatments, and pharmaceutical agents. The textbook continues to present authentic medical records with activities designed to enhance application of medical terminology to the "real world of medicine." This approach provides the essential tools students of various learning levels need to communicate effectively in today's health-care settings.

As in earlier editions, illustrations that clearly and accurately enhance textual material are integrated throughout the textbook. *Medical Terminology Systems,* 8th edition, includes over 36 new illustrations specifically designed to portray real-life medical conditions, procedures, and treatments. The illustrations supplement course content in new and interesting ways and help make difficult concepts clear. Unique to this edition are innovative illustrations created for Chapters 1 through 3 to help students understand the various applications of suffixes and prefixes in word building. Also new to the 8th edition are Documenting Health-Care Activities sections in each body systems chapter. These sections emphasize the role of the electronic medical record (EMR) in today's health-care industry.

Documenting Health-Care Activities are first introduced in Chapter 4, Body Structure. The introduction provides information related to the transition of the medical record from a paper medical chart to a digital version. Reinforcement of this introduction continues throughout each body systems chapter so that students fully understand how today's digital medical record allows practitioners to electronically monitor and track the history of a patient's medical treatment.

Although the fundamental characteristics of the 8th edition remain the same as those in previous editions, this edition offers significant updates and enhancements to aid in the learning process and improve retention of medical terms. To achieve this goal, each illustration in the textbook presents clinically accurate and aesthetically pleasing representations of anatomical structures, disease conditions, and medical procedures. In addition, ICD-10-PCS replacement terms for discontinued eponyms are summarized in Appendix H. As in previous editions, we continue to incorporate the excellent suggestions offered by instructors and students and appreciate all of their contributions. Undoubtedly, the recommendations have helped make *Medical Terminology Systems: A Body Systems Approach* a leading textbook in educational institutions and one that continues to be well received by instructors and students. Here is a brief summary of chapter content:

- **Chapter 1** explains the techniques of medical word building using basic word elements.
- **Chapter 2** categorizes major surgical, diagnostic, symptomatic, and grammatical suffixes.
- **Chapter 3** presents major prefixes of position, number and measurement, direction, and other parameters.
- **Chapter 4** introduces anatomical, physiological, and pathological terms. It also presents combining forms denoting cellular and body structures, body position and direction, and regions of the body, in addition to combining forms related to diagnostic methods and pathology. General diagnostic and therapeutic terms are described and provide a solid foundation for specific terms addressed in the body systems chapters that follow.
- **Chapters 5 through 16** are organized according to specific body systems and may be taught in any sequence. These chapters include key anatomical and physiological terms, basic anatomy and physiology, a body systems connections table, and a comprehensive table of word elements, including combining forms, suffixes, and prefixes. The remaining chapter material consists of a disease focus section, followed by tables that include updated diseases and conditions; diagnostic, surgical, and therapeutic procedures; pharmacology; and abbreviations. Each body systems chapter concludes with several learning activities that assess comprehension of material and medical record activities that

illustrate various clinical applications and reinforce medical record documentation.
- **Appendix A: Answer Key** contains answers to each learning activity to validate proficiency and provide immediate feedback for student assessment. Although the answer key for the terminology section of each Documenting Health-Care Activity is not included in this appendix, it is available to adopters in the Instructor's Guide.
- **Appendix B: Common Abbreviations and Symbols** includes an updated, comprehensive list of medical abbreviations and their meanings and an updated summary of common symbols.
- **Appendix C: Glossary of Medical Word Elements** contains alphabetical lists of medical word elements and their meanings. This appendix presents two methods for word-element indexing—first by medical word element, then by English term.
- **Appendix D: Index of Genetic Disorders** lists genetic disorders presented in the textbook.
- **Appendix E: Index of Clinical, Laboratory, and Imaging Procedures** lists radiographic and other diagnostic imaging procedures presented in the textbook.
- **Appendix F: Index of Pharmacology** lists drug classifications presented in the textbook.
- **Appendix G: Index of Oncological Terms** lists oncological diseases presented in the textbook.
- **Appendix H: Index of Discontinued Abbreviations and Eponyms** summarizes abbreviations discontinued in medical charts. It also contains discontinued eponyms along with their replacement terms for coding purposes.

Medical Language Lab (MLL)

Included in every new copy of *Medical Terminology Systems: A Body Systems Approach,* 8th edition, is access to the ultimate online medical terminology resource for students. The MLL is a rich learning environment utilizing proven language development methods to help students become effective users of medical language. To access the MLL, students simply go to *http://www.medicallanguagelab.com* and redeem the access code provided in their new copies of *Medical Terminology Systems: A Body Systems Approach,* 8th edition.

Each lesson in the MLL teaches students how to listen critically for important terms, respond to terms using medical terminology, and generate their own terminology-rich writing and speaking skills. By following the activities in each lesson, students graduate from simple memorization to becoming stronger users of medical language.

In addition, the MLL provides students with a wide variety of practice activities that help them to solidify their recall of key terms from the chapter. It also contains an audio glossary in which students can hear words pronounced and used properly in context.

Designed to work seamlessly with *Medical Terminology Systems: A Body Systems Approach*, 8th edition, each activity in the MLL has been crafted with content specific to the textbook. Every chapter in *Medical Terminology Systems: A Body Systems Approach*, 8th edition, contains a corresponding lesson in the MLL that is relevant and useful in helping students develop medical terminology skills.

Instructors benefit from an instructor's page that is powerful yet easy to understand and allows them to decide which chapters and activities will be available to their students. Instructors also control how the MLL reports student scores, either through the native MLL grade book or to their own BlackBoard, Angel, Moodle, or SCORM-compliant course management solution.

Davis*Plus* Online Resource Center

Although the study of medical terminology demands hard work and discipline, various self-paced activities offer interest and variety to the learning process. Many activities and resources are available to adopters of the textbook at the Davis*Plus* Instructor and Student Online Resource Center. The Online Resource Center is designed to help teachers teach and students learn medical terminology in an exciting, challenging, effective fashion. Visit *http://davisplus.fadavis.com* for the Instructor and Student Online Resource Center to explore the various ancillaries available for instructors and students.

Instructor Online Resource Center

The Davis*Plus* Instructor Online Resource Center provides many updated, innovative instructional activities. These activities make teaching medical terminology easier and more effective. Teachers can use the supplemental activities in various educational settings—traditional classroom, distance learning, or independent or self-paced studies. The many ancillaries help instructors maximize the benefits of the textbook and include the following:

- Electronic test bank with *ExamView Pro* test-generating software
- PowerPoint presentations for each chapter

- Searchable image bank
- Printable Instructor's Guide
- Resources in Blackboard, Angel, Moodle, and SCORM formats

Electronic Test Bank

This edition offers a powerful updated *ExamView Pro* test-generating program that allows instructors to create custom-made or randomly generated tests in a printable or online format from a test bank of more than 2,500 test items.

PowerPoint Lecture Notes

The lecture notes provide a unique and reinforcing dimension to the learning process.

Over 1,400 slides are carefully designed to supplement and augment the material covered in the textbook. The PowerPoint presentations suggest various teaching techniques to make learning and teaching profoundly effective. Notes at the bottom of various slides offer faculty suggestions to tailor or expand the presentations to suit their individual academic needs.

Each chapter has an outline-based presentation, consisting of a chapter overview, main functions of the body system, and selected pathology, vocabulary, and procedures. Included are interactive clinically related exercises that highlight real-life situations. Full-color illustrations reinforce many of the clinically related exercises.

Image Bank

The image bank contains all illustrations from the textbook. It is fully searchable and allows users to zoom in and out and display a JPG image of an illustration that can be copied into a Microsoft Word document or PowerPoint presentation.

Instructor's Guide

The printable Instructor's Guide is a resource full of instructional activities that have been updated to meet today's instructional needs. It is available in PDF format on the Instructor's Online Resource Center and includes the following elements:

- *Suggested Course Outlines.* Course outlines of various lengths, provide effective methods of covering material presented in the textbook. A course outline is also provided for Term*Plus,* the interactive software that is available separately from F. A. Davis Co. The outline makes it easy to correlate the instructional software with the textbook chapters.
- *Student- and Instructor-Directed Activities.* These comprehensive teaching aids are updated and extended for this edition. They offer an assortment of activities for each body systems chapter that are easily incorporated as course requirements, supplemental activities, or collaborative projects. Included are peer evaluation forms and community and Internet resources. This section provides an updated list of resources, including technical journals, community organizations, and Internet sites to complement course content.
- *Supplemental Documenting Health-Care Activities.* The supplemental medical record activities have been updated to parallel the new Documenting Health-Care Activities sections presented in each of the body systems chapters. As in the textbook, these activities use actual medical records to show how medical terminology is used to document patient care. Terminology and analysis exercises reinforce the medical vocabulary in the report to help students develop critical thinking skills. Instructors can use the answer key for grading purposes or give it to the students for self-evaluation. In addition, they can use these medical records for various activities, including oral reports, medical coding, medical transcribing, or individual assignments.
- *Pronunciations and Answer Keys.* Answer keys are provided in the IG for the activities in the Medical Word Elements tables and Documenting Health-Care Activities Terminology tables in the textbook. These keys should prove helpful for grading or for class presentations.

Student Online Resource Center

The Davis*Plus* Student Online Resource Center includes many user-friendly activities to reinforce material covered in the textbook. At the same time, it is structured to make learning medical terminology an exciting, challenging activity. Resources include medical record activities, audio tutorials, and animations.

Reinforcement of Medical Record Activities

Health-care providers in hospitals, medical centers, and private practice facilities dictate various types of medical reports that become part of the electronic medical record. Included are chart notes, history and physical examinations, progress notes, consultation

reports, operative reports, discharge summaries, and diagnostic studies. Samples of these types of reports are included in the Documenting Health-Care Activities found in the body systems chapters (Chapters 5–16). To reinforce these activities, the Student Online Resource Center includes a medical records activities section in which the key terms in each report are underlined. As students click the underlined terms, they hear the correct pronunciation of each term. All reports are styled following the guidelines established by the American Association of Medical Transcription (AAMT). This formatting provides an opportunity for students to learn the correct styling of various types for medical reports.

Audio Tutorials

The audio tutorials are developed from the Medical Word Elements sections of the body systems chapters (Chapters 5–16). They are designed to strengthen word building, spelling, pronunciation, and understanding of selected medical terms. These tutorials are also useful for students in beginning transcription and medical secretarial courses. Students can develop transcription skills by typing each word as it is pronounced. After typing the words, the student can correct spelling by referring to the textbook or a medical dictionary.

Animations

Several animations are included to help students better visualize complex concepts. For example, one animation explores the pathology of gastroesophageal reflux disease (GERD). Another shows the various stages of pregnancy and delivery. These innovative tools help students better understand important processes and procedures as they learn the associated medical terminology.

Term*Plus*

Term*Plus* continues to be a powerful, interactive CD-ROM program that is available for purchase separately from F. A. Davis Co. Term*Plus* is a competency-based, self-paced, multimedia program that includes graphics, audio, and a dictionary culled from *Taber's Cyclopedic Medical Dictionary,* 22nd edition. Help menus provide navigational support. The software comes with numerous interactive learning activities, including the following:

- Anatomy Focus
- Tag the Elements (drag-and-drop)
- Spotlight the Elements
- Concentration
- Build Medical Words
- Programmed Learning
- Medical Vocabulary
- Chart Notes
- Spelling
- Crossword Puzzles
- Word Scramble
- Terminology Teaser

All activities can be graded, and the results can be printed or e-mailed to the instructor. This feature makes Term*Plus* especially valuable as a distance-learning tool because it provides evidence of student drill-and-practice completion in various learning activities.

Taber's Cyclopedic Medical Dictionary

The world-famous *Taber's Cyclopedic Medical Dictionary* is the recommended companion reference for this book. Virtually all terms in *Systems* may be found in *Taber's*. In addition, *Taber's* contains etymologies for nearly all main entries presented in this textbook.

Discontinued Eponyms with ICD-10-PCS Replacement Terms

ICD-10-CM contains the use of eponyms when assigning certain codes for diagnoses and procedures. However, all surgical eponyms have been removed from ICD-10-PCS. In their place are root terms that describe the objective of the procedure and other parameters to assign the proper code(s). The ICD-10-PCS procedural codes are more specific, more clinically accurate, and use a more logical structure than the previous coding systems. There are still some diagnostic eponyms in ICD-10-PCS, but most have been replaced by a constructed term that identifies the disease or condition. A summary of eponyms found in this textbook along with the ICD-10-PCS 2015 term(s) that replace the eponym are summarized in Appendix H of this textbook.

We hope you enjoy this new edition as much as we enjoyed preparing it. We think you will find this the best edition ever.

Barbara A. Gylys
Mary Ellen Wedding

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Contents at a Glance

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CHAPTER

1

Basic Elements of a Medical Word

Chapter Outline

Objectives

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

- Identify the four word elements used to build medical words.
- Divide medical words into their component parts.
- Apply the basic rules to define and build medical words.
- Locate the pronunciation guidelines chart and interpret pronunciation marks.
- Pronounce medical terms presented in this chapter.
- Demonstrate your knowledge of this chapter by completing the learning activities.

Medical Word Elements

The language of medicine is a specialized vocabulary used by health-care providers. Many current medical word elements originated as early as the 4th century B.C. when Hippocrates practiced medicine. With technological and scientific advancements in medicine, new terms have evolved to reflect these innovations. For example, radiographic terms, such as magnetic resonance imaging (MRI) and ultrasound (US), are now commonly used to describe current diagnostic procedures.

A medical word consists of some or all of the following elements:

- word root
- combining form
- suffix
- prefix.

How these elements are combined and whether all or some of them are present in a medical term determines the meaning of a word. To understand the meaning of medical words, it is important to learn how to divide them into their basic elements. The purpose of this chapter is to cover the basic principles of medical word building and learn how to pronounce the terms correctly. Thus, pronunciations of medical terms are provided throughout the textbook. In addition, pronunciation guidelines are located on the inside back cover of this book. They can be used as a convenient reference to help pronounce terms correctly.

Word Roots

A **word root** is the foundation of a medical term and contains its primary meaning. All medical terms have at least one word root. Most word roots are derived from the Greek or Latin language; thus, two different roots may have the same meaning. For example, the Greek word ***dermatos*** and the Latin word ***cutane*** both refer to the skin. As a general rule, Greek roots describe a disease, condition, treatment, or diagnosis. Latin roots describe anatomical structures. Consequently, the Greek root ***dermat*** describes a disease, condition, treatment, or diagnosis of the skin; the Latin root ***cutane*** describes an anatomical structure. (See Table 1-1.)

Table 1-1 Examples of Word Roots

This table lists examples of English terms with their Greek and Latin origins as well as word analyses of corresponding medical terms. Phonetic pronunciations are provided to help you practice pronouncing the medical terms.

English Term	Greek or Latin Term*	Word Root	Word Analysis
skin	dermatos (Gr)	dermat	**dermat**/itis (dĕr-mă-TĪ-tĭs): inflammation of the skin
			Dermatitis *is a general term used to describe an inflammatory condition of the skin.*
	cutis (L)	cutane	**cutane**/ous (kū-TĀ-nē-ŭs): pertaining to the skin
			Cutaneous *is a term that identifies an anatomical structure.*
kidney	nephros (Gr)	nephr	**nephr**/oma (nĕ-FRŌ-mă): tumor of the kidney
			Nephroma *is a tumor (benign or malignant) of kidney tissue.*
	renes (L)	ren	**ren**/al (RĒ-năl): pertains to the kidney
			Renal *is a term that identifies an anatomical structure.*

Table 1-1 Examples of Word Roots—cont'd

English Term	Greek or Latin Term*	Word Root	Word Analysis
mouth	stomatos (Gr)	stomat	**stomat/**itis (stō-mă-TĪ-tĭs): inflammation of the mouth *The word root* stomat *is commonly confused with the English term* stomach. *However,* stomat *is derived from the Greek word for* mouth. *The word root for the stomach is* gastr, *derived from the Greek word* gastros.
	oris (L)	or	**or/**al (OR-ăl): pertaining to the mouth Oral *is a term that identifies an anatomical structure.*

*It is not important to know the origin of a medical word. This information is provided here to clarify and illustrate that there may be two different word roots for a single term.

Combining Forms

A **combining form** is created when a word root is combined with a vowel. The vowel, known as a **combining vowel,** is usually an *o* but is sometimes an *i*. The combining vowel has no meaning of its own but enables the connection of two or more word elements. Like a word root, a combining form is the basic foundation to which other word elements are added to build a complete medical word. In this text, a combining form will be listed as *word root/vowel* (such as *gastr/o*), as illustrated in Table 1-2.

Table 1-2 Examples of Combining Forms

This table illustrates how word roots and vowels create combining forms. Learning combining forms rather than word roots makes pronunciations easier because of the terminal vowel. For example, in this table, the word roots ***gastr*** *and* ***nephr*** *are difficult to pronounce, whereas their combining forms* ***gastr/o*** *and* ***nephr/o*** *are easier to pronounce.*

Word Root	+	Vowel	=	Combining Form	Meaning
erythr/	+	o	=	erythr/o	red
gastr/	+	o	=	gastr/o	stomach
hepat/	+	o	=	hepat/o	liver
immun/	+	o	=	immun/o	immune, immunity, safe
nephr/	+	o	=	nephr/o	kidney
oste/	+	o	=	oste/o	bone

Suffixes

A **suffix** is a word element placed at the end of a word that alters its meaning. All medical terms have a suffix. In the terms *pancreat/itis* (inflammation of the pancreas) and *pancreat/o/pathy* (disease of the pancreas), the suffixes are ***-itis*** (inflammation) and ***-pathy*** (disease). In medical terminology, a suffix usually describes a pathology (disease or abnormality), symptom, surgical or diagnostic procedure, or part of speech.

To link a suffix that begins with a vowel, use a word root. To link a suffix that begins with a consonant, use a combining form. Review Table 1-3, which illustrates this principle.

Table 1-3 Examples of Suffixes

This table lists examples of pathological suffixes linked with a word root (WR) and a combining form (CF). Phonetic pronunciations are provided to help you practice pronouncing the medical terms.

Suffix	=	Medical Word	Meaning	Rationale
-itis (inflammation)	=	gastr/**itis** găs-TRĪ-tĭs	inflammation of the stomach*	The suffix *-itis* begins with a vowel and requires a WR.
-megaly (enlargement)	=	gastr/o/**megaly** găs-trō-MĔG-ă-lē	enlargement of the stomach	The suffix *-megaly* begins with a consonant and requires a CF.
-oma (tumor)	=	hepat/**oma** hĕp-ă-TŌ-mă	tumor of the liver	The suffix *-oma* begins with a vowel and requires a WR.
-cyte (cell)	=	hepat/o/**cytes** HĔP-ă-tō-sīts	cells in the liver	The suffix *-cytes* begins with a consonant and requires a CF.

*To define a medical term, first define the suffix and then the first part of the word.

Prefixes

A **prefix** is a word element attached to the beginning of a word or word root. However, not all medical terms have a prefix. Adding or changing a prefix changes the meaning of the word. Prefixes usually indicate a number, time, position, direction, or negation. Many of the same prefixes used in medical terminology are also used in the English language. Review Table 1-4 to reinforce the principles of linking a prefix to other word elements.

Table 1-4 Examples of Prefixes

This table lists examples of prefixes linked to a word root and a suffix. Note that the suffixes begin with a vowel and are linked to a word root. Phonetic pronunciations of the constructed medical words are provided to help you practice pronouncing the medical terms.

Prefix	+	Word Root	+	Suffix	=	Medical Word	Meaning
an- (without, not)	+	**esthes** (feeling)	+	**-ia** (condition)	=	**an/esthes/ia** ăn-ĕs-THĒ-zē-ă	condition of not feeling
hyper- (excessive, above normal)	+	**therm** (heat)	+	**-ia** (condition)	=	**hyper/therm/ia** hī-pĕr-THĔR-mē-ă	condition of excessive heat
intra- (in, within)	+	**muscul** (muscle)	+	**-ar** (pertaining to)	=	**intra/muscul/ar** ĭn-tră-MŬS-kū-lăr	pertaining to within the muscle
para- (near, beside; beyond)	+	**nas** (nose)	+	**-al** (pertaining to)	=	**para/nas/al** păr-ă-NĀ-săl	pertaining to (area) near the nose
poly (many, much)	+	**ur** (urine)	+	**-ia** (condition)	=	**poly/ur/ia** pŏl-ē-Ū-rē-ă	condition of much urine
pre- (before)	+	**nat** (birth)	+	**-al** (pertaining to)	=	**pre/nat/al** prē-NĀ-tăl	pertaining to before birth

Basic Guidelines

Defining and building medical words are crucial skills in understanding the meaning of a medical word. Following the basic guidelines will help you develop these skills.

Defining Medical Words

Here are three steps for defining medical words using *gastr/o/enter/itis* as an example.

- **Step 1.** Define the **suffix,** or last part of the word. In this case, the suffix *-itis* means *inflammation.*
- **Step 2.** Define the **first part of the word** (which may be a word root, combining form, or prefix). In this case, the combining form ***gastr/o*** means *stomach.*
- **Step 3.** Define the **middle parts of the word.** In this case, the word root ***enter*** means *intestine.*

When you analyze ***gastr/o/enter/itis*** following the three steps, the meaning is:

1. inflammation (of)
2. stomach (and)
3. intestine.

Thus, the meaning of **gastr/o/enter/itis** is *inflammation (of) stomach (and) intestine.* Table 1-5 further illustrates this process.

Table 1-5 Defining Gastroenteritis

This table illustrates the three steps of defining a medical word using the example gastroenteritis.

Combining Form	Middle	Suffix
gastr/o	enter/	-itis
stomach	intestine	inflammation
(step 2)	(step 3)	(step 1)

Building Medical Words

There are three basic rules for building medical words.

Rule 1

A word root links a suffix that begins with a vowel.

Word Root	+	Suffix	=	Medical Word	Meaning
hepat (liver)	+	**-itis** (inflammation)	=	**hepatitis** hĕp-ă-TĪ-tĭs	inflammation of the liver

Rule 2

A combining form (root + o) links a suffix that begins with a consonant.

Combining Form	+	Suffix	=	Medical Word	Meaning
hepat/o (liver)	+	**-cyte** (cell)	=	**hepatocyte** HĔP-ă-tō-sīt	liver cell

Rule 3

A combining form links one root to another root to form a compound word. This rule holds true even if the second root begins with a vowel, as in **oste/o/arthr/itis.** Keep in mind that the rules for linking multiple roots to each other are slightly different from the rules for linking roots and combining forms to suffixes.

Combining Form	+	Word Root	+	Suffix	=	Medical Word	Meaning
oste/o (bone)	+	**chondr** (cartilage)	+	**-itis** (inflammation)	=	**osteochondritis** ŏs-tē-ō-kŏn-DRĪ-tĭs	inflammation of bone and cartilage
	+	**arthr** (joint)	+	**-itis** (inflammation)	=	**osteoarthritis** ŏs-tē-ō-ăr-THRĪ-tĭs	inflammation of bone and joint

It is time to review medical word elements by completing Learning Activities 1-1 and 1-2 on pages 8–9.

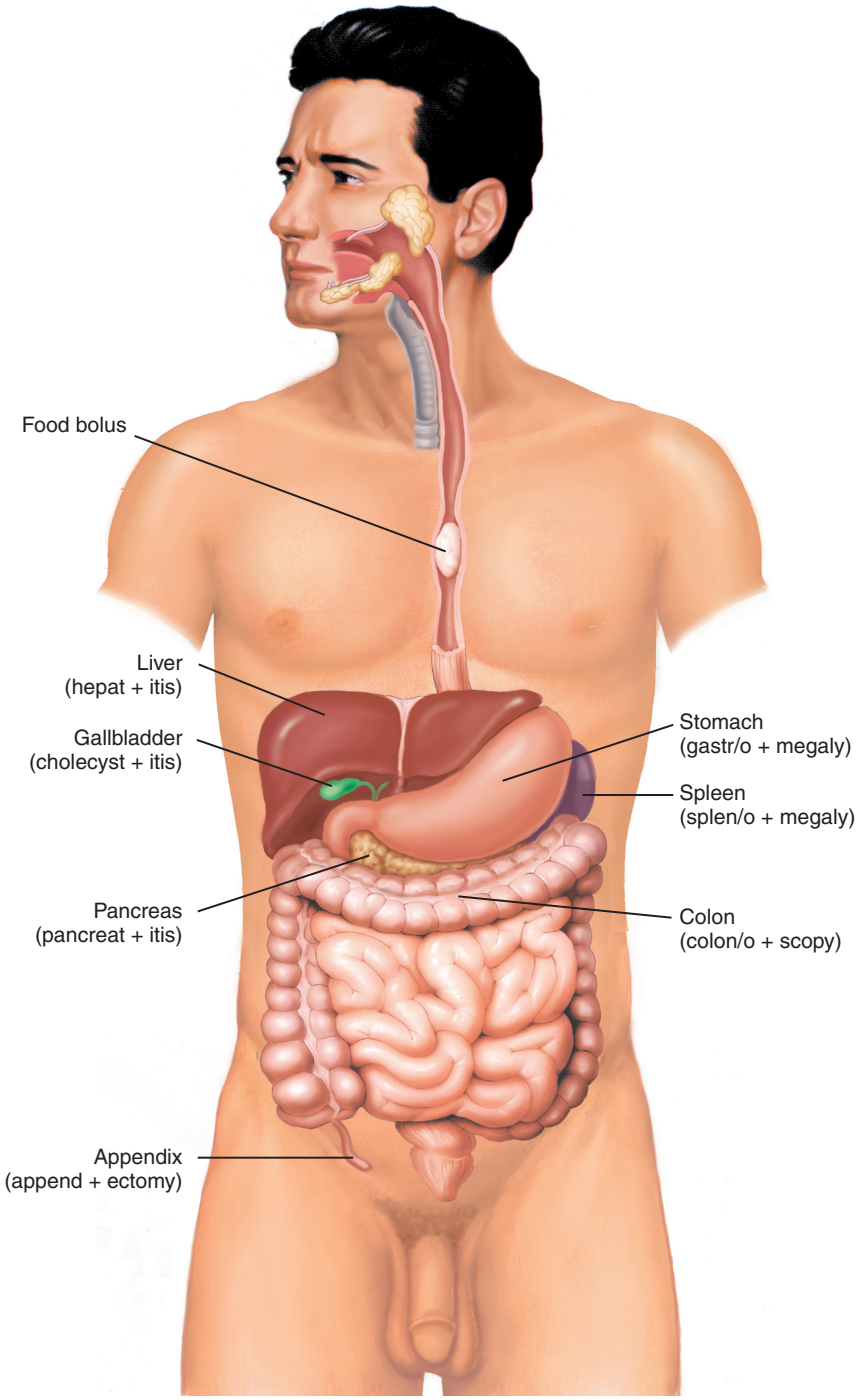
Pronunciation Guidelines

Although pronunciation of medical words usually follows the same rules that govern pronunciations of English words, some medical words may be difficult to pronounce when first encountered. Therefore, selected terms in this book include the phonetic pronunciation. Also, pronunciation guidelines can be found on the inside back cover of this book and at the end of selected tables. Use them whenever you need help with pronunciation of medical words.

It is time to review pronunciations, analysis of word elements, and defining medical terms by completing Learning Activities 1-3, 1-4, and 1-5 on pages 10–12.

Medical Word Building Summary

The illustration that follows demonstrates medical word building. Building a medical word that means *enlargement of the stomach* requires knowledge of the word element for *stomach* (**gastr** or **gastr/o**) and the suffix for *enlargement* (**-megaly**). The medical word for *enlargement of the stomach* is **gastromegaly.** To develop medical word building skills, study the combinations of word building elements in the digestive system illustration that follows.



It is time to practice building medical words by completing Learning Activity 1-6 on page 14.

LEARNING ACTIVITIES

The learning activities that follow provide a review of the basic medical word elements introduced in this chapter. Complete each activity and review your answers to evaluate your understanding of this chapter.

Learning Activity 1-1

Understanding Medical Word Elements

Fill in the blanks to complete the sentences correctly.

1. The four elements used to form words are _____.
2. A root is the main part or foundation of a word. In the words *arthritis, arthrectomy,* and *arthroscope,* the root is _____.

Identify the statements as true or false. If false, rewrite the statement correctly on the line provided.

3. A combining vowel is usually an *e.* True False

_____

4. A word root links a suffix that begins with a consonant. True False

_____

5. A combining form links multiple roots to each other. True False

_____

6. A combining form links a suffix that begins with a consonant. True False

_____

7. To define a medical word, first define the prefix. True False

_____

8. In the term *intramuscular, intra* is the prefix. True False

_____

Underline the word root in each of the combining forms.

9. splen/o (spleen)
10. hyster/o (uterus)
11. enter/o (intestine)
12. neur/o (nerve)
13. ot/o (ear)
14. dermat/o (skin)
15. hydr/o (water)

Check your answers in Appendix A. Review material that you did not answer correctly.

Correct Answers _____ X 6.67 = _____ % Score

Learning Activity 1-2

Identifying Word Roots and Combining Forms

Underline the word roots in the medical words that follow.

Medical Word	Meaning
1. nephritis	inflammation of the kidney
2. arthrodesis	fixation of a joint
3. dermatitis	inflammation of the skin
4. dentist	specialist in teeth
5. gastrectomy	excision of the stomach
6. chondritis	inflammation of cartilage
7. hepatoma	tumor of the liver
8. muscular	pertaining to muscle
9. gastric	pertaining to the stomach
10. osteoma	tumor of the bone

Underline the combining forms.

11. nephr	kidney
12. hepat/o	liver
13. arthr	joint
14. oste/o/arthr	bone, joint
15. cholangi/o	bile vessel

Check your answers in Appendix A. Review material that you did not answer correctly.

Correct Answers _____ X 6.67 = _____ % Score