

# MEDICAL TERMINOLOGY

FOURTH EDITION

GET CONNECTED!



SUZANNE S. FRUCHT

# BRIEF CONTENTS

## SECTION I: *Basic Word Building*

<b>Chapter 1</b>	Introduction to Medical Terminology.....	1
<b>Chapter 2</b>	Suffixes .....	13
<b>Chapter 3</b>	Prefixes .....	25
<b>Chapter 4</b>	Anatomical Terminology .....	33

## SECTION II: *Medical Specialties*

<b>Chapter 5</b>	Dermatology: Integumentary System.....	54
<b>Chapter 6</b>	Orthopedics: Musculoskeletal System .....	82
<b>Chapter 7</b>	Cardiology: Cardiovascular System .....	117
<b>Chapter 8</b>	Hematology: Blood.....	148
<b>Chapter 9</b>	Immunology: Immune Systems .....	169
<b>Chapter 10</b>	Pulmonology: Respiratory System .....	192
<b>Chapter 11</b>	Gastroenterology: Digestive System .....	223
<b>Chapter 12</b>	Urology and Nephrology: Urinary System and Male Reproductive System.....	253
<b>Chapter 13</b>	Obstetrics and Gynecology: Female Reproductive System .....	285
<b>Chapter 14</b>	Neurology: Nervous System .....	315
<b>Chapter 15</b>	Endocrinology: Endocrine System .....	342
<b>Chapter 16</b>	Ophthalmology: The Eye.....	368
<b>Chapter 17</b>	Otorhinolaryngology: The Ears, Nose, and Throat.....	394

## SECTION III: *Appendices*

<b>Appendix I</b>	Word Parts .....	419
<b>Appendix II</b>	Abbreviations and Symbols .....	423
<b>Appendix III</b>	Selected English/Spanish Glossary.....	431
<b>Appendix IV</b>	Answer Keys .....	434
<b>Glossary/Index</b>	.....	461

*This page intentionally left blank*

*Fourth Edition*

# Medical Terminology

*Get Connected!*

Suzanne S. Frucht, PhD

*Associate Professor Emeritus*

Northwest Missouri State University

Maryville, MO



**Content Production:** William Johnson  
**Development Editor:** Danielle Doller  
**Product Management:** Stephen Heasley

**Product Marketing:** Brooke Imbornone  
**Rights and Permissions:** Jenell Forschler  
**Cover Image:** AlonzoDesign/DigitalVision Vectors/Getty Images

Credits and acknowledgments for content borrowed from other sources and reproduced, with permission, in this textbook appear on appropriate page within text.

---

**Copyright © 2026, 2020, 2017, 2012 by Pearson Education, Inc. 221 River Street, Hoboken, NJ 07030.** All Rights Reserved. Printed in the United States of America. This publication is protected by copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise. For information regarding permissions, request forms and the appropriate contacts within the Pearson Education Global Rights & Permissions department, please visit [www.pearsoned.com/permissions/](http://www.pearsoned.com/permissions/).

Notice: The author and the publisher of this book have taken care to make certain that the information given is correct and compatible with the standards generally accepted at the time of publication. Nevertheless, as new information becomes available, changes in treatment and in the use of equipment and procedures become necessary. The reader is advised to carefully consult the instruction and information material included in each piece of equipment or device before administration. Students are warned that the use of any techniques must be authorized by their medical advisor, where appropriate, in accordance with local laws and regulations. The publisher disclaims any liability, loss, injury, or damage incurred as a consequence, directly or indirectly, of the use and application of any of the contents of this book.

Many of the designations by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and the publisher was aware of a trademark claim, the designations have been printed in initial caps or all caps.

#### Library of Congress Cataloging-in-Publication Data

**Names:** Frucht, Suzanne S., author.

**Title:** Medical terminology : get connected! / Suzanne S. Frucht.

**Description:** Fourth edition. | Hoboken, NJ : Pearson, [2025] | Includes index. | Summary: "This text will give you the ability to build and interpret medical terms with accuracy and confidence. It will demonstrate the interconnectedness of body structures and systems. It will provide you with activities and online resources that will foster peer-to-peer study opportunities. And finally, it will help you acquire the tools necessary to communicate effectively in a professional healthcare environment"-- Provided by publisher.

**Identifiers:** LCCN 2024034973 (print) | LCCN 2024034974 (ebook) | ISBN 9780135314807 (paperback) | ISBN 0135314801 (paperback) | ISBN 9780135317280 (ebook)

**Subjects:** MESH: Medicine | Terminology

**Classification:** LCC R123 (print) | LCC R123 (ebook) | NLM W 15 | DDC 610.1/4—dc23/eng/20241030

**LC record available at** <https://lccn.loc.gov/2024034973>

**LC ebook record available at** <https://lccn.loc.gov/2024034974>

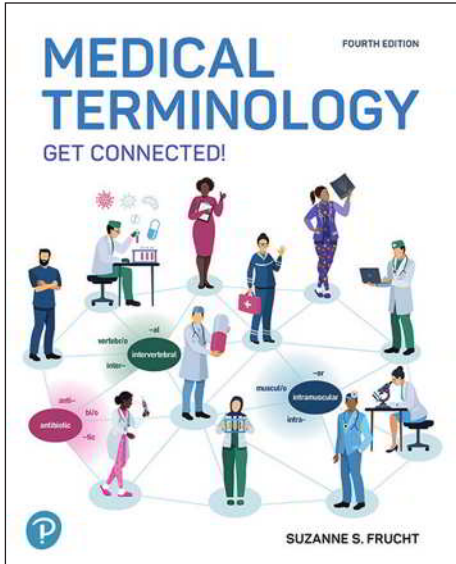


[www.pearsonhighered.com](http://www.pearsonhighered.com)

ISBN-13: 978-013-531480-7  
ISBN-10: 0-13-531480-1

## *Make the Connection!*

Welcome to your first leap into the study of medical language. You may be curious about the title of this book and why it is so important to “get connected.” In this socially networked world, where we can organize the meaningful aspects of our lives and link them with others, it is clear that successful experiences involve making connections. Medical terminology is no different. Let us illustrate.



(AlonzoDesign/DigitalVision Vectors/Getty Images)

Medical Terminology is about **connecting** . . .



*with peers and classmates  
to help you study*



**organs and structures**  
that comprise body  
systems



(Stuart Jenner/Shutterstock)

*with colleagues and patients  
for accurate medical communication*

(Fremgen/Frucht, *Medical Terminology: A Living Language*, 8e 0138030014, F 7-SI, p. 233)



**word parts**  
to form medical terms

This text will give you the ability to build and interpret medical terms with accuracy and confidence. It will demonstrate the interconnectedness of body structures and systems. It will provide you with activities and online resources that will foster peer-to-peer study opportunities. And finally, it will help you acquire the tools necessary to communicate effectively in a professional health care environment.

So let's get **connected** with the features of this book.

# What Makes This Book Different

You will quickly notice that this book is not arranged like most other medical terminology texts. Others present medical terms within the framework of basic human anatomy and physiology, creating a mini-A&P course. Instead, this book organizes and presents terms by medical specialty. This gives you an immediate window into how the health care world is organized—around medical specialties, and not by organ systems.

This is a true introductory-level “essentials” text focusing solely on medical terminology, and on teaching how to construct and translate medical terms. Designed to be fun, accessible, and eye-catching, it guides readers step-by-step toward mastery of relevant word parts, understanding word roots, and assembling terms. To help you learn meanings, correct spelling, pronunciation, and other components of each term, the book contains numerous exercises, tips, and colorful figures for learning and practice. It is flexible enough to be used either in support of lectures, or as a workbook to support independent study.

## New for this edition

- Increased information is provided regarding the medical specialists related to each chapter, including reliable websites for further investigation.
- Updated Learning Objectives to reflect higher order skills featured in this text, particularly application of new knowledge and analysis of real-world situations.
- Updated and More Diverse Art Program—This new edition showcases even more art than ever before! We have added over 55 new photos of real people, diseases, and conditions related to the chapter content as well as an updated and expanded collection of medical illustrations throughout the text to provide a clearer view of each body system and its related diseases and conditions. We have also strived to include a more diverse array of people to help better reflect the world we live in while also trying to point out areas where skin tone may be important when assessing patient symptoms or diagnosing a condition. *As the photos are of actual persons with various diseases, conditions or injuries, it is important to point out that some of these images are graphic and may be potentially disturbing or triggering for some people.*
- As with every edition of this text, this new fourth edition includes many new medical terms to provide even more information for today’s student, especially regarding the newest technologies and procedures.
- Each chapter includes an updated and comprehensive list of combining forms, suffixes, and prefixes used to build terms in the remaining sections of the chapter.
- Pronunciations have been added (in parentheses) following terms in either the Vocabulary tables or Word Building answer key. A system of phonetic spelling is used in which the syllables of the term are written out based on how they sound. For example, cardiovascular is phonetically spelled as kar-dee-oh-VAS-kyoo-lar.
- Practice Exercises have been reviewed and augmented to further reinforce the Learning Objectives of each chapter while providing a more meaningful way to review each chapter’s content.
- Additional entries have been added to each chapter’s Vocabulary section to provide a more comprehensive list of related medical terms not solely composed of word parts. Also, these tables have been broken out into helpful categories to better organize the information.
- Updated Appendix II includes a listing of abbreviations and symbols beyond only those presented in the text, and identifies alternate meanings where applicable to reinforce the need for caution when using abbreviations.

## Here is a summary of the key objectives of the book

### Introduce selected medical specialties

Each chapter in Section II begins with a brief description of its particular medical specialty, along with some examples of health care workers in this specialty and some conditions that they treat. This section also provides a brief overview of the body system in which these specialists focus.



## Urology and Nephrology

### Urinary System and Male Reproductive System



#### Learning Objectives

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

- 12-1 Explain the medical specialties of urology and nephrology.
- 12-2 Understand the functions of the urinary and male reproductive systems.
- 12-3 Identify the organs treated in urology and nephrology.
- 12-4 Define urology- and nephrology-related combining forms, prefixes, and suffixes.
- 12-5 Build urology- and nephrology medical terms from word parts.
- 12-6 Explain urology and nephrology medical terms.
- 12-7 Use urology and nephrology abbreviations.
- 12-8 Apply new knowledge of urology and nephrology terms to clinical practice activities.

### Pulmonology Combining Forms

The following list presents combining forms closely associated with the respiratory system and commonly used for building and defining pulmonology terms:

<b>aer/o</b>	air	<b>mediastin/o</b>	mediastinum	<b>trache/o</b>	trachea
<b>alveol/o</b>	alveolus (air sac)	<b>muc/o</b>	mucus	<b>tuss/o</b>	cough
<b>bronch/o</b>	bronchus	<b>nas/o</b>	nose		
<b>bronchi/o</b>	bronchus	<b>ox/i</b>	oxygen		
<b>bronchiol/o</b>	bronchiole	<b>pleur/o</b>	pleura		
<b>coni/o</b>	dust	<b>pneum/o</b>	air, lung		
<b>cyan/o</b>	blue	<b>pneumon/o</b>	lung		
<b>diaphragmat/o</b>	diaphragm	<b>pulmon/o</b>	lung		
<b>hal/o</b>	to breathe	<b>spir/o</b>	breathing		
<b>lob/o</b>	lobe	<b>thorac/o</b>	chest		

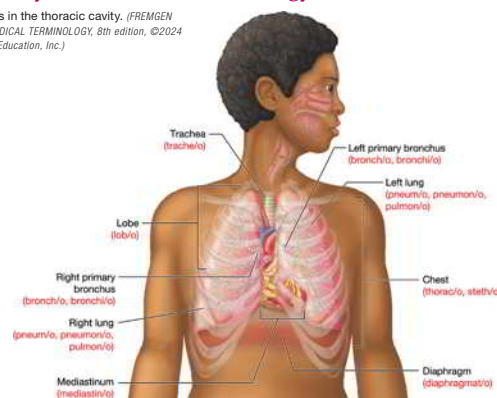
**TERMINOLOGY TIDBIT** It may appear odd that combining forms such as **rhin/o** and **pharyng/o** do not appear here even though the nose and pharynx are part of the respiratory system. Conditions of the nose, sinuses, and pharynx are covered in Chapter 17 on otorhinolaryngology (commonly known as ears, nose, and throat).

## Identify organs and structures treated by the medical specialty

Each medical specialty chapter presents a quick visual summary of the corresponding organs and/or structures from the related body system. To reinforce the combining forms introduced in the preceding section, this art is labeled with both the names and combining forms (**in red**) of each organ and/or structure where applicable.

## Organs Commonly Treated in Pulmonology

**Figure 10-1** Respiratory organs in the thoracic cavity. (FREEMAN BONNIE F., FRUCHT SUZANNE S., MEDICAL TERMINOLOGY, 8th edition, ©2024 Reprinted by permission of Pearson Education, Inc.)



## Building Endocrinology Terms

This section presents word parts most often used to build endocrinology terms. Following the explanation of the term, you have the opportunity to begin building your medical vocabulary. Read the meaning for each term and then fill in the blanks to build a single medical term. Use the slashes to divide prefixes, word roots, combining vowels, and suffixes. To help you out, you will find a key to the word parts underneath the blanks: **wr** for word roots, **p** for prefix, **cv** for combining vowel, and **s** for suffix. Remember that not every term will contain all these word parts. As you gain experience, this process becomes easier. Pronunciations for these terms can be found in the Answer Key (Appendix IV) of this book.

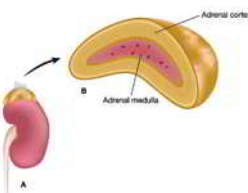
### 1. **aden/o**—combining form meaning **gland**; plural is **glands**

A group of cells that work together to produce and secrete substances such as hormones; endocrine glands secrete their substances (hormones) directly into the bloodstream; exocrine glands, such as sweat glands, secrete into a duct

- cancerous tumor in gland  
wr / cv / wr / s
- gland cell  
wr / cv / s
- resembling gland  
wr / s
- condition of abnormally soft gland  
wr / cv / s

### 2. **adren/o**—combining form meaning **adrenal gland** (ah-DREE-nal); plural is **adrenal glands**

Each of two adrenal glands sits on top of a kidney; divided into outer **adrenal cortex** (ah-DREE-nal / KOR-tek) and inner **adrenal medulla** (ah-DREE-nal / meh-DULL-ah); adrenal cortex secretes **aldosterone** (al-DOSS-ter-oh-n) to regulate sodium and potassium levels in the body; **cortisol** (KOR-th-zaw) to regulate carbohydrate metabolism, and sex hormones such as **estrogen** (ESS-troh-jen) and **testosterone** (tes-THAHS-ter-oh-n); adrenal medulla secretes **epinephrine** (ep-ih-NEF-rin [also called adrenaline]) to help the body respond to emergency situations (refer also to Figure 15-1)



**TERMINOLOGY TIDBIT** The term **cortex** is frequently used in anatomy to indicate the outer portion of an organ such as the adrenal gland or the kidney. The word **cortex** is Latin and means bark as in the bark of a tree. The word **medulla** means marrow. Because marrow is found in the inner cavity of bones, the term came to stand for the middle of an organ.

**Figure 15-2** Illustration showing (A) location of adrenal gland above kidney and (B) internal structure of adrenal gland. (Alla Medical Media/Shutterstock)

- pertaining to the adrenal gland  
wr / s
- enlarged adrenal gland  
wr / cv / s

## Build medical terms from word parts

The heart of each chapter, this section is where you will apply your medical vocabulary knowledge. Each word part is explained and then followed by a list of phrases followed by a color coded blank line divided by slash marks. These marks indicate how many word parts are necessary to build the term. You complete this activity by filling in the blanks as you work through this section. Updated for the fourth edition, even more anatomy and physiology figures have been provided to better illustrate the structures and organs presented in this section. This information gives more detail of the structure of each organ, how it accomplishes its functions, and how it interacts with other organs in the system.



Explain medical terms

You will quickly learn that not all medical terms are built completely from word parts. The medical specialty vocabulary section defines this type of term. Note that some terms, such as *heart valve prolapse* or *fistula*, have no word parts in them at all, while other terms, such as *coronary artery bypass graft* or *peripheral vascular disease*, contain some word parts, but the whole term is not built using word parts. In order to make it easier to master these terms, they have been divided into three vocabulary tables. The first vocabulary table is Pathology, consisting of common conditions and diseases treated by the chapter specialty. The second vocabulary table describes Diagnostic Tests used to identify the pathologies in the previous table. Finally, the third vocabulary table explains the variety of Medical and Surgical Treatments utilized to treat these pathologies.

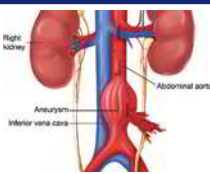
Use abbreviations

Abbreviations are an essential part of medical language because they save time. However, only approved abbreviations may be used in order to prevent misunderstandings. This section of each chapter presents the most commonly used abbreviations for that medical specialty. Throughout the book abbreviations are included, when possible, immediately following terms. Appendix II offers a listing of the chapter abbreviations plus additional abbreviations and symbols, including those that should no longer be used.

Cardiology Vocabulary

The cardiology terms presented in this section include eponyms, modern English words, and those that contain Latin or Greek word parts but are not constructed solely from these word parts. When you recognize word parts within a term, they will give you a hint about the word's meaning. In these instances, look for the word parts to follow the term.

PATHOLOGY	
TERM	EXPLANATION
<b>aneurysm</b> (AN-yoo-ri-zm)	Localized widening of artery due to weakness in arterial wall; may develop in any artery, but common sites are abdominal aorta and cerebral arteries



**Figure 7-7** Illustration of a large aneurysm in the abdominal aorta that has ruptured.

<b>angina pectoris</b> (an-JYE-nah / PEK-tor-is)	Severe chest pain caused by myocardial ischemia
<b>arrhythmia</b> (ah-RITH-mee-ah) -e = without	Irregular heartbeat
<b>bacterial endocarditis</b> (en-doh-kar-DYE-tis) <b>endo-</b> = inner <b>cardi/o</b> = heart <b>-itis</b> = inflammation	Inflammation of inner lining of the heart (endocardium) caused by bacteria; may result in visible accumulation of bacteria called vegetation
<b>bradycardia</b> (brad-ee-KAR-dee-ah) <b>brady-</b> = slow <b>cardi/o</b> = heart <b>-ia</b> = condition	Abnormally slow heart rate, below 60 beats per minute (bpm)
<b>cardiac arrest</b> (KAR-dee-ah) <b>cardi/o</b> = heart <b>-ar</b> = pertaining to	Complete stoppage of all heart activity, both electrical signals and muscle contractions

**TERMINOLOGY TIDBIT** The term *angina* comes from the Latin word *angere*, meaning to strangle, to cause pain, or to press tight. This describes the sensation of a tight band around the chest that occurs during angina pectoris.

Neurology Abbreviations

The following list presents common neurology abbreviations:

<b>AD</b>	Alzheimer disease	<b>LP</b>	lumbar puncture
<b>ADLs</b>	activities of daily living	<b>MS</b>	multiple sclerosis
<b>ALS</b>	amyotrophic lateral sclerosis	<b>TERMINOLOGY TIDBIT</b> Be careful when using the MS abbreviation. It can mean musculoskeletal, mitral stenosis, or multiple sclerosis.	
<b>ANS</b>	autonomic nervous system		
<b>CNS</b>	central nervous system		
<b>CP</b>	cerebral palsy	<b>NCS</b>	nerve conduction study
<b>CSF</b>	cerebrospinal fluid	<b>NCV</b>	nerve conduction velocity
<b>CTE</b>	chronic traumatic encephalopathy	<b>PET</b>	positron emission tomography
<b>CT scan</b>	computed tomography scan	<b>PNS</b>	peripheral nervous system
<b>CVA</b>	cerebrovascular accident	<b>SCI</b>	spinal cord injury
<b>CVD</b>	cerebrovascular disease	<b>TBI</b>	traumatic brain injury
<b>EEG</b>	electroencephalogram, electroencephalography	<b>TIA</b>	transient ischemic attack
<b>HA</b>	headache	<b>VZV</b>	varicella zoster virus
<b>ICP</b>	intracranial pressure		

Practice using medical terms

As with any newly learned skill, practice is essential. Each chapter closes with a large variety of exercises. These include real-life application exercises (Case Study and Transcription Practice), pronunciation practice (Sound It Out), as well as more typical types of recall exercises (labeling, multiple choice, fill-in-the-blank, matching). In addition, this section includes exercises requiring higher levels of critical thinking (Medical Term Analysis and Visual Identification Challenge). For this fourth edition, these activities have been reviewed, augmented, and updated to further reinforce the Learning Objectives of each chapter while providing a more meaningful way to assess your grasp of each chapter's content.

- The white spots in the mouth of this patient are thrush. What causes this infection?
- Read the entire case study carefully. What are all of this patient's symptoms? List them.
- What test is used to diagnose HIV infection?
- At this point, the patient is diagnosed with AIDS-related complex. What is the difference?
- What is an opportunistic infection? Name two that are commonly found in AIDS patients.
- This patient was started on an HIV drug regimen of three different medications. Use a w.com or www.webmd.com to look up these drugs. How would you briefly describe how th
- A CD4 count was ordered for this patient. This is a count of a specific type of white blo do you think this piece of information is important for following this patient's progress?

## PRACTICE

### Sound It Out

The following are some of the key terms from this chapter written as their phonetic spelling. So it in the blank.

- lim-FOH-mah
- AL-er-jee
- pah-THOL-oh-jee
- im-yoo-noh-THAIR-ah-pe

## Medical Term Analysis

Examine each of the following terms. Begin by dividing it into its word parts and writing them in the indicated blanks (**P** = prefix; **WR** = word root; **CF** = combining form; **S** = suffix). Follow with the definition of each word part and then finally the meaning of the full term.

### 1. erythrocytosis

**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

### 2. hematologist

**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

### 3. hematopathology

**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

### 4. hyperlipemia

**P** \_\_\_\_\_  
means \_\_\_\_\_  
**WR** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

### 5. hemorrhage

**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

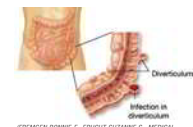
### 6. leukopenia

**CF** \_\_\_\_\_  
means \_\_\_\_\_  
**S** \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

## Visual Identification Challenge

Use the Word Bank to build a term for each figure.

WORD BANK: appendix | chole | colic | diverticul | -iasis | -itis | lapar | ileitis | -osis | polyp | -scopy | -stomy



(FREMSEN BONNE F, FRUIGHT SUZANNE S, MEDICAL TERMINOLOGY, 8th edition, ©2014 Reprinted by permission of Pearson Education, Inc.)

1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_

# The Total Teaching and Learning Package

We are committed to providing students and instructors with exactly the tools they need to be successful in the classroom and beyond. To this end, *Medical Terminology: Get Connected!*, Fourth Edition is supported by the most complete and dynamic set of resources available today.

## MyLab Medical Terminology

The ultimate personalized learning tool is available at [www.pearsonmylaband-mastering.com/mymedicalterminologylab/](http://www.pearsonmylaband-mastering.com/mymedicalterminologylab/). This online course correlates with the textbook and is available for purchase separately or for a discount when packaged with the book. **MyLab Medical Terminology** is an immersive study experience.

1 of 30

hypochondriac region

Skip

[return](#)
[Bill Johnson](#)

Learning: Suffixes

QUESTION ⓘ

Which of the following suffixes means chest?

ANSWER

☐ -tripsy  
☐ -thorax  
☐ -trophy  
☐ -trophic  
☐ I DON'T KNOW YET

submit

Manage Course
Course Home
Accessible Resources
How to Succeed in This Course
Assignments
Chapter 1
Chapter 2
Chapter 3
Chapter 4
Chapter 5
Chapter 6
Chapter 7
Chapter 8
Chapter 9
Chapter 10
Chapter 11
Chapter 12
Chapter 13
Chapter 14

Pearson | Word Part Prescription : Ch 01

Help
Exit

QUESTION 1 / 10

Drop the pill into the container that best matches the word on the prescription.

Plural of nucleus

nuclea

nucleuses

nuclei

nucleon

**MyLab Medical Terminology** saves instructors time by providing quality feedback, ongoing individualized assessments for students, and instructor resources all in one place. It offers instructors the flexibility to make technology an integral part of their course, or a supplementary resource for students. Visit

Manage Course
Course Home
Accessible Resources
How to Succeed in This Course
Assignments
Study Plan
Purchase Options
Pearson eBook
Results
Multimedia Library
Instructor Tools
Instructor Support
Student Support

Frucht, Medical Terminology: Get Connected! 4e

View Instructor Home
Help
87%

Current

Entire Course To Date

June 2024
Today

View by
2 Weeks

SUN	MON	TUE	WED	THU	FRI	SAT
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Announcements (0)

No announcements during the selected timeframe.

Past Due Assignments (0)

No past due assignments during the selected timeframe.

Current Assignments (0)

No current assignments during the selected timeframe.

Completed Assignments (0)

No completed assignments during the selected timeframe.

[www.pearsonmylabandmastering.com/mymedicalterminologylab/](http://www.pearsonmylabandmastering.com/mymedicalterminologylab/) to log in to the course or purchase access. Instructors may contact their Pearson sales representative for a demonstration or for information on discount bundle options.

### Help each student learn through personalized Dynamic Study Modules

Help students study effectively on their own by continuously assessing their activity and performance in real time. Here's how it works: students complete a set of questions with a unique answer format that also asks them to indicate their confidence level. Questions repeat until the student can answer them all correctly and confidently. Once completed, Dynamic Study Modules explain the concept using materials from the text. These are available as graded assignments prior to class, and accessible on smartphones, tablets, and computers.

#### Key Features of MyLab Medical Terminology

**MyLab Medical Terminology is a premium online homework management system that includes a host of features to help you study. Registered users will find:**

- A multitude of quizzes and activities pre-built within the MyLab platform.
- Interactive study games—Students construct, label, match, pronounce, and dissect terms, for an experience as engaging as it is effective.
- Pronounce & Spell—A built-in technology assesses and scores students' pronunciation so they can continue to improve.
- Application-focused activities let students practice and apply their knowledge by identifying, pronouncing, and translating medical terms within the context of real-world medical records and reports.
- Powerful tools that track and analyze your results—facilitating a personalized learning experience.

## 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, including a comprehensive test bank, PowerPoint lecture notes, an image library, guided lectures that can be used in class or for student self-study—all designed to help instructors prepare, present, and assess. For more information, please contact your Pearson sales representative or visit [www.pearsonhighered.com/educator](http://www.pearsonhighered.com/educator).



*(Suzanne S. Frucht)*

## About the Author

**Suzanne S. Frucht** is an Associate Professor Emeritus of Anatomy and Physiology at Northwest Missouri State University (NWMSU). She holds baccalaureate degrees in biological sciences and physical therapy from Indiana University, an MS in biological sciences at NWMSU, and a PhD in molecular biology and biochemistry from the University of Missouri–Kansas City.

For 14 years Dr. Frucht worked full time as a physical therapist in various health care settings, including acute care hospitals, extended care facilities, and home health. Based on her educational and clinical experience, she was invited to teach medical terminology part-time in 1988 and became a full-time faculty member three years later as she discovered her love for the challenge of teaching. Dr. Frucht has taught a variety of courses, including medical terminology, human anatomy, human physiology, and animal anatomy and physiology. She received the Governor's Award for Excellence in Teaching in 2003. Since retiring from teaching in 2008, she continues to be active in student learning through teaching medical terminology as an online course and writing medical terminology texts and anatomy and physiology laboratory manuals.

# Dedication

*To my family*

# Acknowledgments

No textbook can ever reach the hands of students without the extraordinary contributions of numerous talented and dedicated professionals. *Medical Terminology: Get Connected!, Fourth Edition* is certainly no exception and I would like to take this opportunity to acknowledge their contributions.

Foremost, I would like to acknowledge Pearson Education, particularly Stephen Heasley, Commercial Product Manager, for his continued support. This project has benefited from an unparalleled team, especially Melissa Bashe, Managing Producer for Health Science, and William Johnson, Content Producer, as well as Amy Kopperude, Project Manager at Straive.

Many, many thanks go to Danielle Doller, Development Editor. Her professionalism, expertise, sound ideas, and friendship always keep me on track. I know any project I undertake is more successful because of her.

Without the hard work and dedication of each of these individuals, plus everyone else who has had a hand in this project, there might be a book, but certainly not this one. Words can never express my thanks.

– Suzanne Frucht

## Editorial Development Team

The content and format of *Medical Terminology: Get Connected!, Fourth Edition* are the result of an incredible collaboration of expert educators from across the country. 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, and offer our deepest gratitude to, the members of our team.

## Reviewers of the Fourth Edition

Jeff Anderson, MA, RRT  
College of Western Idaho  
Nampa, Idaho

Mary W. Hood MS R.T. (R)(CT) (ARRT)  
William Rainey Harper College  
Palatine, Illinois

Teri Junge, EdD, CSFA, CST, FAST, CSPDT  
Triton College  
River Grove, Illinois

Shahin Kanani, MD  
Seminole State College of Florida  
Altamonte Spring, Florida

Donna L Maher, MS RHIA  
Renton Technical College  
Renton, Washington

Ronda Sturgill, PhD  
The University of Tampa  
Tampa, Florida

Amy Way, PhD  
Commonwealth University of  
Pennsylvania  
Clearfield, Pennsylvania

Kari Williams, RMA (AMT), CPT (NHA),  
CET (NHA), BS, MPH, DC  
Front Range Community College  
Longmont, Colorado

## Reviewers of Past Editions

Wendy Ayers, MSc, RRT-NPS  
Central Virginia Community  
College  
Lynchburg, Virginia

Steven G. Bassett, PhD  
Seton Hill University  
Greensburg, Pennsylvania

Teresa Blanc, DNP  
University of Missouri-Kansas City  
Kansas City, Missouri

Karen Boriack, RN, BSN, MA Ed  
Porterville College  
Porterville, California

Ranelle Brew, EdD  
Grand Valley State University  
Grand Rapids, Michigan

Dean Chiarelli, MA, RDN, HFS, CHES,  
REHS  
Arizona State University  
Phoenix, Arizona

Megan Cook, OTD, OTR/L  
Northern Virginia Community College  
Annandale, Virginia

Colleen Croxall, PhD  
Eastern Michigan University  
Ypsilanti, Michigan

Amanda J. Davis  
Meridian Community College  
Meridian, Mississippi

Dianne Davis, MS  
West Virginia University at  
Parkersburg  
Parkersburg, West Virginia

Shelba Durston, MSN, RN, CCRN, SAFE  
San Joaquin Delta College  
Stockton, California

Duane A. Dreyer, PhD  
Miller-Motte College  
Cary, North Carolina

<b>Alisha Eaves</b> Western Texas College <i>Snyder, Texas</i>	<b>Allison Kaczmarek, MPH</b> University of Tampa <i>Tampa, Florida</i>	<b>Karen Plawecki, PhD, RD, LDN</b> University of Illinois <i>Urbana, Illinois</i>
<b>Marie A. Fenske, EdD, RRT</b> GateWay Community College <i>Phoenix, Arizona</i>	<b>Dana Kemery, EdD</b> Drexel University <i>Philadelphia, Pennsylvania</i>	<b>Christina Prudeen, LPN-BLS</b> Highland Community College <i>Atchison, Kansas</i>
<b>Melissa Mapp Francisco, BA, MAOM</b> Suwanee Hamilton Technical Center <i>Live Oak, Florida</i>	<b>Patricia Ketcham, MSN, RN</b> Oakland University <i>Rochester, Michigan</i>	<b>Martha L. Rew, MS, RD, LD</b> Texas Woman's University <i>Denton, Texas</i>
<b>Elaine Garcia, RHIT</b> Spokane Community College <i>Spokane, Washington</i>	<b>Donna M. Kubesh, BS, MA, PhD</b> Luther College <i>Decorah, Iowa</i>	<b>Michael Sells, RN, Certified Surgical Tech</b> Kirkwood Community College <i>Cedar Rapids, Iowa</i>
<b>Savanna Garrity, MPA, CPC</b> Madisonville Community College <i>Madisonville, Kentucky</i>	<b>Anita Lane, MEd, OTR</b> Navarro College <i>Corsicana, Texas</i>	<b>Lorraine Smith, MBHA</b> Fresno City College <i>Fresno, California</i>
<b>Sue Gunnink, MS, RDN, CSO</b> Grand Rapids Community College <i>Grand Rapids, Michigan</i>	<b>Molly Lee, PhD</b> Harrisburg Area Community College <i>Harrisburg, Pennsylvania</i>	<b>Don Steinert, MA, RRT, MT, CLS</b> University of the District of Columbia <i>Washington, D.C.</i>
<b>Betty Haar, BS, MHA, RHIA</b> Kirkwood Community College <i>Cedar Rapids, Iowa</i>	<b>Tricia Leggett, MEd, RT(R)(QM)</b> Zane State College <i>Zanesville, Ohio</i>	<b>Jane K. Walker, BBA, PhD, RN, CPN, CNE</b> Walters State Community College <i>Morristown, Tennessee</i>
<b>Paula Hagstrom, RHIA, RHIT</b> Ferris State University <i>Big Rapids, Michigan</i>	<b>Sue Moe, RN</b> Northwest Technical College <i>East Grand Forks, Minnesota</i>	<b>Halcyon Watkins, BS, DVM</b> Prairie View A&M University <i>Prairie View, Texas</i>
<b>Julie Hall, MPH, RT(R)(CT)(ARRT)</b> Roane State Community College <i>Oak Ridge, Tennessee</i>	<b>Cynthia K. Moore, PhD, RD</b> University of Arkansas—Fayetteville <i>Fayetteville, Arkansas</i>	<b>Sherry B. Wilson, RN, MSN</b> Durham Technical Community College <i>Durham, North Carolina</i>
<b>Ellen Harper, RHIT</b> Schoolcraft Community College <i>Livonia, Michigan</i>	<b>Paulette Nitkiewicz, BSN, RN, CMA</b> Westmoreland County Community College <i>Youngwood, Pennsylvania</i>	<b>Amy Way, PhD</b> Lock Haven University <i>Clearfield, Pennsylvania</i>
<b>Krista L. Hoekstra, RN, MA</b> Hennepin Technical College <i>Brooklyn Park, Minnesota</i>	<b>Tonya Oakley, BS, RT(R)</b> Forsyth Technical Community College <i>Winston-Salem, North Carolina</i>	<b>Barbara Worley, DPM, BS, RMA (AMT)</b> King's College <i>Charlotte, North Carolina</i>
<b>Traci Hotard, RHFA</b> Louisiana Technical College <i>Morgan City, Louisiana</i>	<b>Michelle Parolise, MBA, OTR/L</b> Santa Ana College <i>Santa Ana, California</i>	
<b>Stephen M. Johnson, MS, MT (ASCP)</b> Saint Vincent Hospital, School of Medical Technology <i>Erie, Pennsylvania</i>	<b>Sean Peck, MEd, NRP</b> Arizona Western College <i>Yuma, Arizona</i>	



## 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 co-workers 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: Get Connected!, Fourth Edition* 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. Multiple content experts have read each chapter for accuracy.
2. **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 notify us either through your institution's Pearson representative or online at [www.support.pearson.com](http://www.support.pearson.com).

***Thank you for helping Pearson reach its goal of providing the most accurate medical terminology textbooks available.***

# CONTENTS

## SECTION I: *Basic Word Building*

<b>Chapter 1</b>	<b>Introduction to Medical Terminology</b> .....	<b>1</b>
	A Brief Introduction to Medical Terminology .....	2
	Elements of Latin- and Greek-Based Medical Terms .....	2
	Strategies for Analyzing Medical Terms.....	5
	Rules for Building Plurals .....	6
	Pronouncing Medical Terms.....	7
	A Word about Abbreviations .....	8
	Practice & Review.....	9
<b>Chapter 2</b>	<b>Suffixes</b> .....	<b>13</b>
	A Brief Introduction to Suffixes .....	14
	Practice & Review.....	18
<b>Chapter 3</b>	<b>Prefixes</b> .....	<b>25</b>
	A Brief Introduction to Prefixes .....	26
	Practice & Review.....	29
<b>Chapter 4</b>	<b>Anatomical Terminology</b> .....	<b>33</b>
	Levels of Body Organization .....	34
	Body .....	36
	Practice & Review.....	49

## SECTION II: *Medical Specialties*

<b>Chapter 5</b>	<b>Dermatology: Integumentary System</b> .....	<b>54</b>
	A Brief Introduction to Dermatology .....	55
	Structures Commonly Treated in Dermatology .....	56
	Building Dermatology Terms .....	57
	Dermatology Vocabulary .....	63
	Dermatology Abbreviations .....	71
	Practice & Review.....	72
<b>Chapter 6</b>	<b>Orthopedics: Musculoskeletal System</b> .....	<b>82</b>
	A Brief Introduction to Orthopedics.....	83
	Structures Commonly Treated in Orthopedics .....	85
	Building Orthopedic Terms .....	87
	Orthopedic Vocabulary .....	98
	Orthopedic Abbreviations .....	106
	Practice & Review.....	106

<b>Chapter 7</b>	<b>Cardiology: Cardiovascular System</b>	<b>117</b>
	A Brief Introduction to Cardiology	118
	Organs Commonly Treated in Cardiology	119
	Building Cardiology Terms	121
	Cardiology Vocabulary	128
	Cardiology Abbreviations	136
	Practice & Review	137
<b>Chapter 8</b>	<b>Hematology: Blood</b>	<b>148</b>
	A Brief Introduction to Hematology	149
	Components of Blood	150
	Building Hematology Terms	150
	Hematology Vocabulary	154
	Hematology Abbreviations	159
	Practice & Review	159
<b>Chapter 9</b>	<b>Immunology: Immune Systems</b>	<b>169</b>
	A Brief Introduction to Immunology	170
	Organs Commonly Treated in Immunology	171
	Building Immunology Terms	171
	Immunology Vocabulary	177
	Immunology Abbreviations	181
	Practice & Review	182
<b>Chapter 10</b>	<b>Pulmonology: Respiratory System</b>	<b>192</b>
	A Brief Introduction to Pulmonology	193
	Organs Commonly Treated in Pulmonology	194
	Building Pulmonology Terms	195
	Pulmonology Vocabulary	203
	Pulmonology Abbreviations	212
	Practice & Review	213
<b>Chapter 11</b>	<b>Gastroenterology: Digestive System</b>	<b>223</b>
	A Brief Introduction to Gastroenterology	224
	Organs Commonly Treated in Gastroenterology	225
	Building Gastroenterology Terms	226
	Gastroenterology Vocabulary	235
	Gastroenterology Abbreviations	242
	Practice & Review	243
<b>Chapter 12</b>	<b>Urology and Nephrology: Urinary System and Male Reproductive System</b>	<b>253</b>
	A Brief Introduction to Urology and Nephrology	254
	Organs Commonly Treated in Urology and Nephrology	256
	Building Urology and Nephrology Terms	256
	Urology and Nephrology Vocabulary	267

	Urology and Nephrology Abbreviations . . . . .	274
	Practice & Review . . . . .	274
<b>Chapter 13</b>	<b>Obstetrics and Gynecology: Female Reproductive System . . . . .</b>	<b>285</b>
	A Brief Introduction to Obstetrics and Gynecology . . . . .	286
	Organs and Structures Commonly Treated in Obstetrics and Gynecology . . . . .	287
	Building Obstetrics and Gynecology Terms . . . . .	288
	Obstetrics and Gynecology Vocabulary . . . . .	297
	Obstetrics and Gynecology Abbreviations . . . . .	304
	Practice & Review . . . . .	305
<b>Chapter 14</b>	<b>Neurology: Nervous System . . . . .</b>	<b>315</b>
	A Brief Introduction to Neurology . . . . .	316
	Structures Commonly Treated in Neurology . . . . .	317
	Building Neurology Terms . . . . .	318
	Neurology Vocabulary . . . . .	324
	Neurology Abbreviations . . . . .	331
	Practice & Review . . . . .	332
<b>Chapter 15</b>	<b>Endocrinology: Endocrine System . . . . .</b>	<b>342</b>
	A Brief Introduction to Endocrinology . . . . .	343
	Organs Commonly Treated in Endocrinology . . . . .	344
	Building Endocrinology Terms . . . . .	345
	Endocrinology Vocabulary . . . . .	352
	Endocrinology Abbreviations . . . . .	357
	Practice & Review . . . . .	357
<b>Chapter 16</b>	<b>Ophthalmology: The Eye . . . . .</b>	<b>368</b>
	A Brief Introduction to Ophthalmology . . . . .	369
	Structures of the Eye and Orbit . . . . .	370
	Building Ophthalmology Terms . . . . .	371
	Ophthalmology Vocabulary . . . . .	378
	Ophthalmology Abbreviations . . . . .	384
	Practice & Review . . . . .	385
<b>Chapter 17</b>	<b>Otorhinolaryngology: The Ears, Nose, and Throat . . . . .</b>	<b>394</b>
	A Brief Introduction to Otorhinolaryngology . . . . .	395
	Organs and Structures Commonly Treated in Otorhinolaryngology . . . . .	396
	Building Otorhinolaryngology Terms . . . . .	397
	Otorhinolaryngology Vocabulary . . . . .	405
	Otorhinolaryngology Abbreviations . . . . .	409
	Practice & Review . . . . .	409

**SECTION III: *Appendices***

**Appendix I**    Word Parts..... 419

**Appendix II**    Abbreviations and Symbols..... 423

**Appendix III**    Selected English/Spanish Glossary ..... 431

**Appendix IV**    Answer Keys ..... 434

**Glossary/Index**.....461

*This page intentionally left blank*

# SECTION I Basic Word Building

## 1

# Introduction to Medical Terminology

oste/o

arthr/o

sub-

cardi/o

-ectomy

## Learning Objectives

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

- 1-1 Identify the three types of medical terms.
- 1-2 Explain the differences between prefixes, suffixes, word roots, and combining vowels.
- 1-3 Form combining forms.
- 1-4 Explain how to analyze (build and interpret) medical terms.
- 1-5 Describe how to pluralize medical terms.
- 1-6 Understand how to pronounce medical terms.



# A Brief Introduction to Medical Terminology

In our daily lives, each of us is surrounded by medical terminology. Of course, health care professionals use it to communicate with each other (Figure 1-1 ■), but every person is exposed to these terms whether in the doctor's office, talking with friends, reading the newspaper, or watching television. Using medical terminology is an efficient method of conveying very specific and important information. Because each term has a precise meaning, detailed information can be quickly shared using only a few words. Therefore, everyone has something to gain from learning how to understand and use medical terminology whether in one's professional or personal life.

There are three common types of medical terms:

1. Terms built from **Latin** and **Greek** word parts; examples are *cardiology* and *tonsillectomy*.
2. Terms based on a person's name (or another proper noun such as a place), are called **eponyms**; examples are *Alzheimer disease* and *Parkinson disease*. Be prepared to find eponyms written in either the possessive form, *Alzheimer's disease*, or the nonpossessive form, *Alzheimer disease*. This text uses the nonpossessive form of eponyms.
3. Terms utilizing **modern English** words; examples are *magnetic resonance imaging* and *irritable bowel syndrome*.

Without doubt, the majority of medical terms are based on Latin and Greek word parts. The remainder of this chapter teaches how to build and analyze this type of medical term.

**Figure 1-1** Medical team reviewing patient's medical record on a tablet. (Stuart Jenner/Shutterstock)



## Elements of Latin- and Greek-Based Medical Terms

Learning medical terminology is similar to learning a foreign language because the basis for the majority of medical terms is Latin or Greek. In mastering this “language of medicine,” you will:

- Begin by memorizing individual word parts
- Learn to analyze and build terms from word parts
- Gain skill and confidence through repetitious use of terms
- Make these terms a permanent part of your professional vocabulary

Latin- and Greek-based medical terms are constructed using word parts from four different categories: **word roots**, **suffixes**, **prefixes**, and **combining vowels**.

## Word Roots

The word root is the foundation of most medical terms and gives the essential meaning of the term. It frequently but not always refers to a body structure, organ, or **system**. Refer to examples in Table 1-1 ■. To help you recognize **word roots** in this text, they are color-coded in **red**.

**Table 1-1** Examples of Word Roots

WORD ROOT	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
<b>arthr</b>	joint	<b>arthr</b> oscope	instrument for viewing a <i>joint</i>
<b>carcin</b>	cancer	<b>carcin</b> ogen	that which produces <i>cancer</i>
<b>cardi</b>	heart	<b>cardi</b> omegaly	enlarged <i>heart</i>
<b>cephal</b>	head	<b>cephal</b> ic	pertaining to the <i>head</i>
<b>electr</b>	electricity	<b>electr</b> ocardiogram	record of heart's <i>electrical</i> (activity)
<b>gastr</b>	stomach	<b>gastr</b> ic	pertaining to the <i>stomach</i>
<b>hepat</b>	liver	<b>hepat</b> oma	<i>liver</i> tumor
<b>my</b>	muscle	<b>my</b> ocardium	heart <i>muscle</i>
<b>oste</b>	bone	<b>oste</b> ocyte	<i>bone</i> cell
<b>rhin</b>	nose	<b>rhin</b> orrhea	<i>nose</i> discharge

## Suffixes

A suffix is found at the end of a medical term. The type of information it provides includes conditions, diseases, surgical procedures, and diagnostic procedures involving the word root. Refer to examples in Table 1-2 ■. To help you recognize **suffixes** in this text, they are color-coded in **blue**. *Note that when a suffix is written by itself, a hyphen is placed at the front.*

**Table 1-2** Examples of Suffixes

SUFFIX	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
<b>-ectomy</b>	surgical removal	gast <b>rectomy</b>	<i>surgical removal</i> of stomach
<b>-gram</b>	a record	electrocardi <b>ogram</b>	<i>record</i> of heart's electrical (activity)
<b>-itis</b>	inflammation	arthr <b>itis</b>	joint <i>inflammation</i>
<b>-logy</b>	study of	cardi <b>ology</b>	<i>study of</i> the heart
<b>-megaly</b>	enlarged	hepat <b>megaly</b>	<i>enlarged</i> liver
<b>-pathy</b>	disease	myo <b>pathy</b>	muscle <i>disease</i>

## Prefixes

A prefix is found at the beginning of a medical term. It often indicates information such as abnormal conditions, numbers, positions, or times. Refer to examples in Table 1-3 ■. Not all medical terms have a prefix. To help you recognize **prefixes** in this text, they are color-coded in **green**. *Note that when a prefix is written by itself, a hyphen is placed at the end.*

Table 1-3 Examples of Prefixes

PREFIX	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
a-	without	apnea	without breathing
bi-	two	bilateral	two sides
dys-	abnormal, difficult, painful	dysuria	painful or difficult urination
inter-	between	intervertebral	between vertebrae
post-	after	postsurgical	after surgery
sub-	under	subcutaneous	under the skin

## Combining Vowels

Combining vowels (most often the vowel *o*) are used for two reasons: to connect word parts and to make medical terms easier to spell and pronounce. Combining vowels are placed either between a word root and suffix (when the suffix begins with a consonant) or between two word roots. They are not used between a prefix and word root. Refer to Table 1-4 ■ for examples. To help you recognize **combining vowels** in this text, they are color-coded in **red** and presented with their word root. *Note that the slashes (/) are used to divide the term into its word parts.*

Table 1-4 Examples of the Use of Combining Vowels

TERM WITH COMBINING VOWELS	MEANING
electr/o/cardi/o/gram	record of heart's electrical (activity)
hepat/o/megaly	enlarged liver
oste/o/arthr/itis	bone and joint inflammation
rhin/o/plasty	surgical repair of the nose

However, combining vowels are *not* always necessary.

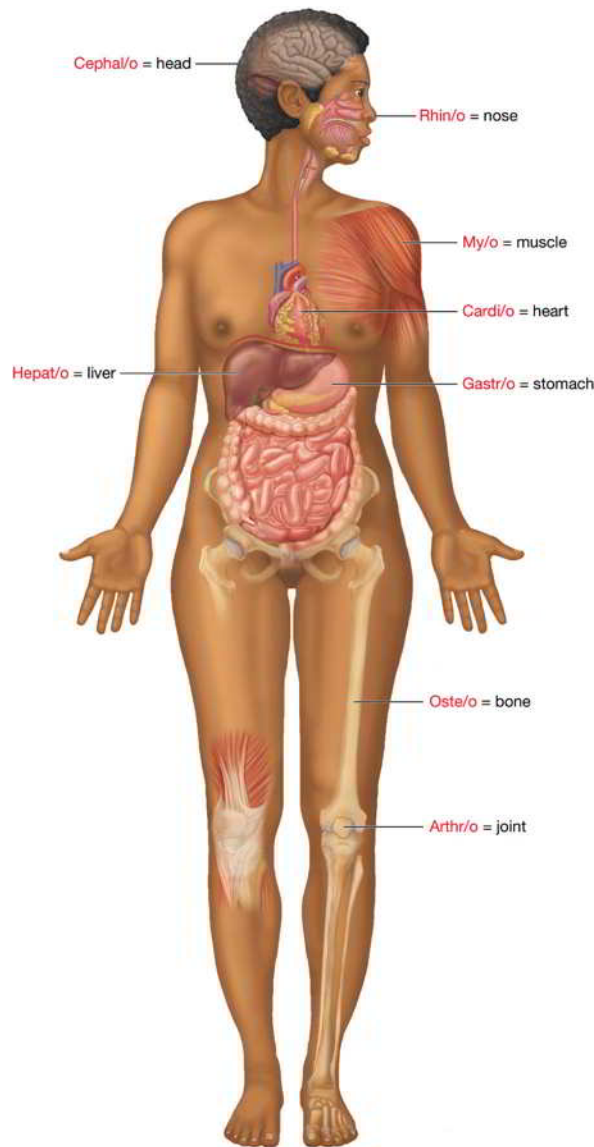
- To decide whether one is needed between a word root and suffix, look at the first letter of the suffix. Do *not* use a combining vowel between a word root and suffix if the suffix begins in a vowel. For example, the correct way to combine the word root **arthr** and the suffix **-itis** is *arthr/itis*, not *arthr/o/itis*.
- Place a combining vowel between two word roots, even if the second word root begins with a vowel. The term *gastr/o/enter/o/logy* is correct, while *gastr/enter/o/logy* is incorrect. Note that adding the combining vowel also makes the term easier to pronounce.

## Combining Forms

**Combining forms** consist of a word root and its combining vowel. Throughout this text, combining forms will be written with a slash (/) between these two word parts. For example, **electr/o** is the combining form meaning electricity. Refer to Figure 1-2 ■ for more examples of combining forms that relate to parts of the body. To help with recognizing **combining forms** in this text, they are color-coded in **red**.

A combining form is not another category of word part because it consists of two other word parts. However, word roots are normally presented as combining forms; these are easier to pronounce and therefore, to remember. Word roots will be given as combining forms throughout this text.

**Figure 1-2** Common combining forms for organs or regions of the body.



## Strategies for Analyzing Medical Terms

Using medical terms is a two-way street; you need to learn both how to define medical terms used by other people and how to build medical terms for yourself. There are some specific strategies that will help with learning both.

**TERMINOLOGY TIDBIT** Do not try to memorize every medical term. Instead, figure out how the word is formed from its components. In a short time, you will be able to do this automatically when encountering a new term.

### *Defining Medical Terms*

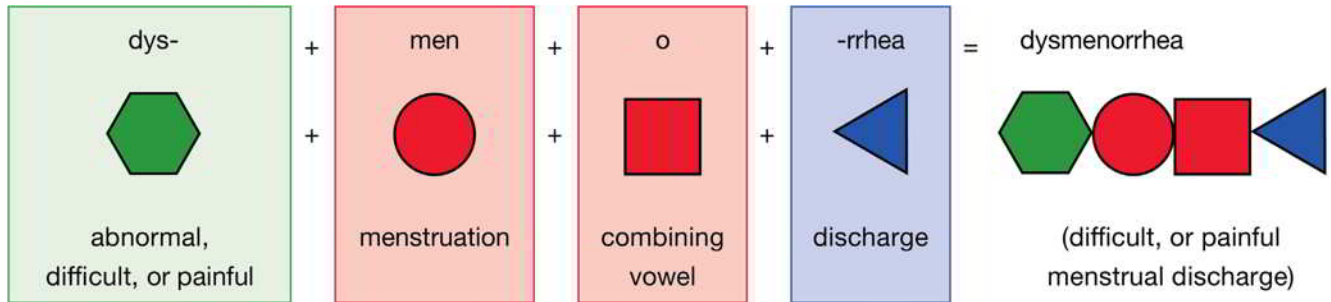
When first encountering an unfamiliar medical term, don't panic! Remember that the meaning of the individual word parts gives the information needed to understand at least the basic meaning of the word.

Follow these simple steps:

1. Divide the term into its word parts.
2. Define each word part.
3. Put the meaning of the word parts together in order to tell what the term is describing.

For example, follow the steps to define the term *dysmenorrhea*:

1. Divide the term into its word parts: dys/men/o/rrhea
2. Define each word part
  - **dys-** → prefix meaning abnormal, difficult, or painful
  - **men/o** → combining form meaning menstruation
  - **-rrhea** → suffix meaning discharge
3. Put the meaning of individual word parts together: abnormal, difficult, or painful menstruation discharge. Refer to Figure 1-3 ■ for a helpful visual aid illustrating this process.



**Figure 1-3** You can figure out the meaning of a medical term by dividing it into its word parts and then defining each part.

### Building Medical Terms

Building medical terms is almost the reverse of defining them. Begin by selecting word parts that convey the meaning needed. Then place the word parts in the correct order to build a complete term.

For example, build a term for the phrase *blood condition of insufficient sugar*. First, choose word parts that represent each portion of the phrase:

- prefix **hypo-** means *insufficient*
- combining form **glyc/o** means *sugar*
- suffix **-emia** means *blood condition*

Then place these word parts in the correct order to complete the whole term: *hypoglycemia*.

It is important to realize that not all possible combinations of word parts will build actual medical terms used by medical professionals. When first learning to build medical terms, this is very frustrating, but do not give up! After working with medical terms for only a short period of time, you will find making correct choices gets easier and easier.

**TERMINOLOGY TIDBIT** To gain a quick understanding of a term, it may be helpful for you to read from the end of the word (the suffix) back to the beginning (the prefix), and then pick up the word root. For example, *endocarditis* reads inflammation (**-itis**) inner, within (**endo-**) the heart (**cardi**). The complete term means *inflammation of the inner (lining) of the heart*.

## Rules for Building Plurals

Latin- and Greek-style medical terms do not follow the same pluralization rules used in English. Refer to the rules presented in Table 1-5 ■ when deciding how to pluralize medical terms.

**Table 1-5** Rules for Pluralizing Medical Terms

IF THE WORD ENDS IN	SINGULAR	PLURAL
-a, keep -a and add -e	vertebra	vertebrae
-ax, drop -x and add -ces	thorax	thoraces
-ex, drop -ex and add -ices	apex	apices
-is, drop -is and add -es	metastasis	metastases
-ix, drop -x and add -ces	appendix	appendices
-ma, keep -ma and add -ta	sarcoma	sarcomata
-on, drop -on and add -a	spermatozoon	spermatozoa
-us, drop -us and add -i	alveolus	alveoli
-um, drop -um and add -a	ovum	ova
-x, drop -x and add -ges	phalanx	phalanges
-y, drop -y and add -ies	biopsy	biopsies

## Pronouncing Medical Terms

Often medical terms are difficult to pronounce because the word parts are unfamiliar to us, or they contain letter combinations that do not occur in English words. Refer to Table 1-6 ■ for hints on pronouncing these letter combinations. You may hear different pronunciations for the same terms depending on where a person was born or educated. As long as it is clear which term people are saying, differing pronunciations are acceptable. Some people are difficult to understand over the telephone or on a transcription tape. If you have any doubt about a term being discussed, ask

**Table 1-6** Hints for Pronouncing Medical Terms

HINT	EXAMPLES
-ae or -oe, pronounce only second letter	bursae ( <i>BER-see</i> ) coelom ( <i>SEE-lum</i> )
c and g have soft sound if followed by e, i, or y	cerebrum ( <i>seh-REE-brum</i> ) gingivitis ( <i>jīn-jīh-VIGH-tis</i> )
c and g have hard sound if followed by other letters	cardiac ( <i>KAR-dee-ak</i> ) gastric ( <i>GAS-trik</i> )
ch- at beginning of word has hard k sound	cholesterol ( <i>koh-LES-ter-all</i> ) chemical ( <i>KEM-ih-kull</i> )
-e or -es at end of word pronounced as separate syllable	syncope ( <i>SIN-koh-pee</i> ) nares ( <i>NAIR-eez</i> )
-i at end of word pronounced “eye” written as “igh”	bronchi ( <i>BRONG-kigh</i> ) nuclei ( <i>NOO-klee-igh</i> )
pn- at beginning of word, pronounce only n	pneumonia ( <i>noo-MOH-nee-ah</i> ) pneumogram ( <i>NOO-moh-gram</i> )
pn in middle of word, pronounce hard p and hard n	tachypnea ( <i>tak-ip-NEE-ah</i> ) hypopnea ( <i>high-POP-nee-ah</i> )
ps- at beginning of word, pronounce only s	psychiatry ( <i>sigh-KIGH-ah-tree</i> ) psychology ( <i>sigh-KALL-oh-jee</i> )

for the term to be spelled. For example, it is often difficult to hear the difference between the terms *abduction* and *adduction*. However, since the terms refer to opposite directions of movement, it is very important to double-check if there is any question about which term is being used. Each new term in this book is introduced in boldface type, with the phonetic or “sounds like” pronunciation in parentheses immediately following. The exception to this is the Building Terms section in Chapters 5–17. For these terms, the pronunciation can be found in the Answer Key at the end of the book. The part of the word that should receive the greatest emphasis during pronunciation appears in capital letters, for example, pericarditis (pair-ih-kar-DYE-tis).

## A Word about Abbreviations

Abbreviations are routinely used in medical records as a way of saving time. Writing *PTCA* is easier and quicker than writing out *percutaneous transluminal cardiac angioplasty*. However, using incorrect abbreviations can result in problems for a patient, as well as with insurance records and processing. For example, the abbreviation *MS* is used for *musculoskeletal*, *mitral stenosis*, and *multiple sclerosis*. If you have any concern that you will confuse someone by using an abbreviation, spell out the word instead. Also, it is never acceptable to use made-up abbreviations. What may appear perfectly clear to you may be quite confusing to others. For this reason, all types of formal health care facilities in the United States will have a list of approved abbreviations, and it is extremely important that you become familiar with this list and follow it closely. Throughout this book abbreviations are included, when possible, immediately following terms. Additionally, a list of common abbreviations for each medical specialty is provided at the end of each chapter. Finally, Appendix II is a complete alphabetical listing of all of the abbreviations used in this text, as well as a list of abbreviations to be avoided.



# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Types of Medical Terms

Indicate whether each of the medical terms below is a Latin/Greek term, eponym, or modern English term.

1. hepatitis \_\_\_\_\_
2. ball and socket \_\_\_\_\_
3. Bell palsy \_\_\_\_\_
4. arthrogram \_\_\_\_\_
5. cardiomegaly \_\_\_\_\_
6. Addison disease \_\_\_\_\_
7. activities of daily living \_\_\_\_\_
8. Hodgkin disease \_\_\_\_\_
9. pacemaker \_\_\_\_\_
10. gastritis \_\_\_\_\_

### Forming Plurals

Fill in the following blanks with the missing singular or plural form of the term.

#### Singular

1. bursa \_\_\_\_\_
2. diverticulum \_\_\_\_\_
3. \_\_\_\_\_
4. ganglion \_\_\_\_\_
5. index \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

#### Plural

- \_\_\_\_\_
- \_\_\_\_\_
- adenomata \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- diagnoses \_\_\_\_\_
- nuclei \_\_\_\_\_

## Practice Defining Medical Terms

These medical terms have already been subdivided into their word parts. Each word part has been defined for you. First, label each word part as a prefix, word root, suffix, or combining vowel. Then put together the meanings of all of the word parts to define the term.

### 1. encephal/o/malacia

- **encephal** is a \_\_\_\_\_ meaning *brain*
- **o** is a \_\_\_\_\_
- **-malacia** is a \_\_\_\_\_ meaning *abnormally soft condition*
- *encephalomalacia* means \_\_\_\_\_

### 2. sub/cutane/ous

- **sub-** is a \_\_\_\_\_ meaning *under*
- **cutane** is a \_\_\_\_\_ meaning *skin*
- **-ous** is a \_\_\_\_\_ meaning *pertaining to*
- *subcutaneous* means \_\_\_\_\_

### 3. hyster/o/pexy

- **hyster** is a \_\_\_\_\_ meaning *uterus*
- **o** is a \_\_\_\_\_
- **-pexy** is a \_\_\_\_\_ meaning *surgical fixation*
- *hysteropexy* means \_\_\_\_\_

### 4. pan/sinus/itis

- **pan-** is a \_\_\_\_\_ meaning *all*
- **sinus** is a \_\_\_\_\_ meaning *sinus*
- **-itis** is a \_\_\_\_\_ meaning *inflammation*
- *pansinusitis* means \_\_\_\_\_

### 5. angi/o/rrhaphy

- **angi** is a \_\_\_\_\_ meaning *vessel*
- **o** is a \_\_\_\_\_
- **-rrhaphy** is a \_\_\_\_\_ meaning *to suture*
- *angiorrhaphy* means \_\_\_\_\_

## 6. inter/ventricul/ar

- **inter-** is a \_\_\_\_\_ meaning *between*
- **ventricul** is a \_\_\_\_\_ meaning *ventricle*
- **-ar** is a \_\_\_\_\_ meaning *pertaining to*
- *interventricular* means \_\_\_\_\_

## 7. cardi/o/megaly

- **cardi** is a \_\_\_\_\_ meaning *heart*
- **o** is a \_\_\_\_\_
- **-megaly** is a \_\_\_\_\_ meaning *enlarged*
- *cardiomegaly* means \_\_\_\_\_

## 8. rhin/o/rrhea

- **rhin** is a \_\_\_\_\_ meaning *nose*
- **o** is a \_\_\_\_\_
- **-plasty** is a \_\_\_\_\_ meaning *surgical repair*
- *rhinoplasty* means \_\_\_\_\_

## 9. gastr/o/enter/o/logy

- **gastr** is a \_\_\_\_\_ meaning *stomach*
- **o** is a \_\_\_\_\_
- **enter** is a \_\_\_\_\_ meaning *intestine*
- **o** is a \_\_\_\_\_
- **-logy** is a \_\_\_\_\_ meaning *study of*
- *gastroenterology* means \_\_\_\_\_

## 10. intra/ven/ous

- **intra-** is a \_\_\_\_\_ meaning *within*
- **ven** is a \_\_\_\_\_ meaning *vein*
- **-ous** is a \_\_\_\_\_ meaning *pertaining to*
- *intravenous* means \_\_\_\_\_

# Practice Building Medical Terms

Use the following list of word parts to build a medical term for each definition. The blanks following each definition provide an outline of the term showing the placement of prefixes (**p**), word roots (**wr**), combining vowels (**cv**), and suffixes (**s**).

Word Part	Category	Meaning
-algia	suffix	pain condition
-ar	suffix	pertaining to
arthr	word root	joint
intra-	prefix	within
-itis	suffix	inflammation
-logy	suffix	study of
laryng	word root	voice box
muscul	word root	muscle
neur	word root	nerve
o	combining vowel	
-oma	suffix	mass, tumor
ophthalm	word root	eye
pan-	prefix	all
-plasty	suffix	surgical repair
scapul	word root	shoulder blade
-scope	suffix	instrument for viewing
sinus	word root	sinus
sub-	prefix	under

1. surgical repair of the voice box

wr

cv

s
2. instrument for viewing a joint

wr

cv

s
3. pertaining to under the shoulder blade

p

wr

s
4. study of the eye

wr

cv

s
5. nerve tumor

wr

s
6. pertaining to within a muscle

p

wr

s
7. inflammation of all sinuses

p

wr

s
8. surgical repair of a nerve

wr

cv

s
9. voice box inflammation

wr

s
10. joint pain

wr

s

# 2

## Suffixes

-oma

-sclerosis

-itis

-logy

-scope

### Learning Objectives

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

- 2-1** Explain the role of suffixes in building medical terms.
- 2-2** Use suffixes to indicate diseases or abnormal conditions.
- 2-3** Use suffixes to indicate surgical procedures.
- 2-4** Use suffixes to indicate diagnostic procedures.
- 2-5** Use general suffixes to build additional medical terms.
- 2-6** Use suffixes to indicate medical specialties or personnel.
- 2-7** Use suffixes to convert word roots into adjectives.

# A Brief Introduction to Suffixes

A suffix at the end of a medical term adds a specific meaning to the term. All medical terms built from Latin or Greek word parts must have a suffix. Changing the suffix added to a term changes the meaning of the entire term. This can be illustrated with the combining form for heart, **cardi/o**.

- **cardi/o** + **-logy** = *cardiology* meaning *study of heart*
- **cardi/o** + **-dynia** = *cardiodynia* meaning *condition of heart pain*
- **cardi/o** + **-megaly** = *cardiomegaly* meaning *enlarged heart*

Most suffixes are not associated with only one medical specialty or body system. Therefore, you will use many of the same suffixes with each new set of combining forms introduced in each chapter of this text. Suffixes can be placed into one of several categories. The following list makes learning them easier by subdividing them into smaller groups:

- Suffixes indicating diseases or abnormal conditions
- Suffixes indicating a surgical procedure
- Suffixes indicating a diagnostic procedure
- General suffixes
- Suffixes indicating medical specialties or personnel
- Suffixes that convert word roots into adjectives

## Suffixes Indicating Diseases or Abnormal Conditions

When added to a word root, the following suffixes indicate a diseased state or body abnormality.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-algia</b>	pain condition	gastralgia (condition of stomach pain)
<b>-apheresis</b>	removal	plasmapheresis (plasma removal)
<b>-asthenia</b>	weakness condition	myasthenia (condition of muscle weakness)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-asthenia</b> comes from combining the prefix <b>a-</b> , meaning <i>without</i> and the Greek word <i>sthenos</i> , meaning <i>strength</i> .		
<b>-capnia</b>	carbon dioxide condition	hypercapnia (condition of excessive carbon dioxide)
<b>-cele</b>	protrusion	cystocele (protrusion of urinary bladder)
<b>-cide</b>	to kill	spermatocide (to kill sperm)
<b>-cytosis</b>	abnormal cell condition (too many)	erythrocytosis (abnormal condition of [too many] red cells)
<b>-derma</b>	skin condition	leukoderma (condition of white skin)
<b>-dipsia</b>	thirst condition	polydipsia (condition of many [frequent] thirst)
<b>-dynia</b>	pain condition	cardiodynia (condition of heart pain)
<b>-ectasis</b>	dilated	bronchiectasis (dilated bronchi)
<b>-edema</b>	swelling	lymphedema (lymphatic swelling)
<b>-emesis</b>	vomiting	hematemesis (vomiting blood)
<b>-emetic</b>	pertaining to vomiting	antiemetic (pertaining to against vomiting)
<b>-emia</b>	blood condition	leukemia (white [cell] blood condition)
<b>-esthesia</b>	sensation condition	anesthesia (condition of [being] without sensation)
<b>-ia</b>	condition	pneumonia (lung condition)
<b>-iasis</b>	abnormal condition	lithiasis (abnormal condition of stones)

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-ism</b>	state of	hypothyroidism (state of insufficient thyroid [hormones])
<b>-itis</b>	inflammation	dermatitis (skin inflammation)
<b>-kinesia</b>	movement condition	bradykinesia (condition of slow movement)
<b>-lith</b>	stone	cystolith (bladder stone)
<b>-lysis</b>	to destroy	osteolysis (to destroy bone)
<b>-lytic</b>	pertaining to destruction	thrombolytic (pertaining to clot destruction)
<b>-malacia</b>	abnormally soft condition	chondromalacia (condition of abnormally soft cartilage)
<b>-megaly</b>	enlarged	cardiomegaly (enlarged heart)
<b>-oma</b>	mass, tumor	carcinoma (cancerous tumor)
<b>-opia</b>	vision condition	diplopia (condition of double vision)
<b>-osis</b>	abnormal condition	cyanosis (abnormal condition of blue [skin])
<b>-osmia</b>	sense of smell condition	anosmia (condition of [being] without [sense of] smell)
<b>-oxia</b>	oxygen condition	hypoxia (condition of insufficient oxygen)
<b>-paresis</b>	weakness	hemiparesis (half weakness)
<b>-pathy</b>	disease	myopathy (muscle disease)
<b>-penia</b>	condition of too few	cytopenia (condition of too few cells)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-penia</b> comes from the Greek word <i>penia</i> , meaning <i>poverty</i> .		
<b>-pepsia</b>	digestion condition	bradypepsia (condition of slow digestion)
<b>-phagia</b>	swallowing or eating condition	dysphagia (condition of difficulty swallowing)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-phagia</b> comes from the Greek word <i>phagō</i> , meaning <i>to eat</i> . In today's medical terms, it may be used to mean <i>eating condition</i> or <i>swallowing condition</i> .		
<b>-phasia</b>	speech condition	aphasia (condition of [being] without speech)
<b>-phobia</b>	fear condition	photophobia (condition of fear of [sensitivity to] light)
<b>-phonia</b>	voice condition	aphonia (condition of [being] without voice)
<b>-plasia</b>	condition of cell formation	hyperplasia (condition of excessive cell formation)
<b>-plegia</b>	paralysis condition	paraplegia (condition of paralysis of both lower extremities)
<b>-ptosis</b>	drooping	protopsis (drooping rectum)
<b>-rrhage</b>	abnormal flow	hemorrhage (abnormal flow of blood)
<b>-rrhagia</b>	abnormal flow condition	menorrhagia (abnormal menstrual flow condition)
<b>-rrhea</b>	discharge	rhinorrhea (discharge from nose)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-rrhea</b> and <b>-rrhagia</b> are very similar but come from different Greek words. <b>-rrhea</b> comes from <i>rhoia</i> , meaning <i>to flow</i> ; <b>-rrhagia</b> comes from <i>rhagnymi</i> , meaning <i>to burst forth</i> and now means abnormal flow condition.		
<b>-rrhexis</b>	rupture	hysterorrhexis (rupture of uterus)
<b>-sclerosis</b>	hardening	arteriosclerosis (hardening of artery)
<b>-spasm</b>	involuntary muscle contraction	bronchospasm (involuntary contraction of bronchi muscles)
<b>-stasis</b>	standing still	hemostasis (standing still blood)
<b>-stenosis</b>	narrowing	angiostenosis (narrowing of a vessel)
<b>-toxic</b>	pertaining to poison	cytotoxic (pertaining to cell poison)
<b>-uria</b>	urine condition	hematuria (blood in urine condition)



## Suffixes Indicating Surgical Procedures

The following suffixes are used to indicate surgical procedures. The word root paired with the surgical suffix indicates which area of the body is being operated on.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-clasia</b>	to surgically break	osteoclasia (to surgically break a bone)
<b>-desis</b>	surgical fusing	arthrodesis (surgical fusing of joint)
<b>-ectomy</b>	surgical removal	gastrectomy (surgical removal of stomach)
<b>-pexy</b>	surgical fixation	nephropexy (surgical fixation of kidney)
<b>-plasty</b>	surgical repair	dermatoplasty (surgical repair of skin)
<b>-rrhaphy</b>	to suture	myorrhaphy (to suture muscle)
<b>-stomy</b>	surgically create an opening	colostomy (surgically create opening for colon [through abdominal wall])
<b>-tome</b>	instrument to cut	dermatome (instrument to cut skin)
<b>-tomy</b>	cutting into	thoracotomy (cutting into chest)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-ectomy</b> and <b>-tomy</b> have very specific meanings that relate back to the original Greek words. <b>-ectomy</b> comes from <i>ektome</i> , meaning <i>to cut out</i> , while <b>-tomy</b> comes from <i>tomia</i> , meaning <i>to cut into</i> .		
<b>-tripsy</b>	surgical crushing	lithotripsy (surgical crushing of stone)

## Suffixes Indicating Diagnostic Procedures

The following suffixes indicate common diagnostic procedures.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-centesis</b>	puncture to withdraw fluid	arthrocentesis (puncture to withdraw fluid from joint)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-centesis</b> comes from the Greek word <i>kentesis</i> , meaning <i>to prick or pierce</i> .		
<b>-gram</b>	a record	electrocardiogram (record of heart's electrical [activity])
<b>-graph</b>	instrument for recording	myograph (instrument for recording muscle)
<b>-graphy</b>	process of recording	electrocardiography (process of recording heart's electrical [activity])
<b>-manometer</b>	instrument to measure pressure	sphygmomanometer (instrument to measure pulse [blood] pressure)
<b>-meter</b>	instrument for measuring	audiometer (instrument for measuring hearing)
<b>-metry</b>	process of measuring	audiometry (process of measuring hearing)
<b>-scope</b>	instrument for viewing	gastroscope (instrument for viewing stomach)
<b>-scopy</b>	process of visually examining	gastroscopy (process of visually examining stomach)

## General Suffixes

These suffixes belong to a group not specifically referring to a medical condition or procedure. However, they add meaning to the term.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-arche</b>	beginning	menarche (beginning menstruation)
<b>-cle</b>	small	vesicle (small sac [blister])
<b>-cysis</b>	pregnancy	salpingocystis (uterine tube pregnancy)

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-cyte</b>	cell	leukocyte (white [blood] cell)
<b>-gen</b>	that which produces	mutagen (that which produces mutations)
<b>-genesis</b>	produces	osteogenesis (produces bone)
<b>-genic</b>	pertaining to producing	carcinogenic (pertaining to producing cancer)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-genesis</b> , <b>-genic</b> , and <b>-gen</b> all come from the Greek word <i>gignesthai</i> , meaning <i>to be born</i> .		
<b>-globin</b>	protein	hemoglobin (blood protein)
<b>-globulin</b>	protein	immunoglobulin (protective protein)
<b>-gravida</b>	pregnancy	multigravida (many pregnancies)
<b>-ion</b>	action	flexion (bending action)
<b>-oid</b>	resembling	lipoid (resembling fat)
<b>-ole</b>	small	arteriole (small artery)
<b>-opsy</b>	view of	biopsy (view of life)
<b>-para</b>	to bear (offspring)	nullipara (to bear no children)
<b>-partum</b>	childbirth	postpartum (after childbirth)
<b>-phil</b>	attracted to	eosinophil (attracted to rosy [dye])
<b>-plasm</b>	formation	neoplasm (new formation [of tissue])
<b>-pnea</b>	breathing	apnea (lack of breathing)
<b>-poiesis</b>	formation	hematopoiesis (blood formation)
<b>-porosis</b>	porous	osteoporosis (porous bone)
<b>-ptysis</b>	spitting	hemoptysis (spitting blood)
<b>-salpinx</b>	uterine tube	pyosalpinx (pus in uterine tube)
<b>-therapy</b>	treatment	chemotherapy (treatment with chemicals)
<b>-thorax</b>	chest	hemothorax (blood in the chest)
<b>-trophic</b>	pertaining to development	amyotrophic (pertaining to without muscle development)
<b>-trophy</b>	development	hypertrophy (excessive development)
<b>-ule</b>	small	venule (small vein)

## Suffixes Indicating Medical Specialties or Personnel

The word root placed with these suffixes indicates the area of medicine in which the specialist works.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-er</b>	one who	radiographer (one who takes X-rays)
<b>-iatric</b>	pertaining to medical treatment	psychiatric (pertaining to medical treatment of the mind)
<b>-iatrist</b>	physician	psychiatrist (physician specializing in the mind)
<b>-iatry</b>	medical treatment	podiatry (medical treatment of the foot)
<b>-ician</b>	specialist	pediatrician (specialist for children)
<b>-ist</b>	specialist	pharmacist (drug specialist)
<b>-logist</b>	one who studies	cardiologist (one who studies the heart)
<b>-logy</b>	study of	cardiology (study of the heart)

## Suffixes Used to Convert Word Roots into Adjectives

The following suffixes are used to convert word roots into adjectives. Often a term such as *ulcer* will need to be paired with a second term to indicate location. For example, **-ic** combined with **gastr/o** forms the term *gastric* to give the

adjective form for stomach. *Gastric* is then paired with *ulcer* to indicate that the ulcer is located in the stomach. The accepted meaning for these adjective suffixes is *pertaining to*.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
-ac	pertaining to	cardiac (pertaining to heart)
-al	pertaining to	duodenal (pertaining to duodenum)
-an	pertaining to	ovarian (pertaining to ovary)
-ar	pertaining to	ventricular (pertaining to ventricle)
-ary	pertaining to	pulmonary (pertaining to lungs)
-atic	pertaining to	lymphatic (pertaining to lymph)
-eal	pertaining to	esophageal (pertaining to esophagus)
-iac	pertaining to	hypochondriac (pertaining to below the cartilage)
-ic	pertaining to	gastric (pertaining to stomach)
-ine	pertaining to	uterine (pertaining to uterus)
-ior	pertaining to	superior (pertaining to above)
-nic	pertaining to	embryonic (pertaining to embryo)
-ory	pertaining to	auditory (pertaining to hearing)
-ose	pertaining to	adipose (pertaining to fat)
-ous	pertaining to	venous (pertaining to vein)
-tic	pertaining to	hepatic (pertaining to liver)

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Categories of Suffixes

On each of the following blanks, indicate the category to which each suffix belongs and its translation. The suffix categories included in this exercise are disease/abnormal condition, surgical, diagnostic, and general.

Suffix	Category	Translation
1. -plegia		
2. -metry		
3. -cyte		
4. -tomy		
5. -lith		
6. -scope		

Suffix	Category	Translation
7. <b>-thorax</b>	_____	_____
8. <b>-graphy</b>	_____	_____
9. <b>-emesis</b>	_____	_____
10. <b>-clasia</b>	_____	_____
11. <b>-lysis</b>	_____	_____
12. <b>-ectomy</b>	_____	_____

## Matching

Match each suffix to its definition.

- |                           |                            |
|---------------------------|----------------------------|
| 1. <b>-pepsia</b> _____   | A. cell                    |
| 2. <b>-pnea</b> _____     | B. formation               |
| 3. <b>-phasia</b> _____   | C. movement condition      |
| 4. <b>-cyesis</b> _____   | D. pertaining to producing |
| 5. <b>-kinesia</b> _____  | E. digestion condition     |
| 6. <b>-genic</b> _____    | F. speech condition        |
| 7. <b>-dipsia</b> _____   | G. treatment               |
| 8. <b>-cyte</b> _____     | H. pregnancy               |
| 9. <b>-porosis</b> _____  | I. thirst condition        |
| 10. <b>-therapy</b> _____ | J. vision condition        |
| 11. <b>-plasm</b> _____   | K. porous                  |
| 12. <b>-opia</b> _____    | L. breathing               |

## Choosing the Correct Adjective Form

One of the most difficult things to master in learning medical terminology is correct use of adjective forms. There are several ways to technically construct a word, but only one of them is an actual medical term. The rest simply aren't used. Unfortunately, there is no rule to help; you can learn this only by becoming familiar with which adjective form is correct. After a short while, a term will just "sound" correct and you won't forget it again.

The following exercise is a start to this process. Read the translation, sound out each choice, and circle the one that "sounds" correct to you.

### 1. pertaining to the heart

cardiac

cardial

cardior

carditic

### 2. pertaining to the ovary

ovarous

ovariac

ovarian

ovarial

(continued on next page)

(continued)

**3. pertaining to the duodenum**

duodenar	duodenal	duodeniatic	duodentic
----------	----------	-------------	-----------

**4. pertaining to a ventricle**

ventricultic	ventriculous	ventricular	ventricula
--------------	--------------	-------------	------------

**5. pertaining to the lungs**

pulmonal	pulmontic	pulmonous	pulmonary
----------	-----------	-----------	-----------

**6. pertaining to the esophagus**

esophageal	esophagic	esophagous	esophagar
------------	-----------	------------	-----------

**7. pertaining to the stomach**

gastran	gastric	gastral	gastreal
---------	---------	---------	----------

**8. pertaining to the uterus**

uterior	uterary	uterotic	uterine
---------	---------	----------	---------

**9. pertaining to a vein**

venous	ventic	venary	veniac
--------	--------	--------	--------

**10. pertaining to the liver**

hepatar	hepatary	hepatic	hepatac
---------	----------	---------	---------

## Building Terms with Suffixes

Now you are ready to start building actual medical terms. The following format will be used for this exercise and for Building Terms sections throughout the rest of this text:

1. Translation phrase for the medical term is provided
2. Answer blanks are subdivided into prefix (if needed), word root, combining vowel (if needed), and suffix  
*Examples*

- |                                  |   |
|----------------------------------|---|
| • Instrument to view the stomach | <b>gastr</b> / <b>o</b> / <b>scope</b>  |
| • Enlarged liver                 | <b>hepat</b> / <b>o</b> / <b>megaly</b> |
| • Pertaining to the kidney       | <b>ren</b> / <b>al</b>                  |
| • Inflammation of skin           | <b>dermat</b> / <b>itis</b>             |

Remember that whether or not to use a combining vowel depends on the first letter of the suffix. If it begins with a consonant, use a combining vowel (see the first two examples). If the suffix begins with a vowel, a combining vowel is not necessary (see the last two examples). Refer back to Chapter 1 if you need more help with this rule.

Finally, you will need a short list of combining forms to use with the suffixes you learned in this chapter. The following list contains several common combining forms for use in these exercises.

Combining Form	Meaning	Combining Form	Meaning	Combining Form	Meaning
<b>angi/o</b>	vessel	<b>cyst/o</b>	urinary bladder, sac	<b>nephr/o</b>	kidney
<b>arteri/o</b>	artery	<b>dermat/o</b>	skin	<b>neur/o</b>	nerve
<b>arthr/o</b>	joint	<b>gastr/o</b>	stomach	<b>rhin/o</b>	nose
<b>bronch/o</b>	bronchus	<b>hepat/o</b>	liver	<b>thorac/o</b>	chest
<b>col/o</b>	colon	<b>my/o</b>	muscle	<b>trache/o</b>	trachea

- Surgical removal of the stomach  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**
- Instrument for viewing inside the stomach  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Process of visually examining the stomach  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Condition of stomach pain  
\_\_\_\_\_ / \_\_\_\_\_ OR  
**wr** **s**
- Bladder stone  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Instrument for viewing inside the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Process of visually examining the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Surgically create an opening in the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Pertaining to the bladder  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**
- Surgical repair of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Vessel tumor  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**
- Process of recording a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Record of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Narrowing of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Hardening of an artery  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**
- Involuntary muscle contraction in an artery  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

(continued on next page)

(continued)

17. Ruptured artery	<hr/>	<hr/>	<hr/>
	wr	cv	s
18. Small artery	<hr/>	<hr/>	<hr/>
	wr		s
19. Joint inflammation	<hr/>	<hr/>	<hr/>
	wr		s
20. Instrument for viewing inside a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
21. Process of visually examining a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
22. Surgical repair of a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
23. Puncture to withdraw fluid from a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
24. Study of the skin	<hr/>	<hr/>	<hr/>
	wr	cv	s
25. One who studies the skin	<hr/>	<hr/>	<hr/>
	wr	cv	s
26. Skin inflammation	<hr/>	<hr/>	<hr/>
	wr		s
27. Abnormal condition of the skin	<hr/>	<hr/>	<hr/>
	wr		s
28. Liver inflammation	<hr/>	<hr/>	<hr/>
	wr		s
29. Liver tumor	<hr/>	<hr/>	<hr/>
	wr		s
30. Enlarged liver	<hr/>	<hr/>	<hr/>
	wr	cv	s
31. Liver cell	<hr/>	<hr/>	<hr/>
	wr	cv	s
32. Pertaining to the liver	<hr/>	<hr/>	<hr/>
	wr		s
33. Discharge from the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
34. Surgical repair of the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
35. Abnormal flow condition from the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
36. Bronchus inflammation	<hr/>	<hr/>	<hr/>
	wr		s
37. Instrument for viewing inside the bronchus	<hr/>	<hr/>	<hr/>
	wr	cv	s
38. Process of visually examining the bronchus	<hr/>	<hr/>	<hr/>
	wr	cv	s
39. Surgically create an opening into the trachea	<hr/>	<hr/>	<hr/>
	wr	cv	s

40. Cutting into the trachea	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
41. Protrusion of the trachea	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
42. Condition of abnormally soft trachea	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
43. Pertaining to the trachea	_____ / _____ / _____
	<b>wr</b> <b>s</b>
44. Surgically create an opening into the colon	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
45. Surgical removal of the colon	_____ / _____ / _____
	<b>wr</b> <b>s</b>
46. Surgical fixation of the colon	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
47. Study of the kidney	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
48. One who studies the kidney	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
49. Condition of abnormally soft kidney	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
50. Abnormal condition of the kidney	_____ / _____ / _____
	<b>wr</b> <b>s</b>
51. Kidney disease	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
52. Surgical fixation of the kidney	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
53. Cutting into the chest	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
54. Puncture to withdraw fluid from the chest	_____ / _____ / _____
	<b>wr</b> / <b>cv</b> <b>s</b>
55. Condition of chest pain	_____ / _____ / _____ OR
	<b>wr</b> <b>cv</b> <b>s</b>
	_____ / _____ / _____
	<b>wr</b> <b>s</b>
56. Study of the nerves	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
57. One who studies the nerves	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
58. Surgical repair of a nerve	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
59. Surgical crushing of a nerve	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>
60. Condition of nerve pain	_____ / _____ / _____ OR
	<b>wr</b> <b>s</b>
	_____ / _____ / _____
	<b>wr</b> <b>cv</b> <b>s</b>

(continued on next page)



(continued)

61. Suture a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

62. Muscle disease

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

63. Condition of muscle pain

\_\_\_\_\_ / \_\_\_\_\_ OR  
**wr** **s**

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

64. Instrument to cut muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

65. Instrument for recording a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

66. Record of a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

67. Process of recording a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

# 3

## Prefixes

inter-

hypo-

auto-

de-

pre-

### Learning Objectives

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

- 3-1** Explain the role of prefixes in building medical terms.
- 3-2** Use prefixes to indicate diseases or abnormal conditions.
- 3-3** Use prefixes to indicate directions or body positions.
- 3-4** Use prefixes to indicate numbers or quantity measurements.
- 3-5** Use prefixes to indicate time.
- 3-6** Use prefixes to build additional medical terms.

# A Brief Introduction to Prefixes

A prefix at the beginning of a medical term adds specific information to the term. Using different prefixes changes the meaning of the medical term. A good example is the suffix meaning development, **-trophy**.

- **hyper-** + **-trophy** = *hypertrophy* meaning *excessive development*
- **dys-** + **-trophy** = *dystrophy* meaning *abnormal development*
- **a-** + **-trophy** = *atrophy* meaning *lack of development*

As with suffixes, few prefixes are associated with only one medical specialty or body system. Therefore, you will use many of the same prefixes with each new set of combining forms introduced in each chapter. Prefixes can be placed into one of several categories. The following list makes learning them easier by subdividing them into smaller groups:

- Prefixes indicating diseases or abnormal conditions
- Prefixes indicating directions or body positions
- Prefixes indicating numbers or quantity measurements
- Prefixes indicating time
- General prefixes

Some prefixes have multiple translations. Therefore, they appear in more than one category. For example, the prefix **hypo-** can be translated as *below*, placing it in the direction or body position category, or as *insufficient*, placing it in the number or quantity measurement category.

## Prefixes Indicating Diseases or Abnormal Conditions

Used with word roots or suffixes, the following prefixes indicate a diseased state or body abnormality.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>a-</b>	without	aphasia (without speech)
<b>an-</b>	without	anoxia (without oxygen)
<b>anti-</b>	against	antibiotic (against life)
<b>brady-</b>	slow	bradycardia (slow heartbeat)
<b>de-</b>	without	dehydration (without water)
<b>dys-</b>	abnormal, difficult, painful	dystrophy (abnormal development); dyspnea (difficulty breathing); dysuria (painful urination)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>dys-</b> comes from the Greek word <i>dus</i> , which has a general negative meaning. It can be translated several ways such as <i>bad</i> , <i>difficult</i> , <i>abnormal</i> , <i>incorrect</i> , and <i>painful</i> .		
<b>in-</b>	inward, not	infertile (not fertile)
<b>pachy-</b>	thick	pachyderma (thick skin)
<b>pseudo-</b>	false	pseudocyesis (false pregnancy)
<b>tachy-</b>	fast	tachycardia (fast heartbeat)
<b>un-</b>	not	unconscious (not conscious)

## Prefixes Indicating Directions or Body Positions

Used with word roots or suffixes, the following prefixes indicate directions or body positions.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>ab-</b>	away from	abduction (to lead away from)
<b>ad-</b>	toward	adduction (to lead toward)
<b>ante-</b>	in front of	antorbital (in front of eye socket)
<b>e-</b>	outward	eversion (action of turning outward)
<b>endo-</b>	inner, within	endometrium (inner [lining of] uterus); endoscope (instrument for viewing within)
<b>epi-</b>	above	epigastric (above stomach)
<b>ex-</b>	outward	exophthalmos (eyes [bulging] outward)
<b>extra-</b>	outside of	extraocular (outside of eye)
<b>hypo-</b>	below, insufficient	hypogastric (below stomach)
<b>in-</b>	inward, not	inhalation (to breathe inward)
<b>infra-</b>	below	infraorbital (below eye socket)
<b>inter-</b>	between	intervertebral (between vertebrae)
<b>intra-</b>	within	intravenous (inside vein)
<b>TERMINOLOGY TIDBIT</b> The prefixes <b>intra-</b> and <b>inter-</b> are commonly confused. Both come from Latin words, <i>intra</i> meaning <i>within</i> and <i>inter</i> meaning <i>between</i> .		
<b>para-</b>	beside, two like parts of a pair	paranasal (beside the nose); paraplegia (paralysis of two like parts of a pair [the legs])
<b>peri-</b>	around	periodontal (around tooth)
<b>retro-</b>	backward, behind	retrograde (to go backward); retroperitoneal (behind the peritoneum)
<b>sub-</b>	under	subcutaneous (under skin)
<b>supra-</b>	above	suprapubic (above <b>pubic</b> bone)
<b>trans-</b>	across	transurethral (across urethra)

## Prefixes Indicating Numbers or Quantity Measurements

Used with word roots or suffixes, the following prefixes indicate the number of items or quantity measurement.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>bi-</b>	two	bilateral (two sides)
<b>di-</b>	two	diplegia (paralysis of two extremities)
<b>hemi-</b>	half	hemiplegia (paralysis of half [one side] of body)
<b>hyper-</b>	excessive	hyperemesis (excessive vomiting)
<b>hypo-</b>	below, insufficient	hypocalcemia (insufficient calcium in blood)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>hypo-</b> is used several different ways. It comes from the Greek word <i>hupo</i> meaning <i>under</i> and is used to indicate a smaller than normal amount. It is also used to indicate a position underneath another structure.		
<b>micro-</b>	small	microscope (instrument for viewing small things)
<b>mono-</b>	one	monoplegia (paralysis of one extremity)
<b>multi-</b>	many	multigravida (many [more than one] pregnancies)

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>nulli-</b>	none	nulligravida (no pregnancies)
<b>pan-</b>	all	pansinusitis (inflammation of all sinuses)
<b>poly-</b>	many	polyarteritis (many inflamed arteries)
<b>primi-</b>	first	primigravida (first pregnancy)
<b>quadri-</b>	four	quadriplegia (paralysis of all four extremities)
<b>tri-</b>	three	triplegia (paralysis of three extremities)
<b>ultra-</b>	beyond	ultrasound (sound beyond [hearing])
<b>uni-</b>	one	unilateral (one side)

## Prefixes Indicating Time

Used with word roots or suffixes, the following prefixes indicate time periods.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>ante-</b>	before	antepartum (before birth)
<b>neo-</b>	new	neonate (newborn)
<b>post-</b>	after	postpartum (after birth)
<b>pre-</b>	before	premenstrual (before menstruation)

## General Prefixes

These prefixes belong to a group not specifically referring to a disease, abnormal condition, direction, body position, number, or time. However, they add meaning to a term.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>auto-</b>	self	autograft (transplant from self [one's own body])
<b>contra-</b>	against	contraception (against conception)
<b>echo-</b>	a repeating sound	echocardiography (process of recording repeating sounds from the heart)
<b>eu-</b>	normal	eupnea (normal breathing)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>eu-</b> comes from the Greek word <i>eu</i> and has a general positive meaning. It can be translated as “good,” “normal,” or “well.” It is the opposite of <b>dys-</b> .		
<b>hetero-</b>	different	heterograft (transplant from different [species])
<b>homo-</b>	same	homograft (transplant from same [species])
<b>per-</b>	through	percutaneous (through skin)

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Categories of Prefixes

On each of the following blanks, indicate the category to which each prefix belongs and its translation. The categories included in this exercise are disease/abnormality prefixes, direction/body position prefixes, number prefixes, and time prefixes.

Prefix	Category	Translation
1. <b>dys-</b>		
2. <b>hyper-</b>		
3. <b>nulli-</b>		
4. <b>brady-</b>		
5. <b>an-</b>		
6. <b>neo-</b>		
7. <b>inter-</b>		
8. <b>post-</b>		
9. <b>micro-</b>		
10. <b>peri-</b>		
11. <b>epi-</b>		
12. <b>anti-</b>		

## Matching

Match each prefix to its definition.

1. **auto-** \_\_\_\_\_
2. **poly-** \_\_\_\_\_
3. **per-** \_\_\_\_\_
4. **homo-** \_\_\_\_\_
5. **eu-** \_\_\_\_\_
6. **pan-** \_\_\_\_\_
7. **primi-** \_\_\_\_\_
8. **quadri-** \_\_\_\_\_
9. **intra-** \_\_\_\_\_
10. **hetero-** \_\_\_\_\_
11. **hypo-** \_\_\_\_\_
12. **tachy-** \_\_\_\_\_

- A. same
- B. four
- C. fast
- D. many
- E. first
- F. within
- G. self
- H. different
- I. insufficient
- J. normal
- K. all
- L. through

## Building Terms with Prefixes

Now you are ready to practice using prefixes to build medical terms. The following format will be used *only for this exercise*.

1. Translation phrase for the medical term is provided.
2. Answer blanks are divided into two halves. The first half is for the prefix and the second half is for the remainder of the term. The remainder may be either a word root/suffix combination (seen in a **redblue** color combination), a suffix only (seen in **-blue** color), or a traditional word (seen in **black**).

You will need additional word parts and words for this practice exercise, so the following list contains word parts and words ready to combine with a prefix.

Word Parts or Word	Meaning
<b>cardia</b>	heart condition
<b>carditis</b>	heart inflammation
<b>cellular</b>	pertaining to cells
<b>dermal</b>	pertaining to skin
<b>graft</b>	transplant
<b>lateral</b>	pertaining to the side
<b>operative</b>	operation
<b>-para</b>	to bear (offspring)

Word Parts or Word	Meaning
<b>-pepsia</b>	digestion
<b>-phagia</b>	eating or swallowing condition
<b>-plegia</b>	paralysis
<b>-pnea</b>	breathing
<b>scapular</b>	pertaining to the scapula
<b>-trophy</b>	development
<b>-uria</b>	condition of the urine

1. Condition of fast heart

\_\_\_\_\_ / \_\_\_\_\_  
**p** **wr + s**

2. Condition of slow heart

\_\_\_\_\_ / \_\_\_\_\_  
**p** **wr + s**

(continued on next page)

(continued)

3. Inflammation within the heart	p	/	wr + s
4. Inflammation around the heart	p	/	wr + s
5. Inflammation of the entire heart	p	/	wr + s
6. Pertaining to within the cell	p	/	wr + s
7. Pertaining to outside the cell	p	/	wr + s
8. Pertaining to many cells	p	/	wr + s
9. Pertaining to one cell	p	/	wr + s
10. Pertaining to within the skin	p	/	wr + s
11. Pertaining to under the skin	p	/	wr + s
12. Pertaining to above the skin	p	/	wr + s
13. Transplant from same [species]	p	/	word
14. Transplant from different [species]	p	/	word
15. Transplant from self	p	/	word
16. Pertaining to two sides	p	/	word
17. Pertaining to one side	p	/	word
18. Before an operation	p	/	word
19. After an operation	p	/	word
20. Within an operation	p	/	word
21. To bear first (offspring)	p	/	s
22. To bear no (offspring)	p	/	s
23. To bear many (offspring)	p	/	s
24. Condition of without eating	p	/	s

(continued on next page)

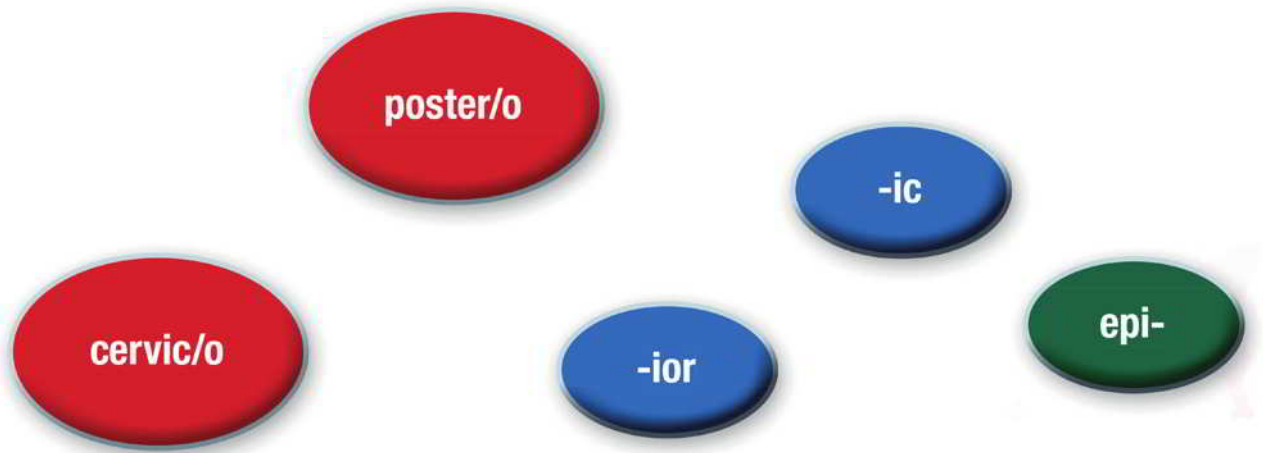


(continued)

25. Condition of abnormal eating	p	/	s
26. Condition of many (too much) eating	p	/	s
27. Condition of without digestion	p	/	s
28. Condition of abnormal digestion	p	/	s
29. Condition of slow digestion	p	/	s
30. Without development	p	/	s
31. Abnormal development	p	/	s
32. Condition of half (body) paralysis	p	/	s
33. Condition of four (limbs) paralysis	p	/	s
34. Condition of one (limb) paralysis	p	/	s
35. No breathing	p	/	s
36. Normal breathing	p	/	s
37. Fast breathing	p	/	s
38. Slow breathing	p	/	s
39. Excessive breathing	p	/	s
40. Insufficient breathing	p	/	s
41. Pertaining to below the scapula	p	/	wr + s
42. Pertaining to above the scapula	p	/	wr + s
43. Pertaining to under the scapula	p	/	wr + s
44. Condition of no urine	p	/	s
45. Condition of many (too much) urine	p	/	s
46. Condition of abnormal urine	p	/	s

# 4

## Anatomical Terminology



### Learning Objectives

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

- 4-1 Visualize patients in the anatomical position.
- 4-2 Identify the planes and sections of the body.
- 4-3 Use correct directional terms.
- 4-4 Use anatomical terms to refer to body surface structures.
- 4-5 Place internal organs into the correct body cavity.
- 4-6 Use either anatomical divisions or clinical divisions to describe the abdominopelvic cavity.

## Anatomical Combining Forms

The combining forms listed below are commonly used to build anatomical terms:

<b>abdomin/o</b>	abdomen	<b>later/o</b>	side
<b>anter/o</b>	front (of body)	<b>lumb/o</b>	low back
<b>brachi/o</b>	arm	<b>medi/o</b>	middle
<b>caud/o</b>	tail	<b>nas/o</b>	nose
<b>cephal/o</b>	head	<b>or/o</b>	mouth
<b>cervic/o</b>	neck, cervix	<b>orbit/o</b>	eye socket
<b>chondr/o</b>	cartilage	<b>ot/o</b>	ear
<b>crani/o</b>	skull	<b>patell/o</b>	patella (kneecap)
<b>cubit/o</b>	elbow	<b>pelv/o</b>	pelvis
<b>dist/o</b>	away from (beginning of structure)	<b>poster/o</b>	back (of body)
<b>dors/o</b>	back (of body)	<b>proxim/o</b>	near to (beginning of structure)
<b>femor/o</b>	femur (thigh bone)	<b>scapul/o</b>	scapula (shoulder blade)
<b>gastr/o</b>	stomach	<b>spin/o</b>	spine
<b>genit/o</b>	genitals	<b>stern/o</b>	sternum (breast bone)
<b>glute/o</b>	buttocks	<b>super/o</b>	above
<b>ili/o</b>	ilium (part of pelvis)	<b>thorac/o</b>	chest
<b>infer/o</b>	below	<b>ventr/o</b>	belly (surface of body)
<b>inguin/o</b>	groin	<b>vertebr/o</b>	vertebra (backbone)

## Suffix Review

These suffixes introduced in Chapter 2 are being reviewed in this chapter because they are commonly used to build anatomical terms:

<b>-ac</b>	pertaining to	<b>-iac</b>	pertaining to
<b>-al</b>	pertaining to	<b>-ic</b>	pertaining to
<b>-ar</b>	pertaining to	<b>-ior</b>	pertaining to

## Prefix Review

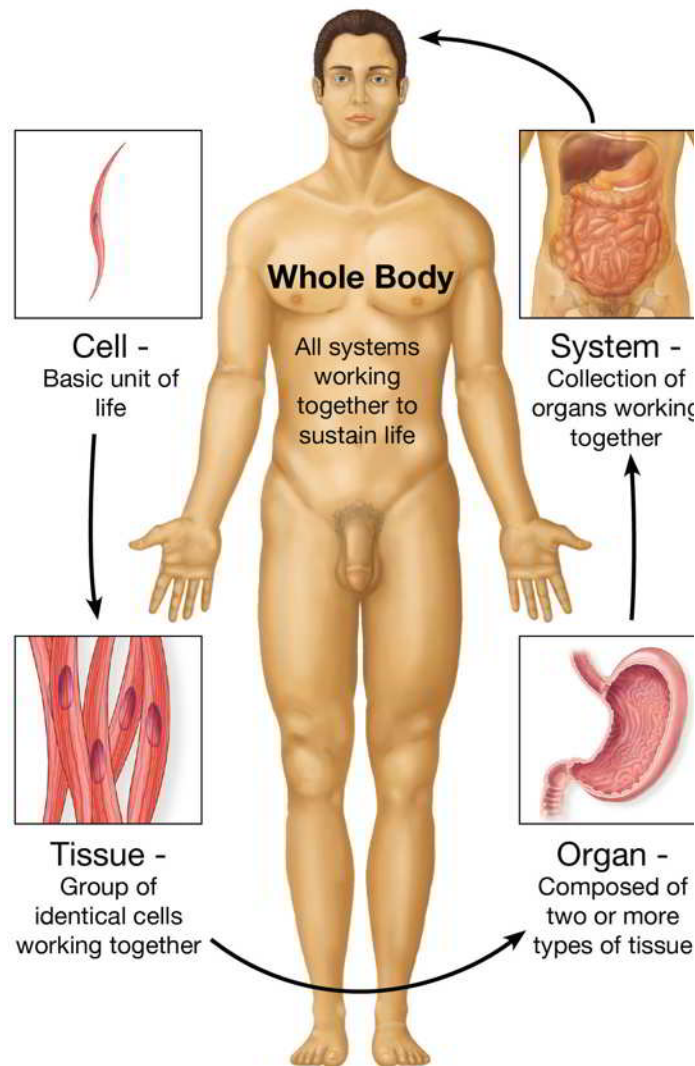
These prefixes introduced in Chapter 3 are being reviewed in this chapter because they are commonly used to build anatomical terms:

<b>ante-</b>	in front of, before	<b>hypo-</b>	below, insufficient
<b>epi-</b>	above	<b>retro-</b>	backward, behind

## Levels of Body Organization

The body is organized into levels from simplest to most complex: **cells, tissues, organs, systems, body**. Each higher level is composed of components from the lower level, meaning that cells make up tissues, tissues make up organs, organs make up systems, and systems make up the whole body (refer to Figure 4-1 ■).

**Figure 4-1** Levels of organization of the body.



## Cells

Cells are the smallest structure of a body that has all of the properties of being alive: they respond to stimuli, they engage in metabolic activities, and they reproduce themselves. All of the tissues and organs in the body are composed of cells. Cells come in all shapes and sizes and perform a variety of functions for the body such as reproduction, hormone secretion, energy production, contraction, and conduction of electrical impulses.

**TERMINOLOGY TIDBIT** Cells were first seen by Robert Hooke over 300 years ago. To him, the rectangular shapes looked like prison cells, so he named them cells. It was a common practice for early anatomists to name an organ solely on its appearance.

## Tissues

When cells of the same type group together in a location and function together to perform a specific activity, they form tissue. The human body has four types of tissue: muscular tissue to produce movement, epithelial tissue to line all of

the body's inner and outer surfaces, connective tissue to support and protect body structures, and nervous tissue to conduct electrical impulses.

## Organs and Systems

Organs are composed of several different types of tissue that work as a unit to perform special functions. For example, the urinary bladder contains muscle tissue, nervous tissue, and epithelial tissue that allow it to safely store urine as it is produced and contract when it is time to eliminate it.

**Figure 4-2** The anatomical position: standing erect, gazing straight ahead, arms down at sides, palms facing forward, fingers extended, legs together, and toes pointing forward.



Several organs working in a coordinated manner to perform a complex function or functions comprise a system. To continue the above example, the urinary bladder plus the other urinary system organs—the kidneys, ureters, and urethra—work together to remove waste from our blood and eliminate it from the body.

As a general rule, the different medical specialties are dedicated to diagnosing and treating conditions involving specific systems. For the urinary system, nephrology specializes in the kidney and urology specializes in the remaining organs of the urinary system. This book is arranged by medical specialties and the organs and systems each is responsible for.

## Body

### Anatomical Position

When describing body positions or using directional terms, health professionals visualize the patient in the **anatomical position** (refer to Figure 4-2 ■).

**TERMINOLOGY TIDBIT** The term *anatomy* comes from combining two Greek words: *ana*, meaning *apart* and *tome*, meaning *to cut*, as it was necessary to cut apart the body in order to study its internal structure.

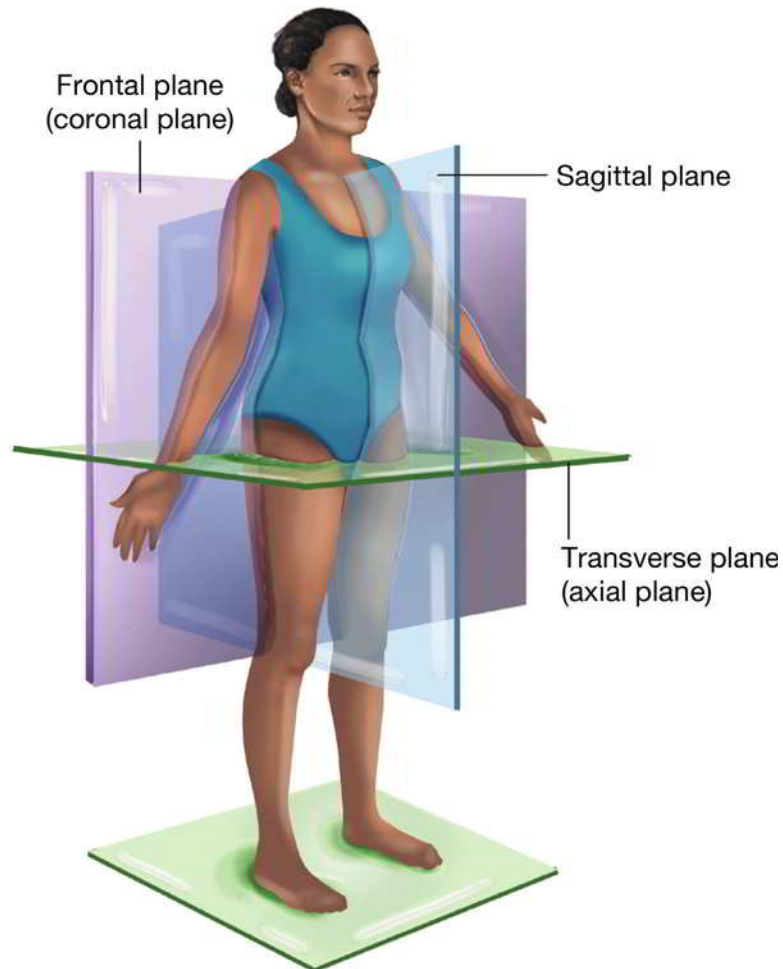
Therefore, it is not necessary to describe the patient's actual position. It does not matter whether the patient is lying down or sitting up, or whether the health professional is on the patient's right or left side. Unless stated otherwise, it is assumed that the patient is:

- Standing upright
- Legs together
- Toes pointing forward
- Arms down at sides
- Palms facing forward
- Fingers extended
- Eyes looking straight ahead

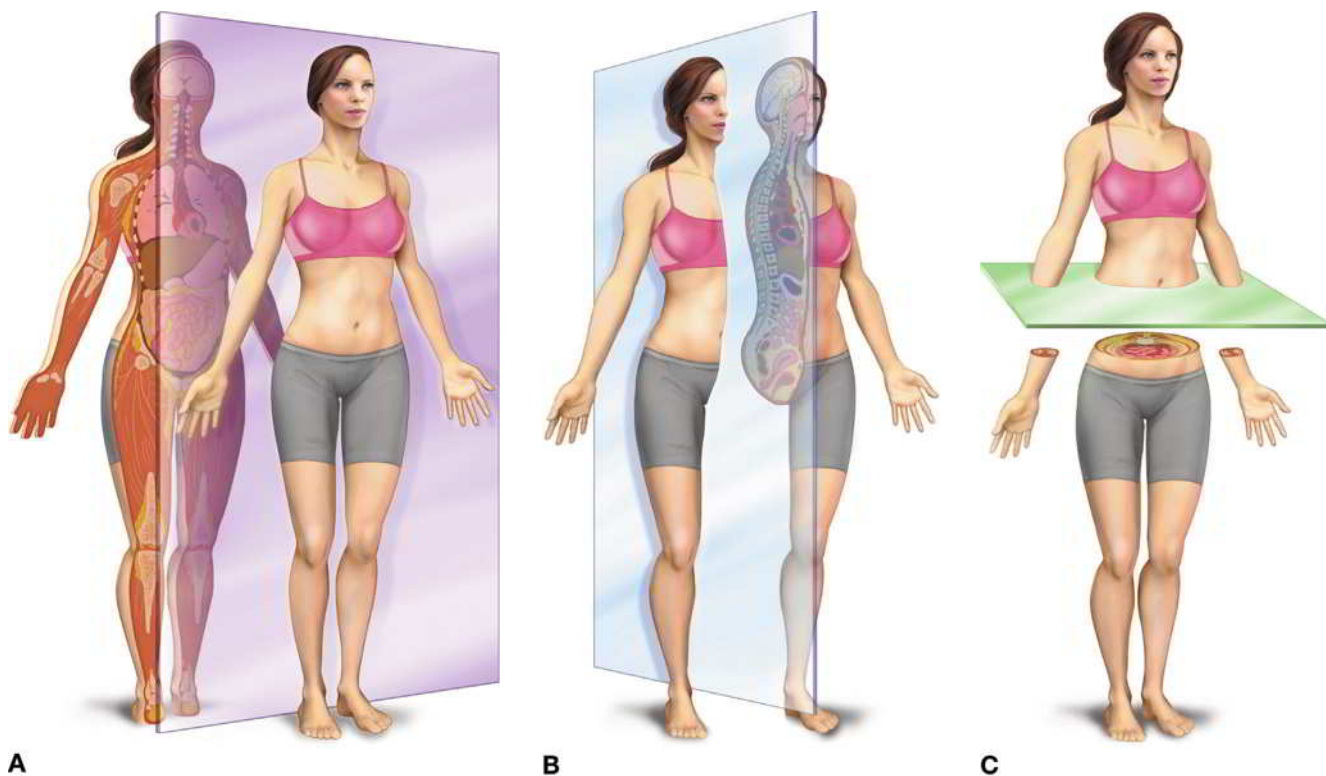
## Planes and Sections

The human body is three-dimensional. Therefore, it can be divided into sections along three different planes: frontal (coronal), sagittal, and transverse (refer to Figure 4-3 ■). A two-dimensional image of the body, for example, an X-ray, taken along one of the planes is called a *section*. Each plane yields a different section.

**Figure 4-3** The planes of the body; sagittal plane is vertical from front to back, the frontal plane is vertical from left to right, and the transverse plane is horizontal.



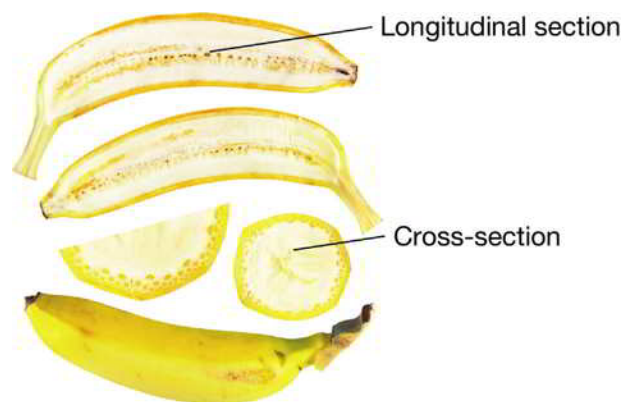
1. **Frontal plane (or coronal plane):** A vertical plane that runs from side to side; it slices the body into anterior and posterior portions; a cut along the frontal plane produces a **frontal section** or **coronal section** (refer to Figure 4-4A ■)
2. **Sagittal plane:** Also a vertical plane but runs from front to back; it slices the body into left and right portions; a cut along the sagittal plane produces a **sagittal section** (refer to Figure 4-4B ■); a line down the center of the body dividing it into equal left and right halves is called the **midsagittal line**



**Figure 4-4** Figures illustrating how the different body sections are formed; (A) frontal or coronal section, (B) sagittal section, (C) transverse or axial section.

**TERMINOLOGY TIDBIT** Imagine slicing down the length of a banana; that is a longitudinal section. Slicing across the banana, like you would to put it on your cereal, is a cross-section.

**Figure 4-5** (Kazakov Maksim/Shutterstock)



3. **Transverse plane (or axial plane):** Only horizontal plane; slices the body into upper and lower portions; a cut along the transverse plane produces a **transverse section** or **axial section** (refer to Figure 4-4C ■)

The terms **longitudinal section** and **cross-section** are often used to describe internal views of the body. A lengthwise slice along the long axis of a structure produces a longitudinal section. A cut down the length of the arm is an example of a longitudinal section. A cross-section is produced by a slice perpendicular to the long axis of a structure. A cut across the upper arm yields a cross-section view (refer to Figure 4-5 ■).

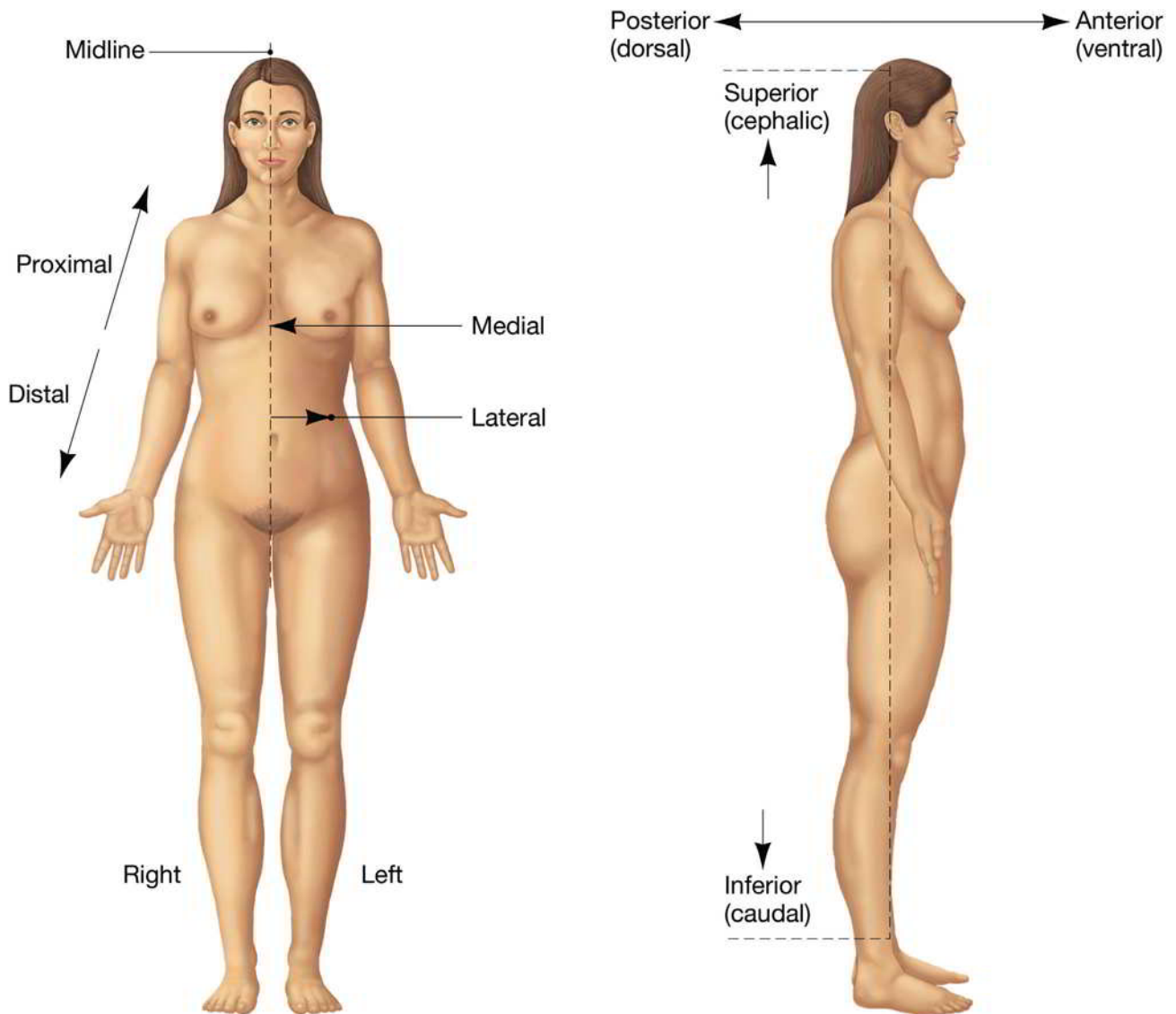


## Directional Terminology

Directional terms indicate the position of a structure *in relation* to another structure. For example, the heart is above the stomach. The position of these two organs relative to each other can be expressed as either the heart is superior to the stomach or the stomach is inferior to the heart. This example also demonstrates another characteristic of directional terms: They come in opposite pairs; for each directional term, there is a second term that means the opposite (refer to Figure 4-6 ■).

**TERMINOLOGY TIDBIT** Remember that when using directional terms, you assume that the patient is in the anatomical position unless otherwise noted.

**TERMINOLOGY TIDBIT** In radiology, the term *anteroposterior* (AP) is used to indicate that the image is taken from the front of the body through to the back. Likewise, the term *posteroanterior* (PA) indicates that the image is taken from the back of the body toward the front.



**Figure 4-6** Anterior and lateral views of the body illustrating directional terms.



## Building Directional Terms

Most directional terms are Latin-based terms and therefore can be built from word parts. They consist of a word root and an adjective suffix, usually **-ic**, **-ior**, or **-al**.

For each of the following word roots and suffixes, build the corresponding directional term on the first line. On the second line, write the translation of that term. Terms not built from word parts are simply presented with their definition. In this chapter, the word parts are being provided. Beginning with Chapter 5, terms will be built from only the definition. Pronunciations for these terms can be found in the Answer Key (Appendix IV) of this book.

1. **anter/o** + **-ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

2. **caud/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

3. **cephal/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

4. **deep** a term meaning *further below from the surface*

\_\_\_\_\_

5. **dist/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

6. **dors/o** + **-al**

**TERMINOLOGY TIDBIT** The combining form **dors/o** comes from the Latin word *dorsum*, meaning “the back.”

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

7. **infer/o** + **-ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

8. **later/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

9. **medi/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

10. **poster/o + -ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

11. **prone** term meaning to *lie face down* (refer to Figure 4-7A ■)

**TERMINOLOGY TIDBIT** The term *prone* comes from the Latin word *pronus*, meaning “leaning forward.”



**Figure 4-7A** The prone position. Note that instead of being face down, head is turned to the side for comfort. (Richard Logan/Pearson Education, Inc)

12. **proxim/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

13. **superficial** a term meaning *nearer the surface*

14. **super/o + -ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

15. **supine** a term meaning to *lie face up* (refer to Figure 4-7B ■)

**TERMINOLOGY TIDBIT** The term *supine* comes from the Latin word *supinus*, meaning “bent backward.”



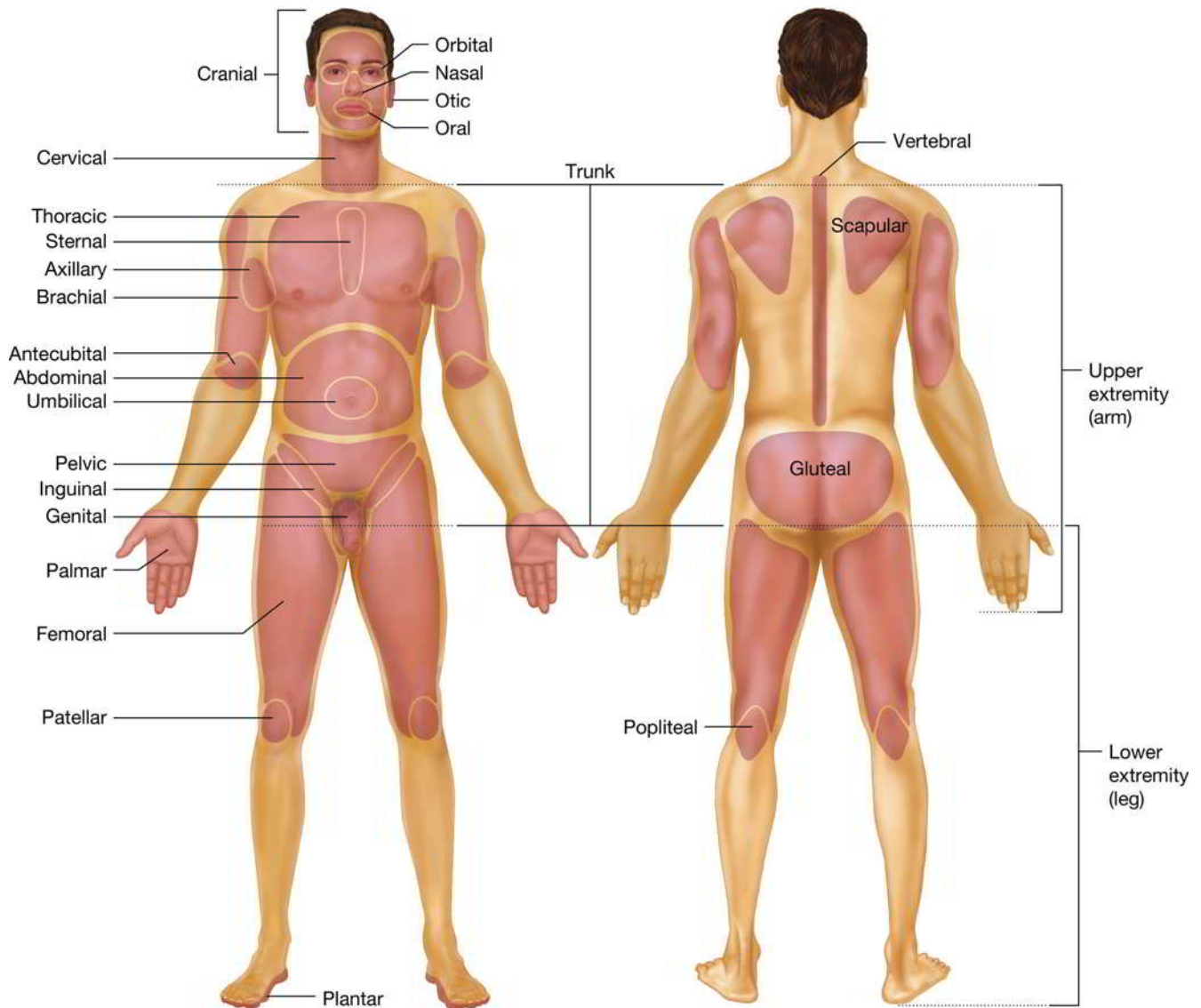
**Figure 4-7B** The supine position. (Richard Logan/Pearson Education, Inc)

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

## Body Region Terminology

The different regions of the body are named so that referring to them is easy and accurate. Many are named for a body structure underlying the region. For example, the sternal region overlies the sternum and the abdominal region overlies the abdominal cavity (refer to Figure 4-8 ■).



**Figure 4-8** Anterior and posterior views of the body illustrating the location of various body regions.

## Building Body Region Terms

Like directional terms, many body region terms are Latin-based words consisting of a word root and suffix.

For each of the following combinations of word parts, build the corresponding term on the first line. On the second line, write the translation of that term. Terms not built from word parts are simply defined. One cautionary note: Some of these terms may appear to be built from word parts, but they are not.

1. **abdomin/o** + **-al**

**TERMINOLOGY TIDBIT** Now that you are learning medical terminology, it is important to use these terms instead of common phrases and terms. Many people commonly say *stomach* (an organ) when they actually mean *abdomen* (a body region).

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

2. **ante-** + **cubit/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

3. **axillary** a term meaning *underarm area*

\_\_\_\_\_

4. **brachi/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

5. **cervic/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

6. **crani/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

7. **femor/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

8. **genit/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

9. **glute/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

10. **inguin/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

11. **lower extremity (LE)** a phrase used to refer to the entire leg

\_\_\_\_\_

---

12. **nas/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

13. **orbit/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

14. **or/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

15. **ot/o + -ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

16. **palmar** a term meaning *the palm of the hand*

\_\_\_\_\_

17. **patell/o** + **-ar**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

18. **pelv/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

19. **plantar** a term meaning *the sole of the foot*

\_\_\_\_\_

---

20. **popliteal** a term meaning *the creased area behind the knee*

\_\_\_\_\_

---

21. **scapul/o** + **-ar**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

22. **stern/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

23. **thorac/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

24. **trunk** a term meaning *the torso, excluding the head and extremities*

\_\_\_\_\_

---

25. **umbilical** a term meaning *the region around the navel*

\_\_\_\_\_

---

26. **upper extremity** a phrase used to refer to the entire arm

\_\_\_\_\_

---

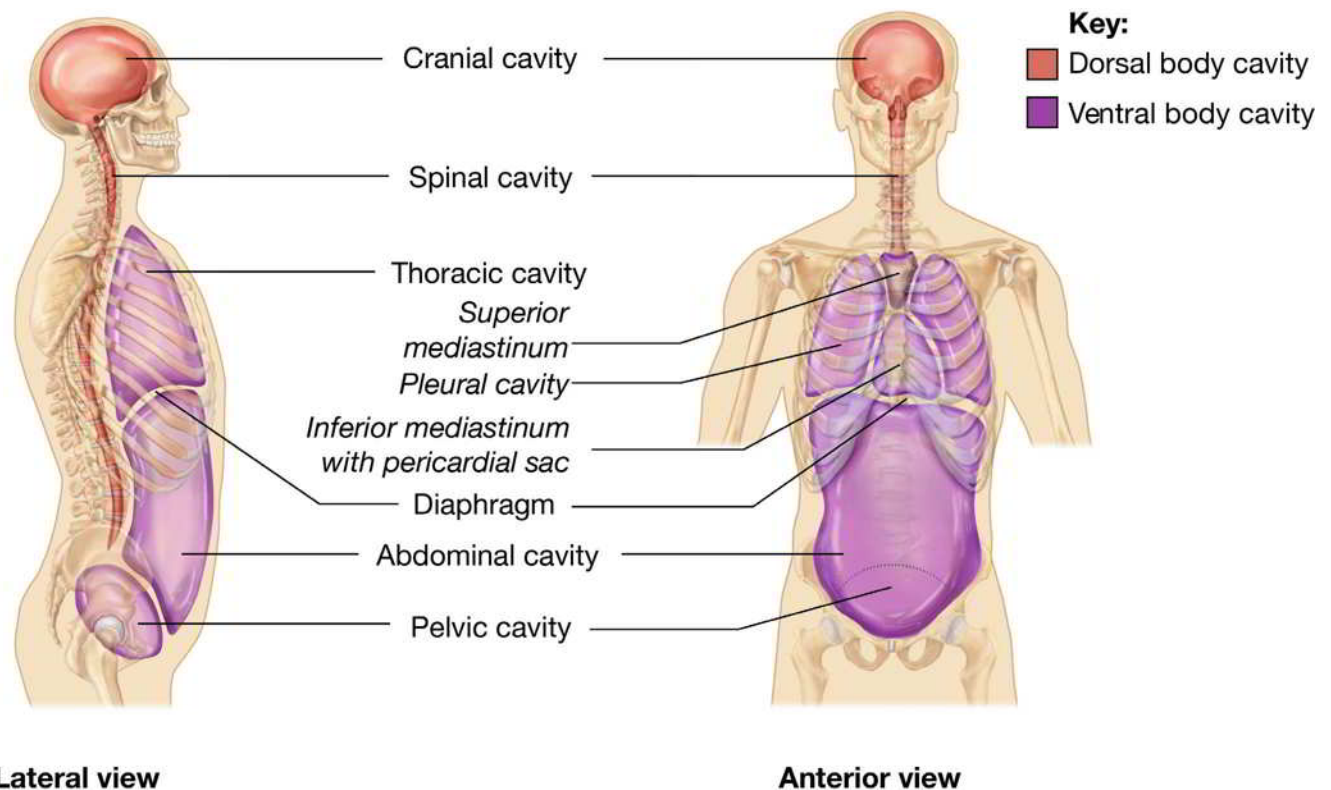
## 27. **vertebr/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

## Body Cavities

The majority of the body's internal **organs**, or **viscera**, are found within one of four body cavities (refer to Figure 4-9 ■). Two of these cavities, the **cranial cavity** and **spinal cavity**, are on the dorsal side of the body. The other two, the **thoracic cavity** and **abdominopelvic cavity**, are **ventral**. The organs within the cavities are usually found within protective membrane sacs.



**Figure 4-9** The dorsal (in red) and ventral (in purple) body cavities.

CAVITY	DESCRIPTION
<b>Cranial</b> <b>crani/o</b> = skull <b>-al</b> = pertaining to	Dorsal cavity; lies inside the skull and contains the brain; the brain is protected by three layers of membranes called the <b>meninges</b> ( <i>men-IN-jeez</i> )
<b>Spinal</b> <b>spin/o</b> = spine <b>-al</b> = pertaining to	Dorsal cavity; formed by a canal through the vertebrae; contains the spinal cord; the spinal cord is also protected by the meninges

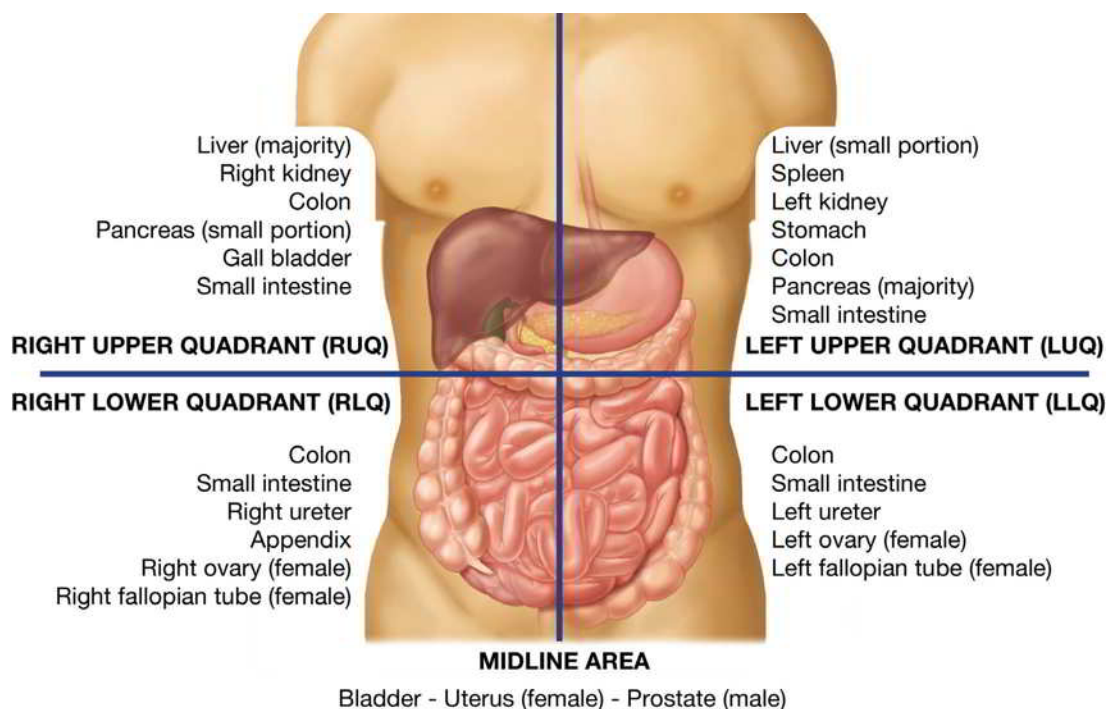
CAVITY	DESCRIPTION
<b>Thoracic</b> <b>thorac/o</b> = chest <b>-ic</b> = pertaining to	<p>Superior of two ventral cavities; found enclosed by the ribs and separated from the abdominopelvic cavity by the <b>diaphragm</b> (<i>DYE-ah-frag</i>) muscle; contains organs such as lungs, heart, esophagus, trachea, aorta, and thymus gland; can be subdivided into one central and two lateral regions</p> <ul style="list-style-type: none"> <li>• <b>Mediastinum</b> (<i>mee-dee-as-TYE-num</i>): central region; contains heart, trachea, esophagus, aorta, superior vena cava, and thymus gland; the heart is encased in the <b>pericardial sac</b> (<i>pair-ih-KAR-dee-al</i>)</li> <li>• <b>Pleural cavities</b> (<i>PLOO-ral</i>): lateral regions; each contains a lung; sac protecting the lungs is called the <b>pleura</b> (<i>PLOO-rah</i>)</li> </ul>
<b>Abdominopelvic</b> <b>abdomin/o</b> = abdomen <b>pelv/o</b> = pelvis <b>-ic</b> = pertaining to	<p>Inferior of two ventral cavities; large cavity generally subdivided into abdominal and pelvic cavities; however, there is no clear structure indicating where one cavity stops and the other begins; organs of abdominopelvic cavity are protected by a membrane covering called the <b>peritoneum</b> (<i>pair-ih-toh-NEE-um</i>)</p> <ul style="list-style-type: none"> <li>• <b>Abdominal cavity</b> (<i>ab-DOM-ih-nal</i>): houses the stomach, liver, gallbladder, spleen, pancreas, small intestine, and most of large intestine</li> <li>• <b>Pelvic cavity</b> (<i>PEL-vik</i>): contains the urinary bladder, ureters, urethra, and last portion of large intestine in both genders; in females also contains the uterus, ovaries, uterine (fallopian) tubes, and vagina; in males also contains the prostate gland, seminal vesicles, bulbourethral gland, and portion of the vas deferens</li> </ul>

The only major abdominopelvic organs that lie outside of the peritoneum are the kidneys. These organs are located along either side of the vertebral column just under the lower ribs. Because they are behind the peritoneum, their position is called **retroperitoneal** (*[ret-roh-pair-ih-toh-NEE-al]* **retro-** = backward, behind).

#### Divisions of the Abdominopelvic Cavity

Because it is so large, the abdominopelvic cavity is commonly divided into regions. Health personnel use one of two methods to do this: **clinical divisions** or **anatomical divisions**.

When using the clinical divisions, the abdominopelvic cavity is divided into four equal quadrants that cross at the navel refer to Figure 4-10 ■).



**Figure 4-10** The clinical divisions of the abdomen; the abdominopelvic cavity is divided into four quadrants.



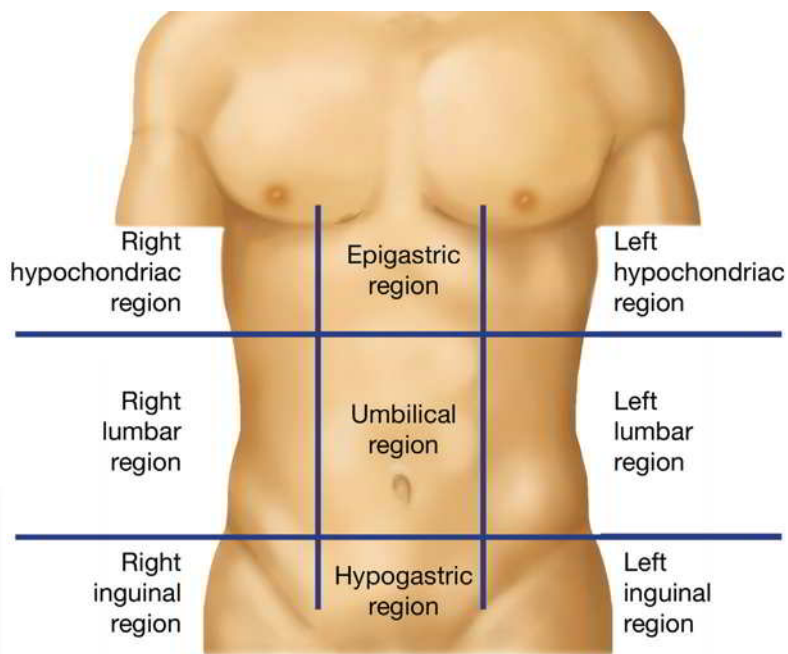
Each quadrant is named by its position as follows:

CLINICAL DIVISION	MAJOR ORGANS FOUND WITHIN
<b>Right upper quadrant (RUQ)</b>	Right lobe of liver (bulk of liver), right kidney, upper portion of right ureter, pancreas (small section), gallbladder, and portions of large and small intestines
<b>Right lower quadrant (RLQ)</b>	Lower portion of right ureter, portions of large and small intestines, appendix, right ovary and uterine tube (in females), and right vas deferens and seminal vesicle (in males)
<b>Left upper quadrant (LUQ)</b>	Stomach, spleen, left lobe of liver (smaller), pancreas (most of the organ), left kidney, upper portion of left ureter, portions of large and small intestines
<b>Left lower quadrant (LLQ)</b>	Lower portion of left ureter, portions of large and small intestines, sigmoid colon, left ovary and uterine tube (in females), and left vas deferens and seminal vesicle (in males)

Note, the urinary bladder, rectum, uterus (in females), and prostate gland (in males) are midline structures and therefore do not actually fall into any one quadrant.

Anatomical divisions are smaller. This system divides the abdominopelvic cavity into nine sections like a tic-tac-toe board (refer to Figure 4-11 ■).

**Figure 4-11** The anatomical divisions of the abdomen; the abdominopelvic cavity is divided into nine regions.



**TERMINOLOGY TIDBIT** The term *hypochondriac* is also used to describe a person who persistently believes they are ill when there is no obvious cause for illness. This usage originated with the ancient Greeks, who believed that imbalances in the organs of the hypochondriac region resulted in melancholy or morbid feelings.

The nine regions are as follows:

ANATOMICAL DIVISION	LOCATION
<b>Right hypochondriac</b> <i>(high-poh-KON-dree-ak)</i> <b>hypo-</b> = below, insufficient <b>chondr/o</b> = cartilage <b>-iac</b> = pertaining to	Right lateral side of upper row under lower ribs that are connected to the sternum by cartilage
<b>Epigastric</b> <i>(ep-ih-GAS-trik)</i> <b>epi-</b> = above <b>gastr/o</b> = stomach <b>-ic</b> = pertaining to	Middle area of upper row overlying stomach
<b>Left hypochondriac</b>	Left lateral side of upper row
<b>Right lumbar</b> ( <i>LUM-bar</i> ) <b>lumb/o</b> = low back <b>-ar</b> = pertaining to	Right lateral side of middle row near waist
<b>Umbilical</b> ( <i>um-BIL-ih-kal</i> )	Middle area of middle row containing navel (also called the <i>umbilicus</i> )
<b>Left lumbar</b>	Left lateral side of middle row
<b>Right iliac</b> ( <i>IL-ee-ak</i> ) <b>ili/o</b> = ilium <b>ac</b> = pertaining to	<ul style="list-style-type: none"> <li>• Right lateral side of lower row near groin</li> <li>• Also called <b>right inguinal</b> (<b>inguin/o</b> = groin; <b>-al</b> = pertaining to [<i>ING-gwih-nal</i>])</li> </ul>
<b>Hypogastric</b> <b>hypo-</b> = below, insufficient <b>gastr/o</b> = stomach <b>-ic</b> = pertaining to	Middle area of lower row
<b>Left iliac</b> <i>(IL-ee-ak)</i> <b>ili/o</b> = ilium <b>-ac</b> = pertaining to	<ul style="list-style-type: none"> <li>• Left lateral side of lower row near groin</li> <li>• Also called <b>left inguinal</b> (<b>inguin/o</b> = groin; <b>-al</b> = pertaining to)</li> </ul>

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Directional Terms

For each of the following directional terms, write a directional term that could be used to indicate the opposite direction.

1. anterior \_\_\_\_\_
2. caudal \_\_\_\_\_
3. cephalic \_\_\_\_\_
4. deep \_\_\_\_\_

(continued on next page)

(continued)

- |                     |                       |
|---------------------|-----------------------|
| 5. distal _____     | 11. proximal _____    |
| 6. dorsal _____     | 12. superficial _____ |
| 7. inferior _____   | 13. superior _____    |
| 8. lateral _____    | 14. ventral _____     |
| 9. medial _____     | 15. supine _____      |
| 10. posterior _____ |                       |

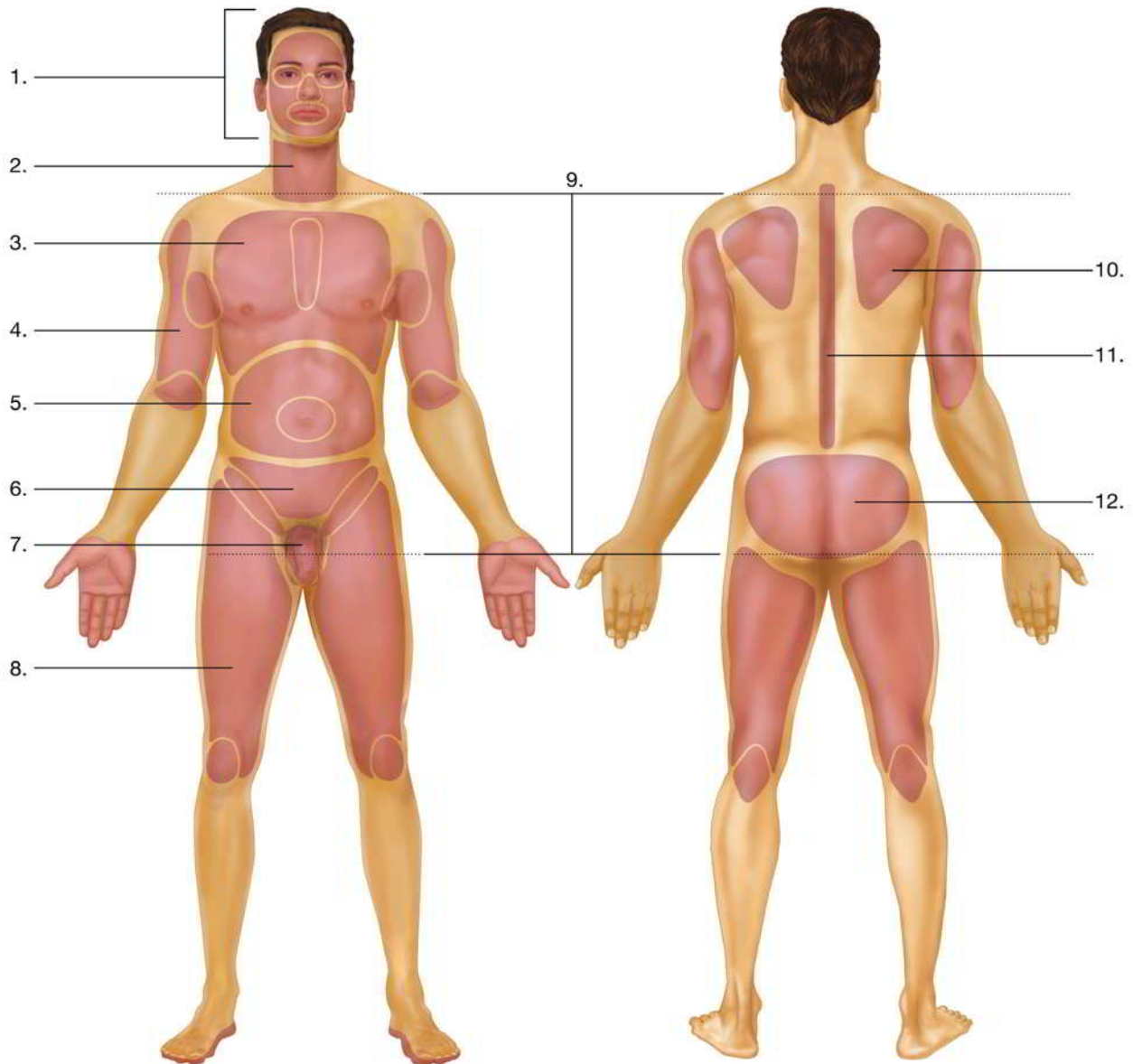
## Fill in the Blank

Fill in the blank to complete each of the following sentences.

1. The \_\_\_\_\_ cavity contains the spinal cord.
2. The sac protecting the lungs is called the \_\_\_\_\_.
3. The cranial and spinal cavities are found on the \_\_\_\_\_ side of the body.
4. The levels of organization of the body from simplest to most complex are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, body.
5. The heart, lungs, esophagus, aorta, and thymus gland are found in the \_\_\_\_\_ cavity.
6. The \_\_\_\_\_ protects the organs of the abdominopelvic cavity.
7. The cranial cavity contains the \_\_\_\_\_.
8. The pericardial sac covers the \_\_\_\_\_.
9. The urinary bladder is found in the \_\_\_\_\_ cavity.
10. The brain and spinal cord are protected by a sac called the \_\_\_\_\_.
11. The liver is found in the \_\_\_\_\_ cavity.
12. The central region of the thoracic cavity is called the \_\_\_\_\_.

## Labeling Exercise—External Surface Anatomy

Write the name of each area on the numbered line.



1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

## Matching—Planes and Sections

Match each body plane and section to its definition. Answers may be used more than once.

- |  |                         |
|--|-------------------------|
| 1. Also called the <i>coronal plane</i> _____                                | A. Frontal plane        |
| 2. Section produced by cut at right angle to long axis of structure<br>_____ | B. Sagittal plane       |
| 3. Plane that divides the body into left and right portions<br>_____         | C. Transverse plane     |
| 4. The two vertical planes _____   | D. Longitudinal section |
| 5. Plane that divides the body into anterior and posterior portions<br>_____ | E. Frontal section      |
| 6. Section produced by the coronal plane _____                               | F. Cross-section        |
| 7. Divides the body into upper and lower portions<br>_____                   |                         |
| 8. The only horizontal plane _____   |                         |
| 9. Section cut along long axis of the structure _____                        |                         |
| 10. Also called the <i>axial plane</i> _____                                 |                         |

## Matching—Organs and Clinical Divisions of the Abdominopelvic Cavity

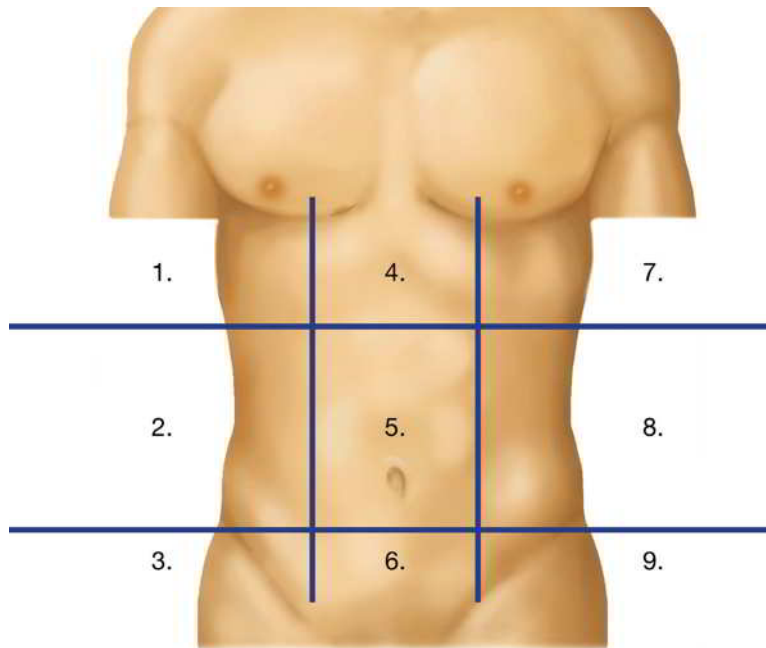
Match each organ to the quadrant in which you would expect to find the majority of that organ. Answers may be used more than once.

- |                          |                     |
|--------------------------|---------------------|
| 1. Liver _____           | A. RUQ              |
| 2. Left ureter _____     | B. RLQ              |
| 3. Spleen _____          | C. LUQ              |
| 4. Stomach _____         | D. LLQ              |
| 5. Large intestine _____ | E. In all quadrants |
| 6. Gallbladder _____     | F. Midline          |
| 7. Right ovary _____     |                     |
| 8. Sigmoid colon _____   |                     |
| 9. Left kidney _____     |                     |
| 10. Uterus _____         |                     |

11. Pancreas \_\_\_\_\_
12. Small intestine \_\_\_\_\_
13. Appendix \_\_\_\_\_

## Labeling Exercise—Anatomical Divisions of the Abdominopelvic Cavity

Write the name for each anatomical division of the abdominopelvic cavity on the line provided.



- |          |          |
|----------|----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ |          |

## SECTION II Medical Specialties

# 5

## Dermatology

### Integumentary System



### Learning Objectives

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

- 5-1 Explain the medical specialty of dermatology.
- 5-2 Understand the functions of the skin.
- 5-3 Identify the structures treated in dermatology.
- 5-4 Define dermatology-related combining forms, prefixes, and suffixes.
- 5-5 Build dermatology medical terms from word parts.
- 5-6 Explain dermatology medical terms.
- 5-7 Use dermatology abbreviations.
- 5-8 Apply new knowledge of dermatology terms to analyze real-world practice activities.

# MEDICAL TERMINOLOGY

FOURTH EDITION

GET CONNECTED!



SUZANNE S. FRUCHT



# BRIEF CONTENTS

## SECTION I: *Basic Word Building*

<b>Chapter 1</b>	Introduction to Medical Terminology.....	1
<b>Chapter 2</b>	Suffixes .....	13
<b>Chapter 3</b>	Prefixes .....	25
<b>Chapter 4</b>	Anatomical Terminology .....	33

## SECTION II: *Medical Specialties*

<b>Chapter 5</b>	Dermatology: Integumentary System.....	54
<b>Chapter 6</b>	Orthopedics: Musculoskeletal System .....	82
<b>Chapter 7</b>	Cardiology: Cardiovascular System .....	117
<b>Chapter 8</b>	Hematology: Blood.....	148
<b>Chapter 9</b>	Immunology: Immune Systems .....	169
<b>Chapter 10</b>	Pulmonology: Respiratory System .....	192
<b>Chapter 11</b>	Gastroenterology: Digestive System .....	223
<b>Chapter 12</b>	Urology and Nephrology: Urinary System and Male Reproductive System.....	253
<b>Chapter 13</b>	Obstetrics and Gynecology: Female Reproductive System .....	285
<b>Chapter 14</b>	Neurology: Nervous System .....	315
<b>Chapter 15</b>	Endocrinology: Endocrine System .....	342
<b>Chapter 16</b>	Ophthalmology: The Eye.....	368
<b>Chapter 17</b>	Otorhinolaryngology: The Ears, Nose, and Throat.....	394

## SECTION III: *Appendices*

<b>Appendix I</b>	Word Parts .....	419
<b>Appendix II</b>	Abbreviations and Symbols .....	423
<b>Appendix III</b>	Selected English/Spanish Glossary.....	431
<b>Appendix IV</b>	Answer Keys .....	434
<b>Glossary/Index</b>	.....	461

*This page intentionally left blank*

*Fourth Edition*

# Medical Terminology

*Get Connected!*

Suzanne S. Frucht, PhD

*Associate Professor Emeritus*

Northwest Missouri State University

Maryville, MO



**Content Production:** William Johnson  
**Development Editor:** Danielle Doller  
**Product Management:** Stephen Heasley

**Product Marketing:** Brooke Imbornone  
**Rights and Permissions:** Jenell Forschler  
**Cover Image:** AlonzoDesign/DigitalVision Vectors/Getty Images

Credits and acknowledgments for content borrowed from other sources and reproduced, with permission, in this textbook appear on appropriate page within text.

---

**Copyright © 2026, 2020, 2017, 2012 by Pearson Education, Inc. 221 River Street, Hoboken, NJ 07030.** All Rights Reserved. Printed in the United States of America. This publication is protected by copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise. For information regarding permissions, request forms and the appropriate contacts within the Pearson Education Global Rights & Permissions department, please visit [www.pearsoned.com/permissions/](http://www.pearsoned.com/permissions/).

Notice: The author and the publisher of this book have taken care to make certain that the information given is correct and compatible with the standards generally accepted at the time of publication. Nevertheless, as new information becomes available, changes in treatment and in the use of equipment and procedures become necessary. The reader is advised to carefully consult the instruction and information material included in each piece of equipment or device before administration. Students are warned that the use of any techniques must be authorized by their medical advisor, where appropriate, in accordance with local laws and regulations. The publisher disclaims any liability, loss, injury, or damage incurred as a consequence, directly or indirectly, of the use and application of any of the contents of this book.

Many of the designations by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and the publisher was aware of a trademark claim, the designations have been printed in initial caps or all caps.

#### Library of Congress Cataloging-in-Publication Data

**Names:** Frucht, Suzanne S., author.

**Title:** Medical terminology : get connected! / Suzanne S. Frucht.

**Description:** Fourth edition. | Hoboken, NJ : Pearson, [2025] | Includes index. | Summary: "This text will give you the ability to build and interpret medical terms with accuracy and confidence. It will demonstrate the interconnectedness of body structures and systems. It will provide you with activities and online resources that will foster peer-to-peer study opportunities. And finally, it will help you acquire the tools necessary to communicate effectively in a professional healthcare environment"-- Provided by publisher.

**Identifiers:** LCCN 2024034973 (print) | LCCN 2024034974 (ebook) | ISBN 9780135314807 (paperback) | ISBN 0135314801 (paperback) | ISBN 9780135317280 (ebook)

**Subjects:** MESH: Medicine | Terminology

**Classification:** LCC R123 (print) | LCC R123 (ebook) | NLM W 15 | DDC 610.1/4—dc23/eng/20241030

**LC record available at** <https://lcn.loc.gov/2024034973>

**LC ebook record available at** <https://lcn.loc.gov/2024034974>



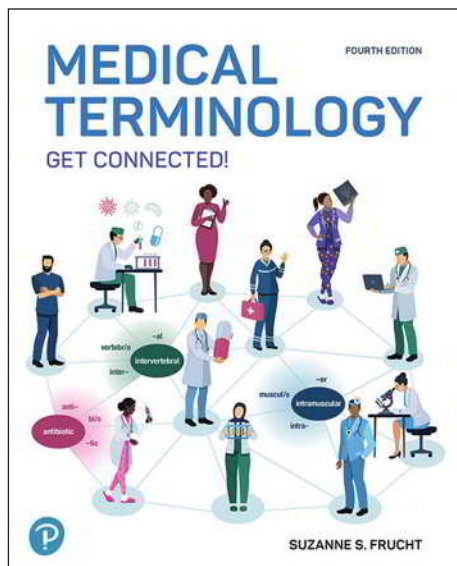
[www.pearsonhighered.com](http://www.pearsonhighered.com)

ISBN-13: 978-013-531480-7  
ISBN-10: 0-13-531480-1

Get FULL Ebook order By email at [palemonking@gmail.com](mailto:palemonking@gmail.com) or Telegram at <https://t.me/meghareddy/>

# Make the Connection!

Welcome to your first leap into the study of medical language. You may be curious about the title of this book and why it is so important to “get connected.” In this socially networked world, where we can organize the meaningful aspects of our lives and link them with others, it is clear that successful experiences involve making connections. Medical terminology is no different. Let us illustrate.



(AlonzoDesign/DigitalVision Vectors/Getty Images)

Medical Terminology is about **connecting . . .**



**with peers and classmates**  
to help you study

(Shutterstock)



**organs and structures**  
that comprise body  
systems

(Fremgen/Frucht, *Medical Terminology: A Living Language*, 8e 0138030014, F 7-SI, p. 233)



(Stuart Jenner/Shutterstock)

**with colleagues and patients**  
for accurate medical communication



**word parts**  
to form medical terms

This text will give you the ability to build and interpret medical terms with accuracy and confidence. It will demonstrate the interconnectedness of body structures and systems. It will provide you with activities and online resources that will foster peer-to-peer study opportunities. And finally, it will help you acquire the tools necessary to communicate effectively in a professional health care environment.

So let's get **connected** with the features of this book.

# What Makes This Book Different

You will quickly notice that this book is not arranged like most other medical terminology texts. Others present medical terms within the framework of basic human anatomy and physiology, creating a mini-A&P course. Instead, this book organizes and presents terms by medical specialty. This gives you an immediate window into how the health care world is organized—around medical specialties, and not by organ systems.

This is a true introductory-level “essentials” text focusing solely on medical terminology, and on teaching how to construct and translate medical terms. Designed to be fun, accessible, and eye-catching, it guides readers step-by-step toward mastery of relevant word parts, understanding word roots, and assembling terms. To help you learn meanings, correct spelling, pronunciation, and other components of each term, the book contains numerous exercises, tips, and colorful figures for learning and practice. It is flexible enough to be used either in support of lectures, or as a workbook to support independent study.

## New for this edition

- Increased information is provided regarding the medical specialists related to each chapter, including reliable websites for further investigation.
- Updated Learning Objectives to reflect higher order skills featured in this text, particularly application of new knowledge and analysis of real-world situations.
- Updated and More Diverse Art Program—This new edition showcases even more art than ever before! We have added over 55 new photos of real people, diseases, and conditions related to the chapter content as well as an updated and expanded collection of medical illustrations throughout the text to provide a clearer view of each body system and its related diseases and conditions. We have also strived to include a more diverse array of people to help better reflect the world we live in while also trying to point out areas where skin tone may be important when assessing patient symptoms or diagnosing a condition. *As the photos are of actual persons with various diseases, conditions or injuries, it is important to point out that some of these images are graphic and may be potentially disturbing or triggering for some people.*
- As with every edition of this text, this new fourth edition includes many new medical terms to provide even more information for today's student, especially regarding the newest technologies and procedures.
- Each chapter includes an updated and comprehensive list of combining forms, suffixes, and prefixes used to build terms in the remaining sections of the chapter.
- Pronunciations have been added (in parentheses) following terms in either the Vocabulary tables or Word Building answer key. A system of phonetic spelling is used in which the syllables of the term are written out based on how they sound. For example, cardiovascular is phonetically spelled as kar-dee-oh-VAS-kyoo-lar.
- Practice Exercises have been reviewed and augmented to further reinforce the Learning Objectives of each chapter while providing a more meaningful way to review each chapter's content.
- Additional entries have been added to each chapter's Vocabulary section to provide a more comprehensive list of related medical terms not solely composed of word parts. Also, these tables have been broken out into helpful categories to better organize the information.
- Updated Appendix II includes a listing of abbreviations and symbols beyond only those presented in the text, and identifies alternate meanings where applicable to reinforce the need for caution when using abbreviations.

## Here is a summary of the key objectives of the book

### Introduce selected medical specialties

Each chapter in Section II begins with a brief description of its particular medical specialty, along with some examples of health care workers in this specialty and some conditions that they treat. This section also provides a brief overview of the body system in which these specialists focus.

## Urology and Nephrology

### Urinary System and Male Reproductive System



#### Learning Objectives

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

- 12-1 Explain the medical specialties of urology and nephrology.
- 12-2 Understand the functions of the urinary and male reproductive systems.
- 12-3 Identify the organs treated in urology and nephrology.
- 12-4 Define urology- and nephrology-related combining forms, prefixes, and suffixes.
- 12-5 Build urology- and nephrology medical terms from word parts.
- 12-6 Explain urology and nephrology medical terms.
- 12-7 Use urology and nephrology abbreviations.
- 12-8 Apply new knowledge of urology and nephrology terms to clinical practice activities.

### Pulmonology Combining Forms

The following list presents combining forms closely associated with the respiratory system and commonly used for building and defining pulmonology terms:

<b>aer/o</b>	air	<b>mediastin/o</b>	mediastinum	<b>trache/o</b>	trachea
<b>alveol/o</b>	alveolus (air sac)	<b>muc/o</b>	mucus	<b>tuss/o</b>	cough
<b>bronch/o</b>	bronchus	<b>nas/o</b>	nose		
<b>bronchi/o</b>	bronchus	<b>ox/i</b>	oxygen		
<b>bronchiol/o</b>	bronchiole	<b>pleur/o</b>	pleura		
<b>coni/o</b>	dust	<b>pneum/o</b>	air, lung		
<b>cyan/o</b>	blue	<b>pneumon/o</b>	lung		
<b>diaphragmat/o</b>	diaphragm	<b>pulmon/o</b>	lung		
<b>hal/o</b>	to breathe	<b>spir/o</b>	breathing		
<b>lob/o</b>	lobe	<b>thorac/o</b>	chest		

**TERMINOLOGY TIDBIT** It may appear odd that combining forms such as **rhin/o** and **pharyng/o** do not appear here even though the nose and pharynx are part of the respiratory system. Conditions of the nose, sinuses, and pharynx are covered in Chapter 17 on otorhinolaryngology (commonly known as ears, nose, and throat).

## Identify organs and structures treated by the medical specialty

Each medical specialty chapter presents a quick visual summary of the corresponding organs and/or structures from the related body system. To reinforce the combining forms introduced in the preceding section, this art is labeled with both the names and combining forms (**in red**) of each organ and/or structure where applicable.

### Building Endocrinology Terms

This section presents word parts most often used to build endocrinology terms. Following the explanation of the term, you have the opportunity to begin building your medical vocabulary. Read the meaning for each term and then fill in the blanks to build a single medical term. Use the slashes to divide prefixes, word roots, combining vowels, and suffixes. To help you out, you will find a key to the word parts underneath the blanks: **wr** for word roots, **p** for prefix, **cv** for combining vowel, and **s** for suffix. Remember that not every term will contain all these word parts. As you gain experience, this process becomes easier. Pronunciations for these terms can be found in the Answer Key (Appendix IV) of this book.

#### 1. **aden/o**—combining form meaning **gland**; plural is **glands**

A group of cells that work together to produce and secrete substances such as hormones; endocrine glands secrete their substances (hormones) directly into the bloodstream; exocrine glands, such as sweat glands, secrete into a duct.

a. cancerous tumor in gland

**wr** / **cv** / **wr** / **s**

b. gland cell

**wr** / **cv** / **s**

c. resembling gland

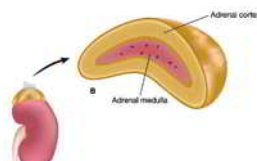
**wr** / **s**

d. condition of abnormally soft gland

**wr** / **cv** / **s**

#### 2. **adren/o**—combining form meaning **adrenal gland** (ah-DREE-nal); plural is **adrenal glands**

Each of two adrenal glands sits on top of a kidney; divided into outer **adrenal cortex** (ah-DREE-nal / KOR-tek-s) and inner **adrenal medulla** (ah-DREE-nal / meh-DULL-ah); adrenal cortex secretes **aldosterone** (al-DOSS-ter-oh-n) to regulate sodium and potassium levels in the body, **cortisol** (KOR-th-zaw) to regulate carbohydrate metabolism, and sex hormones such as **estrogen** (ESS-troh-jen) and **testosterone** (tes-THAHS-ter-oh-n); adrenal medulla secretes **epinephrine** (ep-ih-NEF-rin [also called adrenaline]) to help the body respond to emergency situations (refer also to Figure 15-1).



**TERMINOLOGY TIDBIT** The term **cortex** is frequently used in anatomy to indicate the outer portion of an organ such as the adrenal gland or the kidney. The word **cortex** is Latin and means bark as in the bark of a tree. The word **medulla** means marrow. Because marrow is found in the inner cavity of bones, the term came to stand for the middle of an organ.

Figure 15-2 Illustration showing (A) location of adrenal gland above kidney and (B) internal structure of adrenal gland. (Alla Medical Media/Shutterstock)

a. pertaining to the adrenal gland

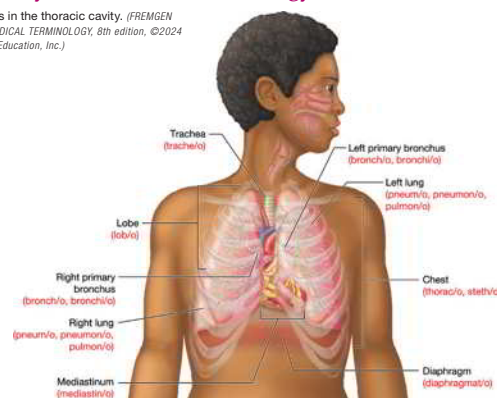
**wr** / **s**

b. enlarged adrenal gland

**wr** / **cv** / **s**

## Organs Commonly Treated in Pulmonology

Figure 10-1 Respiratory organs in the thoracic cavity. (FREMGEN BONNIE F., FRUCHT SUZANNE S., MEDICAL TERMINOLOGY, 8th edition, ©2024 Reprinted by permission of Pearson Education, Inc.)



## Build medical terms from word parts

The heart of each chapter, this section is where you will apply your medical vocabulary knowledge. Each word part is explained and then followed by a list of phrases followed by a color coded blank line divided by slash marks. These marks indicate how many word parts are necessary to build the term. You complete this activity by filling in the blanks as you work through this section. Updated for the fourth edition, even more anatomy and physiology figures have been provided to better illustrate the structures and organs presented in this section. This information gives more detail of the structure of each organ, how it accomplishes its functions, and how it interacts with other organs in the system.



Explain medical terms

You will quickly learn that not all medical terms are built completely from word parts. The medical specialty vocabulary section defines this type of term. Note that some terms, such as *heart valve prolapse* or *fistula*, have no word parts in them at all, while other terms, such as *coronary artery bypass graft* or *peripheral vascular disease*, contain some word parts, but the whole term is not built using word parts. In order to make it easier to master these terms, they have been divided into three vocabulary tables. The first vocabulary table is Pathology, consisting of common conditions and diseases treated by the chapter specialty. The second vocabulary table describes Diagnostic Tests used to identify the pathologies in the previous table. Finally, the third vocabulary table explains the variety of Medical and Surgical Treatments utilized to treat these pathologies.

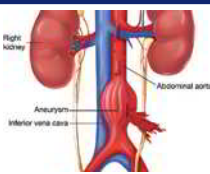
Use abbreviations

Abbreviations are an essential part of medical language because they save time. However, only approved abbreviations may be used in order to prevent misunderstandings. This section of each chapter presents the most commonly used abbreviations for that medical specialty. Throughout the book abbreviations are included, when possible, immediately following terms. Appendix II offers a listing of the chapter abbreviations plus additional abbreviations and symbols, including those that should no longer be used.

Cardiology Vocabulary

The cardiology terms presented in this section include eponyms, modern English words, and those that contain Latin or Greek word parts but are not constructed solely from these word parts. When you recognize word parts within a term, they will give you a hint about the word's meaning. In these instances, look for the word parts to follow the term.

PATHOLOGY	
TERM	EXPLANATION
<b>aneurysm</b> (AN-yoo-rizm)	Localized widening of artery due to weakness in arterial wall; may develop in any artery, but common sites are abdominal aorta and cerebral arteries



**Figure 7-7** Illustration of a large aneurysm in the abdominal aorta that has ruptured.

<b>angina pectoris</b> (an-JYE-nah / PEK-tor-is)	Severe chest pain caused by myocardial ischemia
<b>arrhythmia</b> (ah-RITH-mee-ah) -e = without	Irregular heartbeat
<b>bacterial endocarditis</b> (en-doh-kar-DYE-tis) <b>endo-</b> = inner <b>cardi/o</b> = heart <b>-itis</b> = inflammation	Inflammation of inner lining of the heart (endocardium) caused by bacteria; may result in visible accumulation of bacteria called vegetation
<b>bradycardia</b> (brad-ee-KAR-dee-ah) <b>brady-</b> = slow <b>cardi/o</b> = heart <b>-ia</b> = condition	Abnormally slow heart rate, below 60 beats per minute (bpm)
<b>cardiac arrest</b> (KAR-dee-ah) <b>cardi/o</b> = heart <b>-ar</b> = pertaining to	Complete stoppage of all heart activity, both electrical signals and muscle contractions

**TERMINOLOGY TIDBIT** The term *angina* comes from the Latin word *angere*, meaning to strangle, to cause pain, or to press tight. This describes the sensation of a tight band around the chest that occurs during angina pectoris.

Neurology Abbreviations

The following list presents common neurology abbreviations:

AD	Alzheimer disease	LP	lumbar puncture
ADLs	activities of daily living	MS	multiple sclerosis
ALS	amyotrophic lateral sclerosis	<b>TERMINOLOGY TIDBIT</b> Be careful when using the MS abbreviation. It can mean musculoskeletal, mitral stenosis, or multiple sclerosis.	
ANS	autonomic nervous system		
CNS	central nervous system		
CP	cerebral palsy	NCS	nerve conduction study
CSF	cerebrospinal fluid	NCV	nerve conduction velocity
CTE	chronic traumatic encephalopathy	PET	positron emission tomography
CT scan	computed tomography scan	PNS	peripheral nervous system
CVA	cerebrovascular accident	SCI	spinal cord injury
CVD	cerebrovascular disease	TBI	traumatic brain injury
EEG	electroencephalogram, electroencephalography	TIA	transient ischemic attack
HA	headache	VZV	varicella zoster virus
ICP	intracranial pressure		

Practice using medical terms

As with any newly learned skill, practice is essential. Each chapter closes with a large variety of exercises. These include real-life application exercises (Case Study and Transcription Practice), pronunciation practice (Sound It Out), as well as more typical types of recall exercises (labeling, multiple choice, fill-in-the-blank, matching). In addition, this section includes exercises requiring higher levels of critical thinking (Medical Term Analysis and Visual Identification Challenge). For this fourth edition, these activities have been reviewed, augmented, and updated to further reinforce the Learning Objectives of each chapter while providing a more meaningful way to assess your grasp of each chapter's content.



2. The white spots in the mouth of this patient are thrush. What causes this infection?

3. Read the entire case study carefully. What are all of this patient's symptoms? List them.

4. What test is used to diagnose HIV infection?

5. At this point, the patient is diagnosed with AIDS-related complex. What is the difference?

6. What is an opportunistic infection? Name two that are commonly found in AIDS patients.

7. This patient was started on an HIV drug regimen of three different medications. Use a w.com or www.webmd.com to look up these drugs. How would you briefly describe how they work?

8. A CD4 count was ordered for this patient. This is a count of a specific type of white blood cell. Do you think this piece of information is important for following this patient's progress? Why or why not?

## PRACTICE

### Sound It Out

The following are some of the key terms from this chapter written as their phonetic spelling. So it is in the blank.

1. ilm-FOH-mah
2. AL-er-jee
3. pah-THOL-oh-jee
4. im-yoo-noh-THAIR-ah-pei

### Medical Term Analysis

Examine each of the following terms. Begin by dividing it into its word parts and writing them in the indicated blanks (P = prefix; WR = word root; CF = combining form; S = suffix). Follow with the definition of each word part and then finally the meaning of the full term.

#### 1. erythrocytosis

CF \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

#### 2. hematologist

CF \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

#### 3. hematopathology

CF \_\_\_\_\_  
means \_\_\_\_\_  
CF \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

#### 4. hyperlipemia

P \_\_\_\_\_  
means \_\_\_\_\_  
WR \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

#### 5. hemorrhage

CF \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

#### 6. leukopenia

CF \_\_\_\_\_  
means \_\_\_\_\_  
S \_\_\_\_\_  
means \_\_\_\_\_  
Term meaning: \_\_\_\_\_

### Visual Identification Challenge

Use the Word Bank to build a term for each figure.

WORD BANK: appendix | chole | colic | diverticul | -lasis | -itis | lapar | -ile | -osis | polyp | -scopy | -stomy



(FREMSEN BONNE F, FRICHT SUZANNE S, MEDICAL TERMINOLOGY 8th edition, ©2014 Reprinted by permission of Pearson Education, Inc.)

1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_

# The Total Teaching and Learning Package

We are committed to providing students and instructors with exactly the tools they need to be successful in the classroom and beyond. To this end, *Medical Terminology: Get Connected!*, Fourth Edition is supported by the most complete and dynamic set of resources available today.

## MyLab Medical Terminology

The ultimate personalized learning tool is available at [www.pearsonmylaband-mastering.com/mymedicalterminologylab/](http://www.pearsonmylaband-mastering.com/mymedicalterminologylab/). This online course correlates with the textbook and is available for purchase separately or for a discount when packaged with the book. **MyLab Medical Terminology** is an immersive study experience.

1 of 30

▶ hypochondriac region



Skip

return Bill Johnson

Learning: Suffixes

QUESTION ⓘ

Which of the following suffixes means chest?

ANSWER

☐ -tripsy  
☐ -thorax  
☐ -trophy  
☐ -trophic  
☐ I DON'T KNOW YET

submit

Manage Course
Course Home
Accessible Resources
How to Succeed in This Course
Assignments
Chapter 1
Chapter 2
Chapter 3
Chapter 4
Chapter 5
Chapter 6
Chapter 7
Chapter 8
Chapter 9
Chapter 10
Chapter 11
Chapter 12
Chapter 13
Chapter 14

Pearson | Word Part Prescription : Ch 01

Help Exit

QUESTION 1 / 10

Drop the pill into the container that best matches the word on the prescription.

Plural of nucleus

nuclea

nucleuses

nuclei

nucleon

**MyLab Medical Terminology** saves instructors time by providing quality feedback, ongoing individualized assessments for students, and instructor resources all in one place. It offers instructors the flexibility to make technology an integral part of their course, or a supplementary resource for students. Visit

Manage Course
Course Home
Accessible Resources
How to Succeed in This Course
Assignments
Study Plan
Purchase Options
Pearson eTextbook
Results
Multimedia Library
Instructor Tools
Instructor Support
Student Support

Frucht, Medical Terminology: Get Connected! 4e

View Instructor Home

Help

87%

Current

Entire Course To Date

June 2024

Today

View by 2 Weeks

SUN	MON	TUE	WED	THU	FRI	SAT
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Announcements (0)

No announcements during the selected timeframe.

Past Due Assignments (0)

No past due assignments during the selected timeframe.

Current Assignments (0)

No current assignments during the selected timeframe.

Completed Assignments (0)

No completed assignments during the selected timeframe.

X

Get FULL Ebook order By email at palemonking@gmail.com or Telegram at https://t.me/meghareddy/

[www.pearsonmylabandmastering.com/mymedicalterminologylab/](http://www.pearsonmylabandmastering.com/mymedicalterminologylab/) to log in to the course or purchase access. Instructors may contact their Pearson sales representative for a demonstration or for information on discount bundle options.

### Help each student learn through personalized Dynamic Study Modules

Help students study effectively on their own by continuously assessing their activity and performance in real time. Here's how it works: students complete a set of questions with a unique answer format that also asks them to indicate their confidence level. Questions repeat until the student can answer them all correctly and confidently. Once completed, Dynamic Study Modules explain the concept using materials from the text. These are available as graded assignments prior to class, and accessible on smartphones, tablets, and computers.

#### Key Features of MyLab Medical Terminology

**MyLab Medical Terminology is a premium online homework management system that includes a host of features to help you study. Registered users will find:**

- A multitude of quizzes and activities pre-built within the MyLab platform.
- Interactive study games—Students construct, label, match, pronounce, and dissect terms, for an experience as engaging as it is effective.
- Pronounce & Spell—A built-in technology assesses and scores students' pronunciation so they can continue to improve.
- Application-focused activities let students practice and apply their knowledge by identifying, pronouncing, and translating medical terms within the context of real-world medical records and reports.
- Powerful tools that track and analyze your results—facilitating a personalized learning experience.

## 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, including a comprehensive test bank, PowerPoint lecture notes, an image library, guided lectures that can be used in class or for student self-study—all designed to help instructors prepare, present, and assess. For more information, please contact your Pearson sales representative or visit [www.pearsonhighered.com/educator](http://www.pearsonhighered.com/educator).



(Suzanne S. Frucht)

## About the Author

**Suzanne S. Frucht** is an Associate Professor Emeritus of Anatomy and Physiology at Northwest Missouri State University (NWMSU). She holds baccalaureate degrees in biological sciences and physical therapy from Indiana University, an MS in biological sciences at NWMSU, and a PhD in molecular biology and biochemistry from the University of Missouri–Kansas City.

For 14 years Dr. Frucht worked full time as a physical therapist in various health care settings, including acute care hospitals, extended care facilities, and home health. Based on her educational and clinical experience, she was invited to teach medical terminology part-time in 1988 and became a full-time faculty member three years later as she discovered her love for the challenge of teaching. Dr. Frucht has taught a variety of courses, including medical terminology, human anatomy, human physiology, and animal anatomy and physiology. She received the Governor's Award for Excellence in Teaching in 2003. Since retiring from teaching in 2008, she continues to be active in student learning through teaching medical terminology as an online course and writing medical terminology texts and anatomy and physiology laboratory manuals.

# Dedication

*To my family*

# Acknowledgments

No textbook can ever reach the hands of students without the extraordinary contributions of numerous talented and dedicated professionals. *Medical Terminology: Get Connected!, Fourth Edition* is certainly no exception and I would like to take this opportunity to acknowledge their contributions.

Foremost, I would like to acknowledge Pearson Education, particularly Stephen Heasley, Commercial Product Manager, for his continued support. This project has benefited from an unparalleled team, especially Melissa Bashe, Managing Producer for Health Science, and William Johnson, Content Producer, as well as Amy Kopperude, Project Manager at Straive.

Many, many thanks go to Danielle Doller, Development Editor. Her professionalism, expertise, sound ideas, and friendship always keep me on track. I know any project I undertake is more successful because of her.

Without the hard work and dedication of each of these individuals, plus everyone else who has had a hand in this project, there might be a book, but certainly not this one. Words can never express my thanks.

– Suzanne Frucht

## Editorial Development Team

The content and format of *Medical Terminology: Get Connected!, Fourth Edition* are the result of an incredible collaboration of expert educators from across the country. 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, and offer our deepest gratitude to, the members of our team.

## Reviewers of the Fourth Edition

Jeff Anderson, MA, RRT  
College of Western Idaho  
Nampa, Idaho

Mary W. Hood MS R.T. (R)(CT) (ARRT)  
William Rainey Harper College  
Palatine, Illinois

Teri Junge, EdD, CSFA, CST, FAST, CSPDT  
Triton College  
River Grove, Illinois

Shahin Kanani, MD  
Seminole State College of Florida  
Altamonte Spring, Florida

Donna L Maher, MS RHIA  
Renton Technical College  
Renton, Washington

Ronda Sturgill, PhD  
The University of Tampa  
Tampa, Florida

Amy Way, PhD  
Commonwealth University of  
Pennsylvania  
Clearfield, Pennsylvania

Kari Williams, RMA (AMT), CPT (NHA),  
CET (NHA), BS, MPH, DC  
Front Range Community College  
Longmont, Colorado

## Reviewers of Past Editions

Wendy Ayers, MSc, RRT-NPS  
Central Virginia Community  
College  
Lynchburg, Virginia

Steven G. Bassett, PhD  
Seton Hill University  
Greensburg, Pennsylvania

Teresa Blanc, DNP  
University of Missouri-Kansas City  
Kansas City, Missouri

Karen Boriack, RN, BSN, MA Ed  
Porterville College  
Porterville, California

Ranelle Brew, EdD  
Grand Valley State University  
Grand Rapids, Michigan

Dean Chiarelli, MA, RDN, HFS, CHES,  
REHS  
Arizona State University  
Phoenix, Arizona

Megan Cook, OTD, OTR/L  
Northern Virginia Community College  
Annandale, Virginia

Colleen Croxall, PhD  
Eastern Michigan University  
Ypsilanti, Michigan

Amanda J. Davis  
Meridian Community College  
Meridian, Mississippi

Dianne Davis, MS  
West Virginia University at  
Parkersburg  
Parkersburg, West Virginia

Shelba Durston, MSN, RN, CCRN, SAFE  
San Joaquin Delta College  
Stockton, California

Duane A. Dreyer, PhD  
Miller-Motte College  
Cary, North Carolina

<b>Alisha Eaves</b> Western Texas College <i>Snyder, Texas</i>	<b>Allison Kaczmarek, MPH</b> University of Tampa <i>Tampa, Florida</i>	<b>Karen Plawecki, PhD, RD, LDN</b> University of Illinois <i>Urbana, Illinois</i>
<b>Marie A. Fenske, EdD, RRT</b> GateWay Community College <i>Phoenix, Arizona</i>	<b>Dana Kemery, EdD</b> Drexel University <i>Philadelphia, Pennsylvania</i>	<b>Christina Prudeen, LPN-BLS</b> Highland Community College <i>Atchison, Kansas</i>
<b>Melissa Mapp Francisco, BA, MAOM</b> Suwanee Hamilton Technical Center <i>Live Oak, Florida</i>	<b>Patricia Ketcham, MSN, RN</b> Oakland University <i>Rochester, Michigan</i>	<b>Martha L. Rew, MS, RD, LD</b> Texas Woman's University <i>Denton, Texas</i>
<b>Elaine Garcia, RHIT</b> Spokane Community College <i>Spokane, Washington</i>	<b>Donna M. Kubesh, BS, MA, PhD</b> Luther College <i>Decorah, Iowa</i>	<b>Michael Sells, RN, Certified Surgical Tech</b> Kirkwood Community College <i>Cedar Rapids, Iowa</i>
<b>Savanna Garrity, MPA, CPC</b> Madisonville Community College <i>Madisonville, Kentucky</i>	<b>Anita Lane, MEd, OTR</b> Navarro College <i>Corsicana, Texas</i>	<b>Lorraine Smith, MBHA</b> Fresno City College <i>Fresno, California</i>
<b>Sue Gunnink, MS, RDN, CSO</b> Grand Rapids Community College <i>Grand Rapids, Michigan</i>	<b>Molly Lee, PhD</b> Harrisburg Area Community College <i>Harrisburg, Pennsylvania</i>	<b>Don Steinert, MA, RRT, MT, CLS</b> University of the District of Columbia <i>Washington, D.C.</i>
<b>Betty Haar, BS, MHA, RHIA</b> Kirkwood Community College <i>Cedar Rapids, Iowa</i>	<b>Tricia Leggett, MEd, RT(R)(QM)</b> Zane State College <i>Zanesville, Ohio</i>	<b>Jane K. Walker, BBA, PhD, RN, CPN, CNE</b> Walters State Community College <i>Morristown, Tennessee</i>
<b>Paula Hagstrom, RHIA, RHIT</b> Ferris State University <i>Big Rapids, Michigan</i>	<b>Sue Moe, RN</b> Northwest Technical College <i>East Grand Forks, Minnesota</i>	<b>Halcyon Watkins, BS, DVM</b> Prairie View A&M University <i>Prairie View, Texas</i>
<b>Julie Hall, MPH, RT(R)(CT)(ARRT)</b> Roane State Community College <i>Oak Ridge, Tennessee</i>	<b>Cynthia K. Moore, PhD, RD</b> University of Arkansas—Fayetteville <i>Fayetteville, Arkansas</i>	<b>Sherry B. Wilson, RN, MSN</b> Durham Technical Community College <i>Durham, North Carolina</i>
<b>Ellen Harper, RHIT</b> Schoolcraft Community College <i>Livonia, Michigan</i>	<b>Paulette Nitkiewicz, BSN, RN, CMA</b> Westmoreland County Community College <i>Youngwood, Pennsylvania</i>	<b>Amy Way, PhD</b> Lock Haven University <i>Clearfield, Pennsylvania</i>
<b>Krista L. Hoekstra, RN, MA</b> Hennepin Technical College <i>Brooklyn Park, Minnesota</i>	<b>Tonya Oakley, BS, RT(R)</b> Forsyth Technical Community College <i>Winston-Salem, North Carolina</i>	<b>Barbara Worley, DPM, BS, RMA (AMT)</b> King's College <i>Charlotte, North Carolina</i>
<b>Traci Hotard, RHFA</b> Louisiana Technical College <i>Morgan City, Louisiana</i>	<b>Michelle Parolise, MBA, OTR/L</b> Santa Ana College <i>Santa Ana, California</i>	
<b>Stephen M. Johnson, MS, MT (ASCP)</b> Saint Vincent Hospital, School of Medical Technology <i>Erie, Pennsylvania</i>	<b>Sean Peck, MEd, NRP</b> Arizona Western College <i>Yuma, Arizona</i>	

# 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 co-workers 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: Get Connected!, Fourth Edition* 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. Multiple content experts have read each chapter for accuracy.
2. **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 notify us either through your institution's Pearson representative or online at [www.support.pearson.com](http://www.support.pearson.com).

***Thank you for helping Pearson reach its goal of providing the most accurate medical terminology textbooks available.***

# CONTENTS

## SECTION I: *Basic Word Building*

<b>Chapter 1</b>	<b>Introduction to Medical Terminology.....</b>	<b>1</b>
	A Brief Introduction to Medical Terminology .....	2
	Elements of Latin- and Greek-Based Medical Terms .....	2
	Strategies for Analyzing Medical Terms.....	5
	Rules for Building Plurals .....	6
	Pronouncing Medical Terms.....	7
	A Word about Abbreviations .....	8
	Practice & Review.....	9
<b>Chapter 2</b>	<b>Suffixes .....</b>	<b>13</b>
	A Brief Introduction to Suffixes .....	14
	Practice & Review.....	18
<b>Chapter 3</b>	<b>Prefixes .....</b>	<b>25</b>
	A Brief Introduction to Prefixes .....	26
	Practice & Review.....	29
<b>Chapter 4</b>	<b>Anatomical Terminology .....</b>	<b>33</b>
	Levels of Body Organization .....	34
	Body .....	36
	Practice & Review.....	49

## SECTION II: *Medical Specialties*

<b>Chapter 5</b>	<b>Dermatology: Integumentary System.....</b>	<b>54</b>
	A Brief Introduction to Dermatology .....	55
	Structures Commonly Treated in Dermatology .....	56
	Building Dermatology Terms .....	57
	Dermatology Vocabulary .....	63
	Dermatology Abbreviations .....	71
	Practice & Review.....	72
<b>Chapter 6</b>	<b>Orthopedics: Musculoskeletal System .....</b>	<b>82</b>
	A Brief Introduction to Orthopedics.....	83
	Structures Commonly Treated in Orthopedics .....	85
	Building Orthopedic Terms .....	87
	Orthopedic Vocabulary .....	98
	Orthopedic Abbreviations .....	106
	Practice & Review.....	106



<b>Chapter 7</b>	<b>Cardiology: Cardiovascular System</b>	<b>117</b>
	A Brief Introduction to Cardiology	118
	Organs Commonly Treated in Cardiology	119
	Building Cardiology Terms	121
	Cardiology Vocabulary	128
	Cardiology Abbreviations	136
	Practice & Review	137
<b>Chapter 8</b>	<b>Hematology: Blood</b>	<b>148</b>
	A Brief Introduction to Hematology	149
	Components of Blood	150
	Building Hematology Terms	150
	Hematology Vocabulary	154
	Hematology Abbreviations	159
	Practice & Review	159
<b>Chapter 9</b>	<b>Immunology: Immune Systems</b>	<b>169</b>
	A Brief Introduction to Immunology	170
	Organs Commonly Treated in Immunology	171
	Building Immunology Terms	171
	Immunology Vocabulary	177
	Immunology Abbreviations	181
	Practice & Review	182
<b>Chapter 10</b>	<b>Pulmonology: Respiratory System</b>	<b>192</b>
	A Brief Introduction to Pulmonology	193
	Organs Commonly Treated in Pulmonology	194
	Building Pulmonology Terms	195
	Pulmonology Vocabulary	203
	Pulmonology Abbreviations	212
	Practice & Review	213
<b>Chapter 11</b>	<b>Gastroenterology: Digestive System</b>	<b>223</b>
	A Brief Introduction to Gastroenterology	224
	Organs Commonly Treated in Gastroenterology	225
	Building Gastroenterology Terms	226
	Gastroenterology Vocabulary	235
	Gastroenterology Abbreviations	242
	Practice & Review	243
<b>Chapter 12</b>	<b>Urology and Nephrology: Urinary System and Male Reproductive System</b>	<b>253</b>
	A Brief Introduction to Urology and Nephrology	254
	Organs Commonly Treated in Urology and Nephrology	256
	Building Urology and Nephrology Terms	256
	Urology and Nephrology Vocabulary	267

	Urology and Nephrology Abbreviations .....	274
	Practice & Review .....	274
<b>Chapter 13</b>	<b>Obstetrics and Gynecology: Female Reproductive System .....</b>	<b>285</b>
	A Brief Introduction to Obstetrics and Gynecology .....	286
	Organs and Structures Commonly Treated in Obstetrics and Gynecology .....	287
	Building Obstetrics and Gynecology Terms .....	288
	Obstetrics and Gynecology Vocabulary .....	297
	Obstetrics and Gynecology Abbreviations .....	304
	Practice & Review .....	305
<b>Chapter 14</b>	<b>Neurology: Nervous System .....</b>	<b>315</b>
	A Brief Introduction to Neurology .....	316
	Structures Commonly Treated in Neurology .....	317
	Building Neurology Terms .....	318
	Neurology Vocabulary .....	324
	Neurology Abbreviations .....	331
	Practice & Review .....	332
<b>Chapter 15</b>	<b>Endocrinology: Endocrine System .....</b>	<b>342</b>
	A Brief Introduction to Endocrinology .....	343
	Organs Commonly Treated in Endocrinology .....	344
	Building Endocrinology Terms .....	345
	Endocrinology Vocabulary .....	352
	Endocrinology Abbreviations .....	357
	Practice & Review .....	357
<b>Chapter 16</b>	<b>Ophthalmology: The Eye .....</b>	<b>368</b>
	A Brief Introduction to Ophthalmology .....	369
	Structures of the Eye and Orbit .....	370
	Building Ophthalmology Terms .....	371
	Ophthalmology Vocabulary .....	378
	Ophthalmology Abbreviations .....	384
	Practice & Review .....	385
<b>Chapter 17</b>	<b>Otorhinolaryngology: The Ears, Nose, and Throat .....</b>	<b>394</b>
	A Brief Introduction to Otorhinolaryngology .....	395
	Organs and Structures Commonly Treated in Otorhinolaryngology .....	396
	Building Otorhinolaryngology Terms .....	397
	Otorhinolaryngology Vocabulary .....	405
	Otorhinolaryngology Abbreviations .....	409
	Practice & Review .....	409

### **SECTION III: *Appendices***

<b>Appendix I</b>	Word Parts.....	419
<b>Appendix II</b>	Abbreviations and Symbols.....	423
<b>Appendix III</b>	Selected English/Spanish Glossary.....	431
<b>Appendix IV</b>	Answer Keys.....	434
<b>Glossary/Index</b>	.....	461

*This page intentionally left blank*

# SECTION I Basic Word Building

## 1

# Introduction to Medical Terminology

oste/o

arthr/o

sub-

cardi/o

-ectomy

## Learning Objectives

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

- 1-1 Identify the three types of medical terms.
- 1-2 Explain the differences between prefixes, suffixes, word roots, and combining vowels.
- 1-3 Form combining forms.
- 1-4 Explain how to analyze (build and interpret) medical terms.
- 1-5 Describe how to pluralize medical terms.
- 1-6 Understand how to pronounce medical terms.

# A Brief Introduction to Medical Terminology

In our daily lives, each of us is surrounded by medical terminology. Of course, health care professionals use it to communicate with each other (Figure 1-1 ■), but every person is exposed to these terms whether in the doctor's office, talking with friends, reading the newspaper, or watching television. Using medical terminology is an efficient method of conveying very specific and important information. Because each term has a precise meaning, detailed information can be quickly shared using only a few words. Therefore, everyone has something to gain from learning how to understand and use medical terminology whether in one's professional or personal life.

There are three common types of medical terms:

1. Terms built from **Latin** and **Greek** word parts; examples are *cardiology* and *tonsillectomy*.
2. Terms based on a person's name (or another proper noun such as a place), are called **eponyms**; examples are *Alzheimer disease* and *Parkinson disease*. Be prepared to find eponyms written in either the possessive form, *Alzheimer's disease*, or the nonpossessive form, *Alzheimer disease*. This text uses the nonpossessive form of eponyms.
3. Terms utilizing **modern English** words; examples are *magnetic resonance imaging* and *irritable bowel syndrome*.

Without doubt, the majority of medical terms are based on Latin and Greek word parts. The remainder of this chapter teaches how to build and analyze this type of medical term.

**Figure 1-1** Medical team reviewing patient's medical record on a tablet. (Stuart Jenner/Shutterstock)



## Elements of Latin- and Greek-Based Medical Terms

Learning medical terminology is similar to learning a foreign language because the basis for the majority of medical terms is Latin or Greek. In mastering this “language of medicine,” you will:

- Begin by memorizing individual word parts
- Learn to analyze and build terms from word parts
- Gain skill and confidence through repetitious use of terms
- Make these terms a permanent part of your professional vocabulary

Latin- and Greek-based medical terms are constructed using word parts from four different categories: **word roots**, **suffixes**, **prefixes**, and **combining vowels**.

### 2 Chapter 1

Get FULL Ebook order By email at [palemonking@gmail.com](mailto:palemonking@gmail.com) or Telegram at <https://t.me/meghareddy/>

## Word Roots

The word root is the foundation of most medical terms and gives the essential meaning of the term. It frequently but not always refers to a body structure, organ, or **system**. Refer to examples in Table 1-1 ■. To help you recognize **word roots** in this text, they are color-coded in **red**.

**Table 1-1** Examples of Word Roots

WORD ROOT	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
<b>arthr</b>	joint	<b>arthr</b> oscope	instrument for viewing a <i>joint</i>
<b>carcin</b>	cancer	<b>carcin</b> ogen	that which produces <i>cancer</i>
<b>cardi</b>	heart	<b>cardi</b> omegaly	enlarged <i>heart</i>
<b>cephal</b>	head	<b>cephal</b> ic	pertaining to the <i>head</i>
<b>electr</b>	electricity	<b>electr</b> ocardiogram	record of heart's <i>electrical</i> (activity)
<b>gastr</b>	stomach	<b>gastr</b> ic	pertaining to the <i>stomach</i>
<b>hepat</b>	liver	<b>hepat</b> oma	<i>liver</i> tumor
<b>my</b>	muscle	<b>my</b> ocardium	heart <i>muscle</i>
<b>oste</b>	bone	<b>oste</b> ocyte	<i>bone</i> cell
<b>rhin</b>	nose	<b>rhin</b> orrhea	<i>nose</i> discharge

## Suffixes

A suffix is found at the end of a medical term. The type of information it provides includes conditions, diseases, surgical procedures, and diagnostic procedures involving the word root. Refer to examples in Table 1-2 ■. To help you recognize **suffixes** in this text, they are color-coded in **blue**. *Note that when a suffix is written by itself, a hyphen is placed at the front.*

**Table 1-2** Examples of Suffixes

SUFFIX	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
<b>-ectomy</b>	surgical removal	gast <b>rectomy</b>	<i>surgical removal</i> of stomach
<b>-gram</b>	a record	electrocardi <b>ogram</b>	<i>record</i> of heart's electrical (activity)
<b>-itis</b>	inflammation	arthr <b>itis</b>	joint <i>inflammation</i>
<b>-logy</b>	study of	cardi <b>ology</b>	<i>study of</i> the heart
<b>-megaly</b>	enlarged	hepat <b>megaly</b>	<i>enlarged</i> liver
<b>-pathy</b>	disease	myo <b>pathy</b>	muscle <i>disease</i>

## Prefixes

A prefix is found at the beginning of a medical term. It often indicates information such as abnormal conditions, numbers, positions, or times. Refer to examples in Table 1-3 ■. Not all medical terms have a prefix. To help you recognize **prefixes** in this text, they are color-coded in **green**. *Note that when a prefix is written by itself, a hyphen is placed at the end.*

**Table 1-3** Examples of Prefixes

PREFIX	MEANING	USED IN MEDICAL TERM	MEANING OF MEDICAL TERM
<b>a-</b>	without	<b>ap</b> nea	<i>without</i> breathing
<b>bi-</b>	two	<b>bi</b> lateral	<i>two</i> sides
<b>dys-</b>	abnormal, difficult, painful	<b>dys</b> uria	<i>painful or difficult</i> urination
<b>inter-</b>	between	<b>inter</b> vertebral	<i>between</i> vertebrae
<b>post-</b>	after	<b>post</b> surgical	<i>after</i> surgery
<b>sub-</b>	under	<b>sub</b> cutaneous	<i>under</i> the skin

## Combining Vowels

Combining vowels (most often the vowel *o*) are used for two reasons: to connect word parts and to make medical terms easier to spell and pronounce. Combining vowels are placed either between a word root and suffix (when the suffix begins with a consonant) or between two word roots. They are not used between a prefix and word root. Refer to Table 1-4 ■ for examples. To help you recognize **combining vowels** in this text, they are color-coded in **red** and presented with their word root. *Note that the slashes (/) are used to divide the term into its word parts.*

**Table 1-4** Examples of the Use of Combining Vowels

TERM WITH COMBINING VOWELS	MEANING
<b>electr/o/cardi/o/gram</b>	record of heart's electrical (activity)
<b>hepat/o/megaly</b>	enlarged liver
<b>oste/o/arthr/itis</b>	bone and joint inflammation
<b>rhin/o/plasty</b>	surgical repair of the nose

However, combining vowels are *not* always necessary.

- To decide whether one is needed between a word root and suffix, look at the first letter of the suffix. Do *not* use a combining vowel between a word root and suffix if the suffix begins in a vowel. For example, the correct way to combine the word root **arthr** and the suffix **-itis** is *arthr/itis*, not *arthr/o/itis*.
- Place a combining vowel between two word roots, even if the second word root begins with a vowel. The term *gastr/o/enter/o/logy* is correct, while *gastr/enter/o/logy* is incorrect. Note that adding the combining vowel also makes the term easier to pronounce.

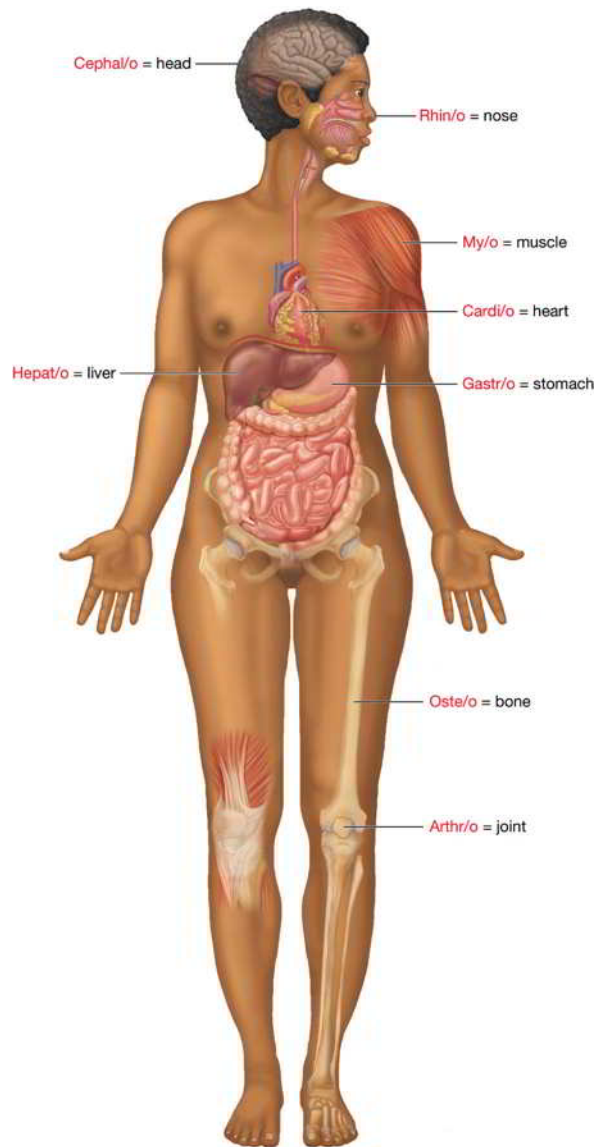
## Combining Forms

**Combining forms** consist of a word root and its combining vowel. Throughout this text, combining forms will be written with a slash (/) between these two word parts. For example, **electr/o** is the combining form meaning electricity. Refer to Figure 1-2 ■ for more examples of combining forms that relate to parts of the body. To help with recognizing **combining forms** in this text, they are color-coded in **red**.

A combining form is not another category of word part because it consists of two other word parts. However, word roots are normally presented as combining forms; these are easier to pronounce and therefore, to remember. Word roots will be given as combining forms throughout this text.



**Figure 1-2** Common combining forms for organs or regions of the body.



## Strategies for Analyzing Medical Terms

Using medical terms is a two-way street; you need to learn both how to define medical terms used by other people and how to build medical terms for yourself. There are some specific strategies that will help with learning both.

**TERMINOLOGY TIDBIT** Do not try to memorize every medical term. Instead, figure out how the word is formed from its components. In a short time, you will be able to do this automatically when encountering a new term.

### Defining Medical Terms

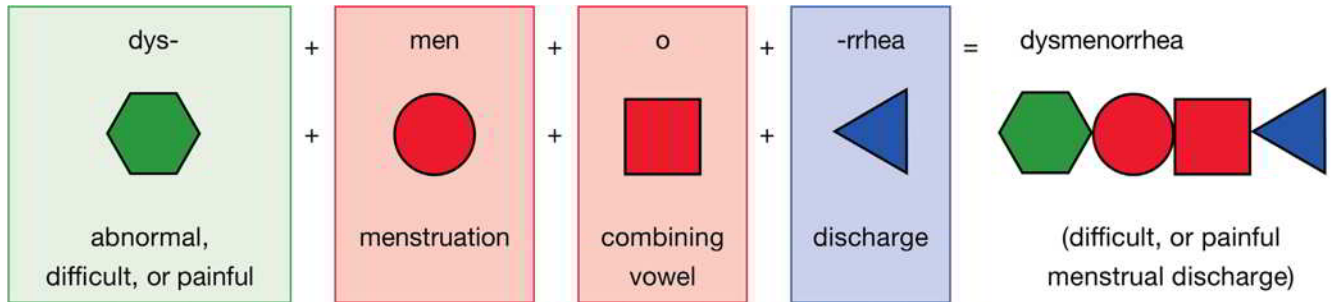
When first encountering an unfamiliar medical term, don't panic! Remember that the meaning of the individual word parts gives the information needed to understand at least the basic meaning of the word.

Follow these simple steps:

1. Divide the term into its word parts.
2. Define each word part.
3. Put the meaning of the word parts together in order to tell what the term is describing.

For example, follow the steps to define the term *dysmenorrhea*:

1. Divide the term into its word parts: dys/men/o/rrhea
2. Define each word part
  - **dys-** → prefix meaning abnormal, difficult, or painful
  - **men/o** → combining form meaning menstruation
  - **-rrhea** → suffix meaning discharge
3. Put the meaning of individual word parts together: abnormal, difficult, or painful menstruation discharge. Refer to Figure 1-3 ■ for a helpful visual aid illustrating this process.



**Figure 1-3** You can figure out the meaning of a medical term by dividing it into its word parts and then defining each part.

### Building Medical Terms

Building medical terms is almost the reverse of defining them. Begin by selecting word parts that convey the meaning needed. Then place the word parts in the correct order to build a complete term.

For example, build a term for the phrase *blood condition of insufficient sugar*. First, choose word parts that represent each portion of the phrase:

- prefix **hypo-** means *insufficient*
- combining form **glyc/o** means *sugar*
- suffix **-emia** means *blood condition*

Then place these word parts in the correct order to complete the whole term: *hypoglycemia*.

It is important to realize that not all possible combinations of word parts will build actual medical terms used by medical professionals. When first learning to build medical terms, this is very frustrating, but do not give up! After working with medical terms for only a short period of time, you will find making correct choices gets easier and easier.

**TERMINOLOGY TIDBIT** To gain a quick understanding of a term, it may be helpful for you to read from the end of the word (the suffix) back to the beginning (the prefix), and then pick up the word root. For example, *endocarditis* reads inflammation (**-itis**) inner, within (**endo-**) the heart (**cardi**). The complete term means *inflammation of the inner (lining) of the heart*.

## Rules for Building Plurals

Latin- and Greek-style medical terms do not follow the same pluralization rules used in English. Refer to the rules presented in Table 1-5 ■ when deciding how to pluralize medical terms.

**Table 1-5** Rules for Pluralizing Medical Terms

IF THE WORD ENDS IN	SINGULAR	PLURAL
-a, keep -a and add -e	vertebra	vertebrae
-ax, drop -x and add -ces	thorax	thoraces
-ex, drop -ex and add -ices	apex	apices
-is, drop -is and add -es	metastasis	metastases
-ix, drop -x and add -ces	appendix	appendices
-ma, keep -ma and add -ta	sarcoma	sarcomata
-on, drop -on and add -a	spermatozoon	spermatozoa
-us, drop -us and add -i	alveolus	alveoli
-um, drop -um and add -a	ovum	ova
-x, drop -x and add -ges	phalanx	phalanges
-y, drop -y and add -ies	biopsy	biopsies

## Pronouncing Medical Terms

Often medical terms are difficult to pronounce because the word parts are unfamiliar to us, or they contain letter combinations that do not occur in English words. Refer to Table 1-6 ■ for hints on pronouncing these letter combinations. You may hear different pronunciations for the same terms depending on where a person was born or educated. As long as it is clear which term people are saying, differing pronunciations are acceptable. Some people are difficult to understand over the telephone or on a transcription tape. If you have any doubt about a term being discussed, ask

**Table 1-6** Hints for Pronouncing Medical Terms

HINT	EXAMPLES
-ae or -oe, pronounce only second letter	bursae ( <i>BER-see</i> ) coelom ( <i>SEE-lum</i> )
c and g have soft sound if followed by e, i, or y	cerebrum ( <i>seh-REE-brum</i> ) gingivitis ( <i>jīn-jih-VIGH-tis</i> )
c and g have hard sound if followed by other letters	cardiac ( <i>KAR-dee-ak</i> ) gastric ( <i>GAS-trik</i> )
ch- at beginning of word has hard k sound	cholesterol ( <i>koh-LES-ter-all</i> ) chemical ( <i>KEM-ih-kull</i> )
-e or -es at end of word pronounced as separate syllable	syncope ( <i>SIN-koh-pee</i> ) nares ( <i>NAIR-eez</i> )
-i at end of word pronounced “eye” written as “igh”	bronchi ( <i>BRONG-kigh</i> ) nuclei ( <i>NOO-klee-igh</i> )
pn- at beginning of word, pronounce only n	pneumonia ( <i>noo-MOH-nee-ah</i> ) pneumogram ( <i>NOO-moh-gram</i> )
pn in middle of word, pronounce hard p and hard n	tachypnea ( <i>tak-ip-NEE-ah</i> ) hypopnea ( <i>high-POP-nee-ah</i> )
ps- at beginning of word, pronounce only s	psychiatry ( <i>sigh-KIGH-ah-tree</i> ) psychology ( <i>sigh-KALL-oh-jee</i> )

for the term to be spelled. For example, it is often difficult to hear the difference between the terms *abduction* and *adduction*. However, since the terms refer to opposite directions of movement, it is very important to double-check if there is any question about which term is being used. Each new term in this book is introduced in boldface type, with the phonetic or “sounds like” pronunciation in parentheses immediately following. The exception to this is the Building Terms section in Chapters 5–17. For these terms, the pronunciation can be found in the Answer Key at the end of the book. The part of the word that should receive the greatest emphasis during pronunciation appears in capital letters, for example, pericarditis (pair-ih-kar-DYE-tis).

## A Word about Abbreviations

Abbreviations are routinely used in medical records as a way of saving time. Writing *PTCA* is easier and quicker than writing out *percutaneous transluminal cardiac angioplasty*. However, using incorrect abbreviations can result in problems for a patient, as well as with insurance records and processing. For example, the abbreviation *MS* is used for *musculoskeletal*, *mitral stenosis*, and *multiple sclerosis*. If you have any concern that you will confuse someone by using an abbreviation, spell out the word instead. Also, it is never acceptable to use made-up abbreviations. What may appear perfectly clear to you may be quite confusing to others. For this reason, all types of formal health care facilities in the United States will have a list of approved abbreviations, and it is extremely important that you become familiar with this list and follow it closely. Throughout this book abbreviations are included, when possible, immediately following terms. Additionally, a list of common abbreviations for each medical specialty is provided at the end of each chapter. Finally, Appendix II is a complete alphabetical listing of all of the abbreviations used in this text, as well as a list of abbreviations to be avoided.

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Types of Medical Terms

Indicate whether each of the medical terms below is a Latin/Greek term, eponym, or modern English term.

1. hepatitis \_\_\_\_\_
2. ball and socket \_\_\_\_\_
3. Bell palsy \_\_\_\_\_
4. arthrogram \_\_\_\_\_
5. cardiomegaly \_\_\_\_\_
6. Addison disease \_\_\_\_\_
7. activities of daily living \_\_\_\_\_
8. Hodgkin disease \_\_\_\_\_
9. pacemaker \_\_\_\_\_
10. gastritis \_\_\_\_\_

### Forming Plurals

Fill in the following blanks with the missing singular or plural form of the term.

#### Singular

1. bursa \_\_\_\_\_
2. diverticulum \_\_\_\_\_
3. \_\_\_\_\_
4. ganglion \_\_\_\_\_
5. index \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

#### Plural

- \_\_\_\_\_
- \_\_\_\_\_
- adenomata \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- diagnoses \_\_\_\_\_
- nuclei \_\_\_\_\_

## Practice Defining Medical Terms

These medical terms have already been subdivided into their word parts. Each word part has been defined for you. First, label each word part as a prefix, word root, suffix, or combining vowel. Then put together the meanings of all of the word parts to define the term.

### 1. encephal/o/malacia

- **encephal** is a \_\_\_\_\_ meaning *brain*
- **o** is a \_\_\_\_\_
- **-malacia** is a \_\_\_\_\_ meaning *abnormally soft condition*
- *encephalomalacia* means \_\_\_\_\_

### 2. sub/cutane/ous

- **sub-** is a \_\_\_\_\_ meaning *under*
- **cutane** is a \_\_\_\_\_ meaning *skin*
- **-ous** is a \_\_\_\_\_ meaning *pertaining to*
- *subcutaneous* means \_\_\_\_\_

### 3. hyster/o/pexy

- **hyster** is a \_\_\_\_\_ meaning *uterus*
- **o** is a \_\_\_\_\_
- **-pexy** is a \_\_\_\_\_ meaning *surgical fixation*
- *hysteropexy* means \_\_\_\_\_

### 4. pan/sinus/itis

- **pan-** is a \_\_\_\_\_ meaning *all*
- **sinus** is a \_\_\_\_\_ meaning *sinus*
- **-itis** is a \_\_\_\_\_ meaning *inflammation*
- *pansinusitis* means \_\_\_\_\_

### 5. angi/o/rrhaphy

- **angi** is a \_\_\_\_\_ meaning *vessel*
- **o** is a \_\_\_\_\_
- **-rrhaphy** is a \_\_\_\_\_ meaning *to suture*
- *angiorrhaphy* means \_\_\_\_\_

## 6. inter/ventricul/ar

- **inter-** is a \_\_\_\_\_ meaning *between*
- **ventricul** is a \_\_\_\_\_ meaning *ventricle*
- **-ar** is a \_\_\_\_\_ meaning *pertaining to*
- *interventricular* means \_\_\_\_\_

## 7. cardi/o/megaly

- **cardi** is a \_\_\_\_\_ meaning *heart*
- **o** is a \_\_\_\_\_
- **-megaly** is a \_\_\_\_\_ meaning *enlarged*
- *cardiomegaly* means \_\_\_\_\_

## 8. rhin/o/rrhea

- **rhin** is a \_\_\_\_\_ meaning *nose*
- **o** is a \_\_\_\_\_
- **-plasty** is a \_\_\_\_\_ meaning *surgical repair*
- *rhinoplasty* means \_\_\_\_\_

## 9. gastr/o/enter/o/logy

- **gastr** is a \_\_\_\_\_ meaning *stomach*
- **o** is a \_\_\_\_\_
- **enter** is a \_\_\_\_\_ meaning *intestine*
- **o** is a \_\_\_\_\_
- **-logy** is a \_\_\_\_\_ meaning *study of*
- *gastroenterology* means \_\_\_\_\_

## 10. intra/ven/ous

- **intra-** is a \_\_\_\_\_ meaning *within*
- **ven** is a \_\_\_\_\_ meaning *vein*
- **-ous** is a \_\_\_\_\_ meaning *pertaining to*
- *intravenous* means \_\_\_\_\_

## Practice Building Medical Terms

Use the following list of word parts to build a medical term for each definition. The blanks following each definition provide an outline of the term showing the placement of prefixes (**p**), word roots (**wr**), combining vowels (**cv**), and suffixes (**s**).

Word Part	Category	Meaning
<b>-algia</b>	suffix	pain condition
<b>-ar</b>	suffix	pertaining to
<b>arthr</b>	word root	joint
<b>intra-</b>	prefix	within
<b>-itis</b>	suffix	inflammation
<b>-logy</b>	suffix	study of
<b>laryng</b>	word root	voice box
<b>muscul</b>	word root	muscle
<b>neur</b>	word root	nerve
<b>o</b>	combining vowel	
<b>-oma</b>	suffix	mass, tumor
<b>ophthalm</b>	word root	eye
<b>pan-</b>	prefix	all
<b>-plasty</b>	suffix	surgical repair
<b>scapul</b>	word root	shoulder blade
<b>-scope</b>	suffix	instrument for viewing
<b>sinus</b>	word root	sinus
<b>sub-</b>	prefix	under

- surgical repair of the voice box  
\_\_\_\_\_ / **wr** / **cv** / **s**
- instrument for viewing a joint  
\_\_\_\_\_ / **wr** / **cv** / **s**
- pertaining to under the shoulder blade  
\_\_\_\_\_ / **p** / **wr** / **s**
- study of the eye  
\_\_\_\_\_ / **wr** / **cv** / **s**
- nerve tumor  
\_\_\_\_\_ / **wr** / **s**
- pertaining to within a muscle  
\_\_\_\_\_ / **p** / **wr** / **s**
- inflammation of all sinuses  
\_\_\_\_\_ / **p** / **wr** / **s**
- surgical repair of a nerve  
\_\_\_\_\_ / **wr** / **cv** / **s**
- voice box inflammation  
\_\_\_\_\_ / **wr** / **s**
- joint pain  
\_\_\_\_\_ / **wr** / **s**



# 2

## Suffixes

-oma

-sclerosis

-itis

-logy

-scope

### Learning Objectives

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

- 2-1** Explain the role of suffixes in building medical terms.
- 2-2** Use suffixes to indicate diseases or abnormal conditions.
- 2-3** Use suffixes to indicate surgical procedures.
- 2-4** Use suffixes to indicate diagnostic procedures.
- 2-5** Use general suffixes to build additional medical terms.
- 2-6** Use suffixes to indicate medical specialties or personnel.
- 2-7** Use suffixes to convert word roots into adjectives.

# A Brief Introduction to Suffixes

A suffix at the end of a medical term adds a specific meaning to the term. All medical terms built from Latin or Greek word parts must have a suffix. Changing the suffix added to a term changes the meaning of the entire term. This can be illustrated with the combining form for heart, **cardi/o**.

- **cardi/o** + **-logy** = *cardiology* meaning *study of heart*
- **cardi/o** + **-dynia** = *cardiodynia* meaning *condition of heart pain*
- **cardi/o** + **-megaly** = *cardiomegaly* meaning *enlarged heart*

Most suffixes are not associated with only one medical specialty or body system. Therefore, you will use many of the same suffixes with each new set of combining forms introduced in each chapter of this text. Suffixes can be placed into one of several categories. The following list makes learning them easier by subdividing them into smaller groups:

- Suffixes indicating diseases or abnormal conditions
- Suffixes indicating a surgical procedure
- Suffixes indicating a diagnostic procedure
- General suffixes
- Suffixes indicating medical specialties or personnel
- Suffixes that convert word roots into adjectives

## Suffixes Indicating Diseases or Abnormal Conditions

When added to a word root, the following suffixes indicate a diseased state or body abnormality.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-algia</b>	pain condition	gastralgia (condition of stomach pain)
<b>-apheresis</b>	removal	plasmapheresis (plasma removal)
<b>-asthenia</b>	weakness condition	myasthenia (condition of muscle weakness)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-asthenia</b> comes from combining the prefix <b>a-</b> , meaning <i>without</i> and the Greek word <i>sthenos</i> , meaning <i>strength</i> .		
<b>-capnia</b>	carbon dioxide condition	hypercapnia (condition of excessive carbon dioxide)
<b>-cele</b>	protrusion	cystocele (protrusion of urinary bladder)
<b>-cide</b>	to kill	spermatocide (to kill sperm)
<b>-cytosis</b>	abnormal cell condition (too many)	erythrocytosis (abnormal condition of [too many] red cells)
<b>-derma</b>	skin condition	leukoderma (condition of white skin)
<b>-dipsia</b>	thirst condition	polydipsia (condition of many [frequent] thirst)
<b>-dynia</b>	pain condition	cardiodynia (condition of heart pain)
<b>-ectasis</b>	dilated	bronchiectasis (dilated bronchi)
<b>-edema</b>	swelling	lymphedema (lymphatic swelling)
<b>-emesis</b>	vomiting	hematemesis (vomiting blood)
<b>-emetic</b>	pertaining to vomiting	antiemetic (pertaining to against vomiting)
<b>-emia</b>	blood condition	leukemia (white [cell] blood condition)
<b>-esthesia</b>	sensation condition	anesthesia (condition of [being] without sensation)
<b>-ia</b>	condition	pneumonia (lung condition)
<b>-iasis</b>	abnormal condition	lithiasis (abnormal condition of stones)

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-ism</b>	state of	hypothyroidism (state of insufficient thyroid [hormones])
<b>-itis</b>	inflammation	dermatitis (skin inflammation)
<b>-kinesia</b>	movement condition	bradykinesia (condition of slow movement)
<b>-lith</b>	stone	cystolith (bladder stone)
<b>-lysis</b>	to destroy	osteolysis (to destroy bone)
<b>-lytic</b>	pertaining to destruction	thrombolytic (pertaining to clot destruction)
<b>-malacia</b>	abnormally soft condition	chondromalacia (condition of abnormally soft cartilage)
<b>-megaly</b>	enlarged	cardiomegaly (enlarged heart)
<b>-oma</b>	mass, tumor	carcinoma (cancerous tumor)
<b>-opia</b>	vision condition	diplopia (condition of double vision)
<b>-osis</b>	abnormal condition	cyanosis (abnormal condition of blue [skin])
<b>-osmia</b>	sense of smell condition	anosmia (condition of [being] without [sense of] smell)
<b>-oxia</b>	oxygen condition	hypoxia (condition of insufficient oxygen)
<b>-paresis</b>	weakness	hemiparesis (half weakness)
<b>-pathy</b>	disease	myopathy (muscle disease)
<b>-penia</b>	condition of too few	cytopenia (condition of too few cells)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-penia</b> comes from the Greek word <i>penia</i> , meaning <i>poverty</i> .		
<b>-pepsia</b>	digestion condition	bradypepsia (condition of slow digestion)
<b>-phagia</b>	swallowing or eating condition	dysphagia (condition of difficulty swallowing)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-phagia</b> comes from the Greek word <i>phagō</i> , meaning <i>to eat</i> . In today's medical terms, it may be used to mean <i>eating condition</i> or <i>swallowing condition</i> .		
<b>-phasia</b>	speech condition	aphasia (condition of [being] without speech)
<b>-phobia</b>	fear condition	photophobia (condition of fear of [sensitivity to] light)
<b>-phonia</b>	voice condition	aphonia (condition of [being] without voice)
<b>-plasia</b>	condition of cell formation	hyperplasia (condition of excessive cell formation)
<b>-plegia</b>	paralysis condition	paraplegia (condition of paralysis of both lower extremities)
<b>-ptosis</b>	drooping	protopsis (drooping rectum)
<b>-rrhage</b>	abnormal flow	hemorrhage (abnormal flow of blood)
<b>-rrhagia</b>	abnormal flow condition	menorrhagia (abnormal menstrual flow condition)
<b>-rrhea</b>	discharge	rhinorrhea (discharge from nose)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-rrhea</b> and <b>-rrhagia</b> are very similar but come from different Greek words. <b>-rrhea</b> comes from <i>rhoia</i> , meaning <i>to flow</i> ; <b>-rrhagia</b> comes from <i>rhagnymi</i> , meaning <i>to burst forth</i> and now means abnormal flow condition.		
<b>-rrhexis</b>	rupture	hysterorrhexis (rupture of uterus)
<b>-sclerosis</b>	hardening	arteriosclerosis (hardening of artery)
<b>-spasm</b>	involuntary muscle contraction	bronchospasm (involuntary contraction of bronchi muscles)
<b>-stasis</b>	standing still	hemostasis (standing still blood)
<b>-stenosis</b>	narrowing	angiostenosis (narrowing of a vessel)
<b>-toxic</b>	pertaining to poison	cytotoxic (pertaining to cell poison)
<b>-uria</b>	urine condition	hematuria (blood in urine condition)

## Suffixes Indicating Surgical Procedures

The following suffixes are used to indicate surgical procedures. The word root paired with the surgical suffix indicates which area of the body is being operated on.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-clasia</b>	to surgically break	osteoclasia (to surgically break a bone)
<b>-desis</b>	surgical fusing	arthrodesis (surgical fusing of joint)
<b>-ectomy</b>	surgical removal	gastrectomy (surgical removal of stomach)
<b>-pexy</b>	surgical fixation	nephropexy (surgical fixation of kidney)
<b>-plasty</b>	surgical repair	dermatoplasty (surgical repair of skin)
<b>-rrhaphy</b>	to suture	myorrhaphy (to suture muscle)
<b>-stomy</b>	surgically create an opening	colostomy (surgically create opening for colon [through abdominal wall])
<b>-tome</b>	instrument to cut	dermatome (instrument to cut skin)
<b>-tomy</b>	cutting into	thoracotomy (cutting into chest)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-ectomy</b> and <b>-tomy</b> have very specific meanings that relate back to the original Greek words. <b>-ectomy</b> comes from <i>ektome</i> , meaning <i>to cut out</i> , while <b>-tomy</b> comes from <i>tomia</i> , meaning <i>to cut into</i> .		
<b>-tripsy</b>	surgical crushing	lithotripsy (surgical crushing of stone)

## Suffixes Indicating Diagnostic Procedures

The following suffixes indicate common diagnostic procedures.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-centesis</b>	puncture to withdraw fluid	arthrocentesis (puncture to withdraw fluid from joint)
<b>TERMINOLOGY TIDBIT</b> The suffix <b>-centesis</b> comes from the Greek word <i>kentesis</i> , meaning <i>to prick or pierce</i> .		
<b>-gram</b>	a record	electrocardiogram (record of heart's electrical [activity])
<b>-graph</b>	instrument for recording	myograph (instrument for recording muscle)
<b>-graphy</b>	process of recording	electrocardiography (process of recording heart's electrical [activity])
<b>-manometer</b>	instrument to measure pressure	sphygmomanometer (instrument to measure pulse [blood] pressure)
<b>-meter</b>	instrument for measuring	audiometer (instrument for measuring hearing)
<b>-metry</b>	process of measuring	audiometry (process of measuring hearing)
<b>-scope</b>	instrument for viewing	gastroscope (instrument for viewing stomach)
<b>-scopy</b>	process of visually examining	gastroscopy (process of visually examining stomach)

## General Suffixes

These suffixes belong to a group not specifically referring to a medical condition or procedure. However, they add meaning to the term.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-arche</b>	beginning	menarche (beginning menstruation)
<b>-cle</b>	small	vesicle (small sac [blister])
<b>-cysis</b>	pregnancy	salpingocystis (uterine tube pregnancy)

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-cyte</b>	cell	leukocyte (white [blood] cell)
<b>-gen</b>	that which produces	mutagen (that which produces mutations)
<b>-genesis</b>	produces	osteogenesis (produces bone)
<b>-genic</b>	pertaining to producing	carcinogenic (pertaining to producing cancer)
<b>TERMINOLOGY TIDBIT</b> The suffixes <b>-genesis</b> , <b>-genic</b> , and <b>-gen</b> all come from the Greek word <i>gignesthai</i> , meaning <i>to be born</i> .		
<b>-globin</b>	protein	hemoglobin (blood protein)
<b>-globulin</b>	protein	immunoglobulin (protective protein)
<b>-gravida</b>	pregnancy	multigravida (many pregnancies)
<b>-ion</b>	action	flexion (bending action)
<b>-oid</b>	resembling	lipoid (resembling fat)
<b>-ole</b>	small	arteriole (small artery)
<b>-opsy</b>	view of	biopsy (view of life)
<b>-para</b>	to bear (offspring)	nullipara (to bear no children)
<b>-partum</b>	childbirth	postpartum (after childbirth)
<b>-phil</b>	attracted to	eosinophil (attracted to rosy [dye])
<b>-plasm</b>	formation	neoplasm (new formation [of tissue])
<b>-pnea</b>	breathing	apnea (lack of breathing)
<b>-poiesis</b>	formation	hematopoiesis (blood formation)
<b>-porosis</b>	porous	osteoporosis (porous bone)
<b>-ptysis</b>	spitting	hemoptysis (spitting blood)
<b>-salpinx</b>	uterine tube	pyosalpinx (pus in uterine tube)
<b>-therapy</b>	treatment	chemotherapy (treatment with chemicals)
<b>-thorax</b>	chest	hemothorax (blood in the chest)
<b>-trophic</b>	pertaining to development	amyotrophic (pertaining to without muscle development)
<b>-trophy</b>	development	hypertrophy (excessive development)
<b>-ule</b>	small	venule (small vein)

## Suffixes Indicating Medical Specialties or Personnel

The word root placed with these suffixes indicates the area of medicine in which the specialist works.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
<b>-er</b>	one who	radiographer (one who takes X-rays)
<b>-iatric</b>	pertaining to medical treatment	psychiatric (pertaining to medical treatment of the mind)
<b>-iatrist</b>	physician	psychiatrist (physician specializing in the mind)
<b>-iatry</b>	medical treatment	podiatry (medical treatment of the foot)
<b>-ician</b>	specialist	pediatrician (specialist for children)
<b>-ist</b>	specialist	pharmacist (drug specialist)
<b>-logist</b>	one who studies	cardiologist (one who studies the heart)
<b>-logy</b>	study of	cardiology (study of the heart)

## Suffixes Used to Convert Word Roots into Adjectives

The following suffixes are used to convert word roots into adjectives. Often a term such as *ulcer* will need to be paired with a second term to indicate location. For example, **-ic** combined with **gastr/o** forms the term *gastric* to give the

adjective form for stomach. *Gastric* is then paired with *ulcer* to indicate that the ulcer is located in the stomach. The accepted meaning for these adjective suffixes is *pertaining to*.

SUFFIX	MEANING	EXAMPLE (TRANSLATION)
-ac	pertaining to	cardiac (pertaining to heart)
-al	pertaining to	duodenal (pertaining to duodenum)
-an	pertaining to	ovarian (pertaining to ovary)
-ar	pertaining to	ventricular (pertaining to ventricle)
-ary	pertaining to	pulmonary (pertaining to lungs)
-atic	pertaining to	lymphatic (pertaining to lymph)
-eal	pertaining to	esophageal (pertaining to esophagus)
-iac	pertaining to	hypochondriac (pertaining to below the cartilage)
-ic	pertaining to	gastric (pertaining to stomach)
-ine	pertaining to	uterine (pertaining to uterus)
-ior	pertaining to	superior (pertaining to above)
-nic	pertaining to	embryonic (pertaining to embryo)
-ory	pertaining to	auditory (pertaining to hearing)
-ose	pertaining to	adipose (pertaining to fat)
-ous	pertaining to	venous (pertaining to vein)
-tic	pertaining to	hepatic (pertaining to liver)

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Categories of Suffixes

On each of the following blanks, indicate the category to which each suffix belongs and its translation. The suffix categories included in this exercise are disease/abnormal condition, surgical, diagnostic, and general.

Suffix	Category	Translation
1. -plegia		
2. -metry		
3. -cyte		
4. -tomy		
5. -lith		
6. -scope		

Suffix	Category	Translation
7. <b>-thorax</b>	_____	_____
8. <b>-graphy</b>	_____	_____
9. <b>-emesis</b>	_____	_____
10. <b>-clasia</b>	_____	_____
11. <b>-lysis</b>	_____	_____
12. <b>-ectomy</b>	_____	_____

## Matching

Match each suffix to its definition.

- |                           |                            |
|---------------------------|----------------------------|
| 1. <b>-pepsia</b> _____   | A. cell                    |
| 2. <b>-pnea</b> _____     | B. formation               |
| 3. <b>-phasia</b> _____   | C. movement condition      |
| 4. <b>-cyesis</b> _____   | D. pertaining to producing |
| 5. <b>-kinesia</b> _____  | E. digestion condition     |
| 6. <b>-genic</b> _____    | F. speech condition        |
| 7. <b>-dipsia</b> _____   | G. treatment               |
| 8. <b>-cyte</b> _____     | H. pregnancy               |
| 9. <b>-porosis</b> _____  | I. thirst condition        |
| 10. <b>-therapy</b> _____ | J. vision condition        |
| 11. <b>-plasm</b> _____   | K. porous                  |
| 12. <b>-opia</b> _____    | L. breathing               |

## Choosing the Correct Adjective Form

One of the most difficult things to master in learning medical terminology is correct use of adjective forms. There are several ways to technically construct a word, but only one of them is an actual medical term. The rest simply aren't used. Unfortunately, there is no rule to help; you can learn this only by becoming familiar with which adjective form is correct. After a short while, a term will just "sound" correct and you won't forget it again.

The following exercise is a start to this process. Read the translation, sound out each choice, and circle the one that "sounds" correct to you.

### 1. pertaining to the heart

cardiac                      cardial                      cardior                      carditic

### 2. pertaining to the ovary

ovarous                      ovariac                      ovarian                      ovarial

(continued on next page)

(continued)

**3. pertaining to the duodenum**

duodenar	duodenal	duodeniatic	duodentic
----------	----------	-------------	-----------

**4. pertaining to a ventricle**

ventricultic	ventriculous	ventricular	ventricula
--------------	--------------	-------------	------------

**5. pertaining to the lungs**

pulmonal	pulmontic	pulmonous	pulmonary
----------	-----------	-----------	-----------

**6. pertaining to the esophagus**

esophageal	esophagic	esophagous	esophagar
------------	-----------	------------	-----------

**7. pertaining to the stomach**

gastran	gastric	gastral	gastreal
---------	---------	---------	----------

**8. pertaining to the uterus**

uterior	uterary	uterotic	uterine
---------	---------	----------	---------

**9. pertaining to a vein**

venous	ventic	venary	veniac
--------	--------	--------	--------

**10. pertaining to the liver**

hepatar	hepatary	hepatic	hepatac
---------	----------	---------	---------

## Building Terms with Suffixes

Now you are ready to start building actual medical terms. The following format will be used for this exercise and for Building Terms sections throughout the rest of this text:

1. Translation phrase for the medical term is provided
2. Answer blanks are subdivided into prefix (if needed), word root, combining vowel (if needed), and suffix  
*Examples*

- |                                  |   |
|----------------------------------|---|
| • Instrument to view the stomach | <b>gastr</b> / <b>o</b> / <b>scope</b>  |
| • Enlarged liver                 | <b>hepat</b> / <b>o</b> / <b>megaly</b> |
| • Pertaining to the kidney       | <b>ren</b> / <b>al</b>                  |
| • Inflammation of skin           | <b>dermat</b> / <b>itis</b>             |

Remember that whether or not to use a combining vowel depends on the first letter of the suffix. If it begins with a consonant, use a combining vowel (see the first two examples). If the suffix begins with a vowel, a combining vowel is not necessary (see the last two examples). Refer back to Chapter 1 if you need more help with this rule.



Finally, you will need a short list of combining forms to use with the suffixes you learned in this chapter. The following list contains several common combining forms for use in these exercises.

Combining Form	Meaning	Combining Form	Meaning	Combining Form	Meaning
<b>angi/o</b>	vessel	<b>cyst/o</b>	urinary bladder, sac	<b>nephro/o</b>	kidney
<b>arteri/o</b>	artery	<b>dermat/o</b>	skin	<b>neur/o</b>	nerve
<b>arthr/o</b>	joint	<b>gastr/o</b>	stomach	<b>rhino/o</b>	nose
<b>bronch/o</b>	bronchus	<b>hepat/o</b>	liver	<b>thorac/o</b>	chest
<b>col/o</b>	colon	<b>my/o</b>	muscle	<b>trache/o</b>	trachea

- Surgical removal of the stomach  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **s**
- Instrument for viewing inside the stomach  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Process of visually examining the stomach  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Condition of stomach pain  
\_\_\_\_\_ / \_\_\_\_\_ OR  
**wr** \_\_\_\_\_ **s**
- Bladder stone  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Instrument for viewing inside the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Process of visually examining the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Surgically create an opening in the bladder  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Pertaining to the bladder  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **s**
- Surgical repair of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Vessel tumor  
\_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **s**
- Process of recording a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Record of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Narrowing of a vessel  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Hardening of an artery  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**
- Involuntary muscle contraction in an artery  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** \_\_\_\_\_ **cv** \_\_\_\_\_ **s**

(continued on next page)

(continued)

17. Ruptured artery	<hr/>	<hr/>	<hr/>
	wr	cv	s
18. Small artery	<hr/>	<hr/>	<hr/>
	wr		s
19. Joint inflammation	<hr/>	<hr/>	<hr/>
	wr		s
20. Instrument for viewing inside a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
21. Process of visually examining a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
22. Surgical repair of a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
23. Puncture to withdraw fluid from a joint	<hr/>	<hr/>	<hr/>
	wr	cv	s
24. Study of the skin	<hr/>	<hr/>	<hr/>
	wr	cv	s
25. One who studies the skin	<hr/>	<hr/>	<hr/>
	wr	cv	s
26. Skin inflammation	<hr/>	<hr/>	<hr/>
	wr		s
27. Abnormal condition of the skin	<hr/>	<hr/>	<hr/>
	wr		s
28. Liver inflammation	<hr/>	<hr/>	<hr/>
	wr		s
29. Liver tumor	<hr/>	<hr/>	<hr/>
	wr		s
30. Enlarged liver	<hr/>	<hr/>	<hr/>
	wr	cv	s
31. Liver cell	<hr/>	<hr/>	<hr/>
	wr	cv	s
32. Pertaining to the liver	<hr/>	<hr/>	<hr/>
	wr		s
33. Discharge from the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
34. Surgical repair of the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
35. Abnormal flow condition from the nose	<hr/>	<hr/>	<hr/>
	wr	cv	s
36. Bronchus inflammation	<hr/>	<hr/>	<hr/>
	wr		s
37. Instrument for viewing inside the bronchus	<hr/>	<hr/>	<hr/>
	wr	cv	s
38. Process of visually examining the bronchus	<hr/>	<hr/>	<hr/>
	wr	cv	s
39. Surgically create an opening into the trachea	<hr/>	<hr/>	<hr/>
	wr	cv	s

## 22 Chapter 2

Get FULL Ebook order By email at [palemonking@gmail.com](mailto:palemonking@gmail.com) or Telegram at <https://t.me/meghareddy/>

40.	Cutting into the trachea	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
41.	Protrusion of the trachea	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
42.	Condition of abnormally soft trachea	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
43.	Pertaining to the trachea	_____	/	_____	/	_____
		<b>wr</b>				<b>s</b>
44.	Surgically create an opening into the colon	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
45.	Surgical removal of the colon	_____	/	_____	/	_____
		<b>wr</b>				<b>s</b>
46.	Surgical fixation of the colon	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
47.	Study of the kidney	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
48.	One who studies the kidney	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
49.	Condition of abnormally soft kidney	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
50.	Abnormal condition of the kidney	_____	/	_____	/	_____
		<b>wr</b>				<b>s</b>
51.	Kidney disease	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
52.	Surgical fixation of the kidney	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
53.	Cutting into the chest	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
54.	Puncture to withdraw fluid from the chest	_____	/	_____	/	_____
		<b>wr</b>		/ <b>cv</b>		<b>s</b>
55.	Condition of chest pain	_____	/	_____	/	_____ OR
		<b>wr</b>		<b>cv</b>		<b>s</b>
		_____	/	_____	/	_____
		<b>wr</b>				<b>s</b>
56.	Study of the nerves	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
57.	One who studies the nerves	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
58.	Surgical repair of a nerve	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
59.	Surgical crushing of a nerve	_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>
60.	Condition of nerve pain	_____	/	_____	/	_____ OR
		<b>wr</b>				<b>s</b>
		_____	/	_____	/	_____
		<b>wr</b>		<b>cv</b>		<b>s</b>

(continued on next page)

(continued)

61. Suture a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

62. Muscle disease

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

63. Condition of muscle pain

\_\_\_\_\_ / \_\_\_\_\_ OR  
**wr** **s**

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

64. Instrument to cut muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

65. Instrument for recording a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

66. Record of a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

67. Process of recording a muscle

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

# 3

## Prefixes

inter-

hypo-

auto-

de-

pre-

### Learning Objectives

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

- 3-1** Explain the role of prefixes in building medical terms.
- 3-2** Use prefixes to indicate diseases or abnormal conditions.
- 3-3** Use prefixes to indicate directions or body positions.
- 3-4** Use prefixes to indicate numbers or quantity measurements.
- 3-5** Use prefixes to indicate time.
- 3-6** Use prefixes to build additional medical terms.

# A Brief Introduction to Prefixes

A prefix at the beginning of a medical term adds specific information to the term. Using different prefixes changes the meaning of the medical term. A good example is the suffix meaning development, **-trophy**.

- **hyper-** + **-trophy** = *hypertrophy* meaning *excessive development*
- **dys-** + **-trophy** = *dystrophy* meaning *abnormal development*
- **a-** + **-trophy** = *atrophy* meaning *lack of development*

As with suffixes, few prefixes are associated with only one medical specialty or body system. Therefore, you will use many of the same prefixes with each new set of combining forms introduced in each chapter. Prefixes can be placed into one of several categories. The following list makes learning them easier by subdividing them into smaller groups:

- Prefixes indicating diseases or abnormal conditions
- Prefixes indicating directions or body positions
- Prefixes indicating numbers or quantity measurements
- Prefixes indicating time
- General prefixes

Some prefixes have multiple translations. Therefore, they appear in more than one category. For example, the prefix **hypo-** can be translated as *below*, placing it in the direction or body position category, or as *insufficient*, placing it in the number or quantity measurement category.

## Prefixes Indicating Diseases or Abnormal Conditions

Used with word roots or suffixes, the following prefixes indicate a diseased state or body abnormality.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>a-</b>	without	aphasia (without speech)
<b>an-</b>	without	anoxia (without oxygen)
<b>anti-</b>	against	antibiotic (against life)
<b>brady-</b>	slow	bradycardia (slow heartbeat)
<b>de-</b>	without	dehydration (without water)
<b>dys-</b>	abnormal, difficult, painful	dystrophy (abnormal development); dyspnea (difficulty breathing); dysuria (painful urination)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>dys-</b> comes from the Greek word <i>dus</i> , which has a general negative meaning. It can be translated several ways such as <i>bad</i> , <i>difficult</i> , <i>abnormal</i> , <i>incorrect</i> , and <i>painful</i> .		
<b>in-</b>	inward, not	infertile (not fertile)
<b>pachy-</b>	thick	pachyderma (thick skin)
<b>pseudo-</b>	false	pseudocyesis (false pregnancy)
<b>tachy-</b>	fast	tachycardia (fast heartbeat)
<b>un-</b>	not	unconscious (not conscious)

## Prefixes Indicating Directions or Body Positions

Used with word roots or suffixes, the following prefixes indicate directions or body positions.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>ab-</b>	away from	abduction (to lead away from)
<b>ad-</b>	toward	adduction (to lead toward)
<b>ante-</b>	in front of	antorbital (in front of eye socket)
<b>e-</b>	outward	eversion (action of turning outward)
<b>endo-</b>	inner, within	endometrium (inner [lining of] uterus); endoscope (instrument for viewing within)
<b>epi-</b>	above	epigastric (above stomach)
<b>ex-</b>	outward	exophthalmos (eyes [bulging] outward)
<b>extra-</b>	outside of	extraocular (outside of eye)
<b>hypo-</b>	below, insufficient	hypogastric (below stomach)
<b>in-</b>	inward, not	inhalation (to breathe inward)
<b>infra-</b>	below	infraorbital (below eye socket)
<b>inter-</b>	between	intervertebral (between vertebrae)
<b>intra-</b>	within	intravenous (inside vein)
<b>TERMINOLOGY TIDBIT</b> The prefixes <b>intra-</b> and <b>inter-</b> are commonly confused. Both come from Latin words, <i>intra</i> meaning <i>within</i> and <i>inter</i> meaning <i>between</i> .		
<b>para-</b>	beside, two like parts of a pair	paranasal (beside the nose); paraplegia (paralysis of two like parts of a pair [the legs])
<b>peri-</b>	around	periodontal (around tooth)
<b>retro-</b>	backward, behind	retrograde (to go backward); retroperitoneal (behind the peritoneum)
<b>sub-</b>	under	subcutaneous (under skin)
<b>supra-</b>	above	suprapubic (above <b>pubic</b> bone)
<b>trans-</b>	across	transurethral (across urethra)

## Prefixes Indicating Numbers or Quantity Measurements

Used with word roots or suffixes, the following prefixes indicate the number of items or quantity measurement.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>bi-</b>	two	bilateral (two sides)
<b>di-</b>	two	diplegia (paralysis of two extremities)
<b>hemi-</b>	half	hemiplegia (paralysis of half [one side] of body)
<b>hyper-</b>	excessive	hyperemesis (excessive vomiting)
<b>hypo-</b>	below, insufficient	hypocalcemia (insufficient calcium in blood)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>hypo-</b> is used several different ways. It comes from the Greek word <i>hupo</i> meaning <i>under</i> and is used to indicate a smaller than normal amount. It is also used to indicate a position underneath another structure.		
<b>micro-</b>	small	microscope (instrument for viewing small things)
<b>mono-</b>	one	monoplegia (paralysis of one extremity)
<b>multi-</b>	many	multigravida (many [more than one] pregnancies)

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>nulli-</b>	none	nulligravida (no pregnancies)
<b>pan-</b>	all	pansinusitis (inflammation of all sinuses)
<b>poly-</b>	many	polyarteritis (many inflamed arteries)
<b>primi-</b>	first	primigravida (first pregnancy)
<b>quadri-</b>	four	quadriplegia (paralysis of all four extremities)
<b>tri-</b>	three	triplegia (paralysis of three extremities)
<b>ultra-</b>	beyond	ultrasound (sound beyond [hearing])
<b>uni-</b>	one	unilateral (one side)

## Prefixes Indicating Time

Used with word roots or suffixes, the following prefixes indicate time periods.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>ante-</b>	before	antepartum (before birth)
<b>neo-</b>	new	neonate (newborn)
<b>post-</b>	after	postpartum (after birth)
<b>pre-</b>	before	premenstrual (before menstruation)

## General Prefixes

These prefixes belong to a group not specifically referring to a disease, abnormal condition, direction, body position, number, or time. However, they add meaning to a term.

PREFIX	MEANING	EXAMPLE (TRANSLATION)
<b>auto-</b>	self	autograft (transplant from self [one's own body])
<b>contra-</b>	against	contraception (against conception)
<b>echo-</b>	a repeating sound	echocardiography (process of recording repeating sounds from the heart)
<b>eu-</b>	normal	eupnea (normal breathing)
<b>TERMINOLOGY TIDBIT</b> The prefix <b>eu-</b> comes from the Greek word <i>eu</i> and has a general positive meaning. It can be translated as “good,” “normal,” or “well.” It is the opposite of <b>dys-</b> .		
<b>hetero-</b>	different	heterograft (transplant from different [species])
<b>homo-</b>	same	homograft (transplant from same [species])
<b>per-</b>	through	percutaneous (through skin)



# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Recognizing Categories of Prefixes

On each of the following blanks, indicate the category to which each prefix belongs and its translation. The categories included in this exercise are disease/abnormality prefixes, direction/body position prefixes, number prefixes, and time prefixes.

Prefix	Category	Translation
1. <b>dys-</b>		
2. <b>hyper-</b>		
3. <b>nulli-</b>		
4. <b>brady-</b>		
5. <b>an-</b>		
6. <b>neo-</b>		
7. <b>inter-</b>		
8. <b>post-</b>		
9. <b>micro-</b>		
10. <b>peri-</b>		
11. <b>epi-</b>		
12. <b>anti-</b>		

## Matching

Match each prefix to its definition.

1. **auto-** \_\_\_\_\_
2. **poly-** \_\_\_\_\_
3. **per-** \_\_\_\_\_
4. **homo-** \_\_\_\_\_
5. **eu-** \_\_\_\_\_
6. **pan-** \_\_\_\_\_
7. **primi-** \_\_\_\_\_
8. **quadri-** \_\_\_\_\_
9. **intra-** \_\_\_\_\_
10. **hetero-** \_\_\_\_\_
11. **hypo-** \_\_\_\_\_
12. **tachy-** \_\_\_\_\_

- A. same
- B. four
- C. fast
- D. many
- E. first
- F. within
- G. self
- H. different
- I. insufficient
- J. normal
- K. all
- L. through

## Building Terms with Prefixes

Now you are ready to practice using prefixes to build medical terms. The following format will be used *only for this exercise*.

1. Translation phrase for the medical term is provided.
2. Answer blanks are divided into two halves. The first half is for the prefix and the second half is for the remainder of the term. The remainder may be either a word root/suffix combination (seen in a **redblue** color combination), a suffix only (seen in **-blue** color), or a traditional word (seen in **black**).

You will need additional word parts and words for this practice exercise, so the following list contains word parts and words ready to combine with a prefix.

Word Parts or Word	Meaning
<b>cardia</b>	heart condition
<b>carditis</b>	heart inflammation
<b>cellular</b>	pertaining to cells
<b>dermal</b>	pertaining to skin
<b>graft</b>	transplant
<b>lateral</b>	pertaining to the side
<b>operative</b>	operation
<b>-para</b>	to bear (offspring)

Word Parts or Word	Meaning
<b>-pepsia</b>	digestion
<b>-phagia</b>	eating or swallowing condition
<b>-plegia</b>	paralysis
<b>-pnea</b>	breathing
<b>scapular</b>	pertaining to the scapula
<b>-trophy</b>	development
<b>-uria</b>	condition of the urine

1. Condition of fast heart

\_\_\_\_\_ / \_\_\_\_\_  
**p** **wr + s**

2. Condition of slow heart

\_\_\_\_\_ / \_\_\_\_\_  
**p** **wr + s**

(continued on next page)

(continued)

3. Inflammation within the heart	p	/	wr + s
4. Inflammation around the heart	p	/	wr + s
5. Inflammation of the entire heart	p	/	wr + s
6. Pertaining to within the cell	p	/	wr + s
7. Pertaining to outside the cell	p	/	wr + s
8. Pertaining to many cells	p	/	wr + s
9. Pertaining to one cell	p	/	wr + s
10. Pertaining to within the skin	p	/	wr + s
11. Pertaining to under the skin	p	/	wr + s
12. Pertaining to above the skin	p	/	wr + s
13. Transplant from same [species]	p	/	word
14. Transplant from different [species]	p	/	word
15. Transplant from self	p	/	word
16. Pertaining to two sides	p	/	word
17. Pertaining to one side	p	/	word
18. Before an operation	p	/	word
19. After an operation	p	/	word
20. Within an operation	p	/	word
21. To bear first (offspring)	p	/	s
22. To bear no (offspring)	p	/	s
23. To bear many (offspring)	p	/	s
24. Condition of without eating	p	/	s

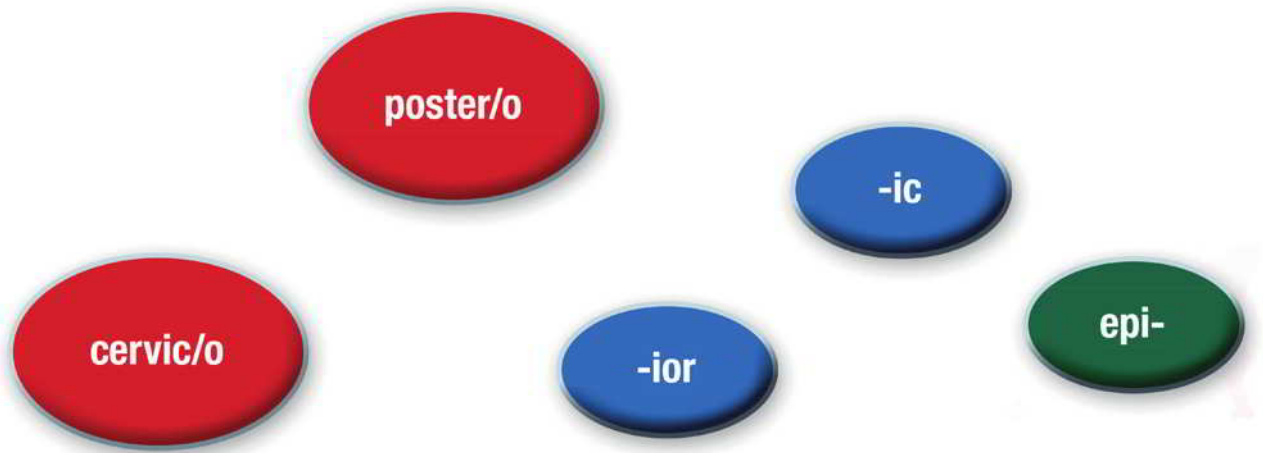
(continued on next page)

(continued)

25. Condition of abnormal eating	p	/	s
26. Condition of many (too much) eating	p	/	s
27. Condition of without digestion	p	/	s
28. Condition of abnormal digestion	p	/	s
29. Condition of slow digestion	p	/	s
30. Without development	p	/	s
31. Abnormal development	p	/	s
32. Condition of half (body) paralysis	p	/	s
33. Condition of four (limbs) paralysis	p	/	s
34. Condition of one (limb) paralysis	p	/	s
35. No breathing	p	/	s
36. Normal breathing	p	/	s
37. Fast breathing	p	/	s
38. Slow breathing	p	/	s
39. Excessive breathing	p	/	s
40. Insufficient breathing	p	/	s
41. Pertaining to below the scapula	p	/	wr + s
42. Pertaining to above the scapula	p	/	wr + s
43. Pertaining to under the scapula	p	/	wr + s
44. Condition of no urine	p	/	s
45. Condition of many (too much) urine	p	/	s
46. Condition of abnormal urine	p	/	s

# 4

## Anatomical Terminology



### Learning Objectives

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

- 4-1 Visualize patients in the anatomical position.
- 4-2 Identify the planes and sections of the body.
- 4-3 Use correct directional terms.
- 4-4 Use anatomical terms to refer to body surface structures.
- 4-5 Place internal organs into the correct body cavity.
- 4-6 Use either anatomical divisions or clinical divisions to describe the abdominopelvic cavity.

## Anatomical Combining Forms

The combining forms listed below are commonly used to build anatomical terms:

<b>abdomin/o</b>	abdomen	<b>later/o</b>	side
<b>anter/o</b>	front (of body)	<b>lumb/o</b>	low back
<b>brachi/o</b>	arm	<b>medi/o</b>	middle
<b>caud/o</b>	tail	<b>nas/o</b>	nose
<b>cephal/o</b>	head	<b>or/o</b>	mouth
<b>cervic/o</b>	neck, cervix	<b>orbit/o</b>	eye socket
<b>chondr/o</b>	cartilage	<b>ot/o</b>	ear
<b>crani/o</b>	skull	<b>patell/o</b>	patella (kneecap)
<b>cubit/o</b>	elbow	<b>pelv/o</b>	pelvis
<b>dist/o</b>	away from (beginning of structure)	<b>poster/o</b>	back (of body)
<b>dors/o</b>	back (of body)	<b>proxim/o</b>	near to (beginning of structure)
<b>femor/o</b>	femur (thigh bone)	<b>scapul/o</b>	scapula (shoulder blade)
<b>gastr/o</b>	stomach	<b>spin/o</b>	spine
<b>genit/o</b>	genitals	<b>stern/o</b>	sternum (breast bone)
<b>glute/o</b>	buttocks	<b>super/o</b>	above
<b>ili/o</b>	ilium (part of pelvis)	<b>thorac/o</b>	chest
<b>infer/o</b>	below	<b>ventr/o</b>	belly (surface of body)
<b>inguin/o</b>	groin	<b>vertebr/o</b>	vertebra (backbone)

## Suffix Review

These suffixes introduced in Chapter 2 are being reviewed in this chapter because they are commonly used to build anatomical terms:

<b>-ac</b>	pertaining to	<b>-iac</b>	pertaining to
<b>-al</b>	pertaining to	<b>-ic</b>	pertaining to
<b>-ar</b>	pertaining to	<b>-ior</b>	pertaining to

## Prefix Review

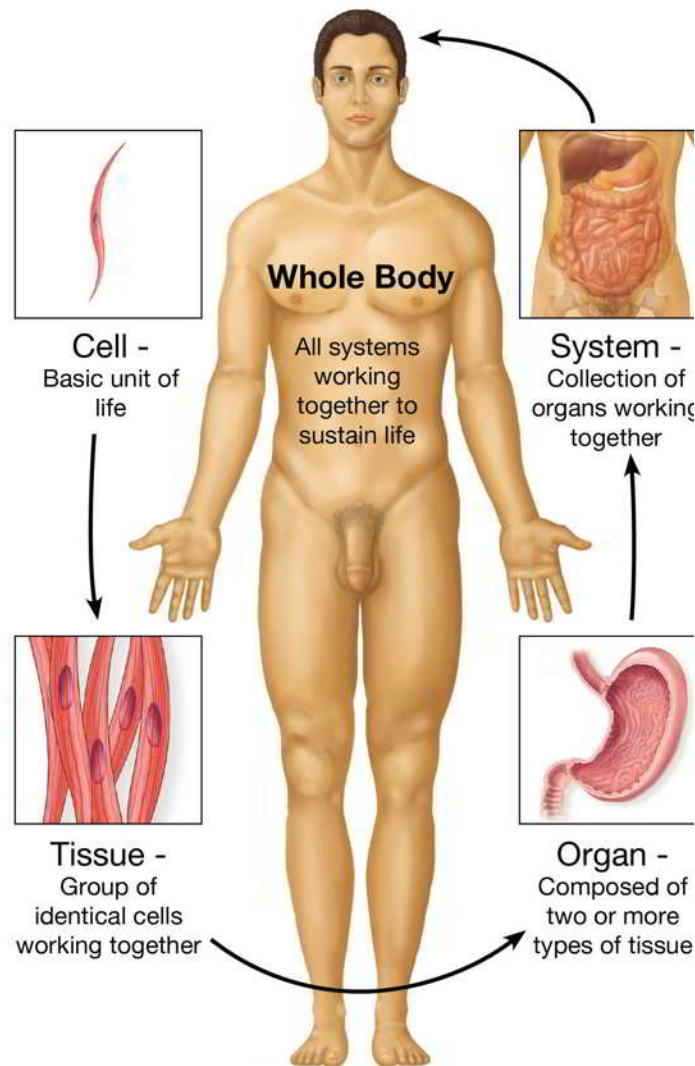
These prefixes introduced in Chapter 3 are being reviewed in this chapter because they are commonly used to build anatomical terms:

<b>ante-</b>	in front of, before	<b>hypo-</b>	below, insufficient
<b>epi-</b>	above	<b>retro-</b>	backward, behind

## Levels of Body Organization

The body is organized into levels from simplest to most complex: **cells, tissues, organs, systems, body**. Each higher level is composed of components from the lower level, meaning that cells make up tissues, tissues make up organs, organs make up systems, and systems make up the whole body (refer to Figure 4-1 ■).

**Figure 4-1** Levels of organization of the body.



## Cells

Cells are the smallest structure of a body that has all of the properties of being alive: they respond to stimuli, they engage in metabolic activities, and they reproduce themselves. All of the tissues and organs in the body are composed of cells. Cells come in all shapes and sizes and perform a variety of functions for the body such as reproduction, hormone secretion, energy production, contraction, and conduction of electrical impulses.

**TERMINOLOGY TIDBIT** Cells were first seen by Robert Hooke over 300 years ago. To him, the rectangular shapes looked like prison cells, so he named them cells. It was a common practice for early anatomists to name an organ solely on its appearance.

## Tissues

When cells of the same type group together in a location and function together to perform a specific activity, they form tissue. The human body has four types of tissue: muscular tissue to produce movement, epithelial tissue to line all of

the body's inner and outer surfaces, connective tissue to support and protect body structures, and nervous tissue to conduct electrical impulses.

## Organs and Systems

Organs are composed of several different types of tissue that work as a unit to perform special functions. For example, the urinary bladder contains muscle tissue, nervous tissue, and epithelial tissue that allow it to safely store urine as it is produced and contract when it is time to eliminate it.

**Figure 4-2** The anatomical position: standing erect, gazing straight ahead, arms down at sides, palms facing forward, fingers extended, legs together, and toes pointing forward.



Several organs working in a coordinated manner to perform a complex function or functions comprise a system. To continue the above example, the urinary bladder plus the other urinary system organs—the kidneys, ureters, and urethra—work together to remove waste from our blood and eliminate it from the body.

As a general rule, the different medical specialties are dedicated to diagnosing and treating conditions involving specific systems. For the urinary system, nephrology specializes in the kidney and urology specializes in the remaining organs of the urinary system. This book is arranged by medical specialties and the organs and systems each is responsible for.

## Body

### Anatomical Position

When describing body positions or using directional terms, health professionals visualize the patient in the **anatomical position** (refer to Figure 4-2 ■).

**TERMINOLOGY TIDBIT** The term *anatomy* comes from combining two Greek words: *ana*, meaning *apart* and *tome*, meaning *to cut*, as it was necessary to cut apart the body in order to study its internal structure.

Therefore, it is not necessary to describe the patient's actual position. It does not matter whether the patient is lying down or sitting up, or whether the health professional is on the patient's right or left side. Unless stated otherwise, it is assumed that the patient is:

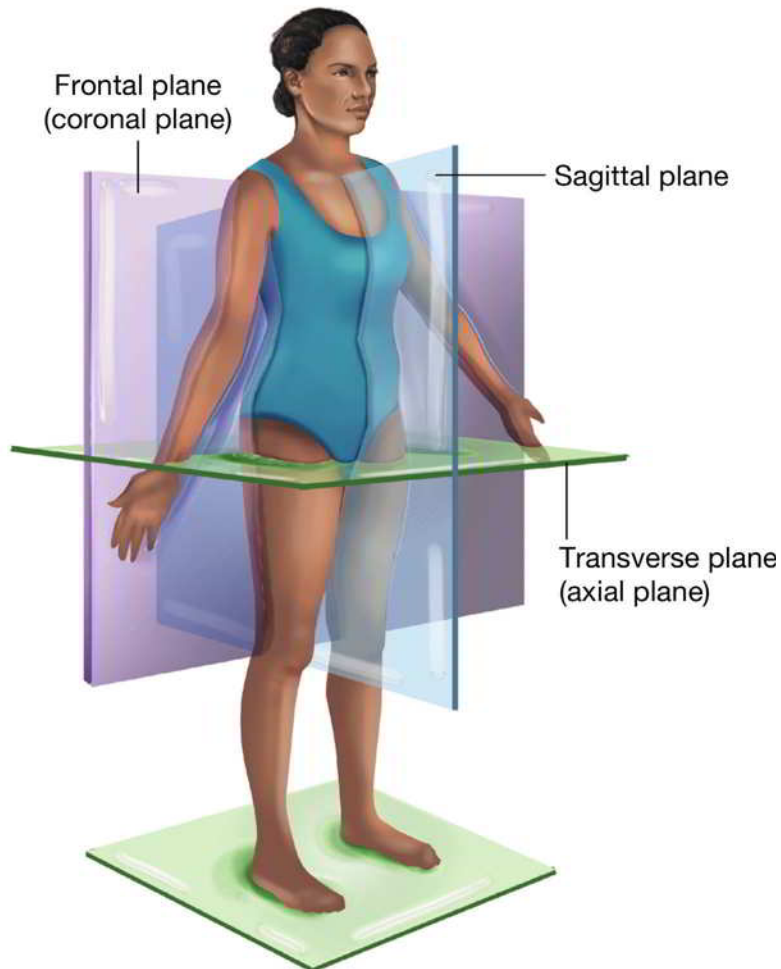
- Standing upright
- Legs together
- Toes pointing forward
- Arms down at sides
- Palms facing forward
- Fingers extended
- Eyes looking straight ahead



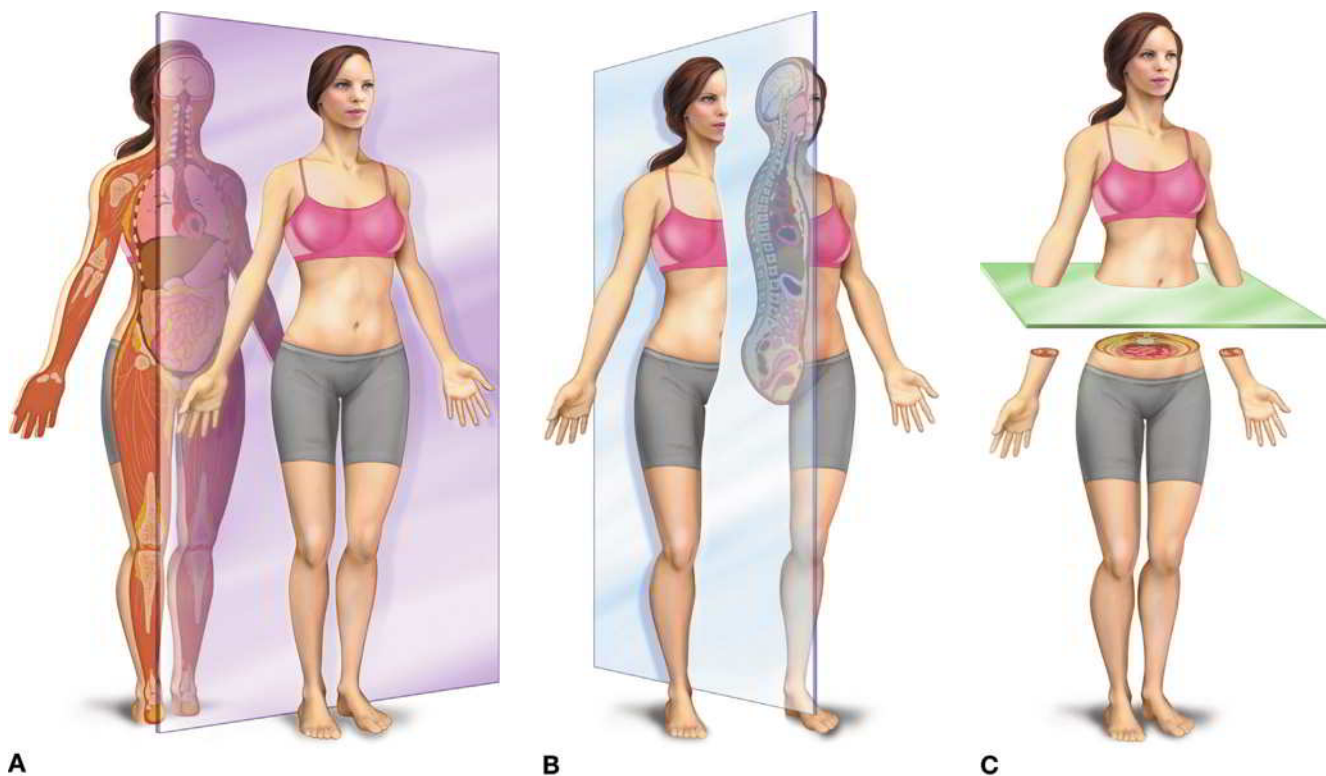
## Planes and Sections

The human body is three-dimensional. Therefore, it can be divided into sections along three different planes: frontal (coronal), sagittal, and transverse (refer to Figure 4-3 ■). A two-dimensional image of the body, for example, an X-ray, taken along one of the planes is called a *section*. Each plane yields a different section.

**Figure 4-3** The planes of the body; sagittal plane is vertical from front to back, the frontal plane is vertical from left to right, and the transverse plane is horizontal.



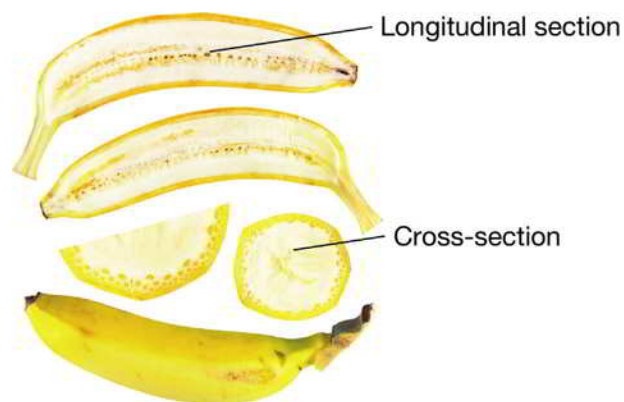
1. **Frontal plane (or coronal plane):** A vertical plane that runs from side to side; it slices the body into anterior and posterior portions; a cut along the frontal plane produces a **frontal section** or **coronal section** (refer to Figure 4-4A ■)
2. **Sagittal plane:** Also a vertical plane but runs from front to back; it slices the body into left and right portions; a cut along the sagittal plane produces a **sagittal section** (refer to Figure 4-4B ■); a line down the center of the body dividing it into equal left and right halves is called the **midsagittal line**



**Figure 4-4** Figures illustrating how the different body sections are formed; (A) frontal or coronal section, (B) sagittal section, (C) transverse or axial section.

**TERMINOLOGY TIDBIT** Imagine slicing down the length of a banana; that is a longitudinal section. Slicing across the banana, like you would to put it on your cereal, is a cross-section.

**Figure 4-5** (Kazakov Maksim/Shutterstock)



3. **Transverse plane (or axial plane):** Only horizontal plane; slices the body into upper and lower portions; a cut along the transverse plane produces a **transverse section** or **axial section** (refer to Figure 4-4C ■)

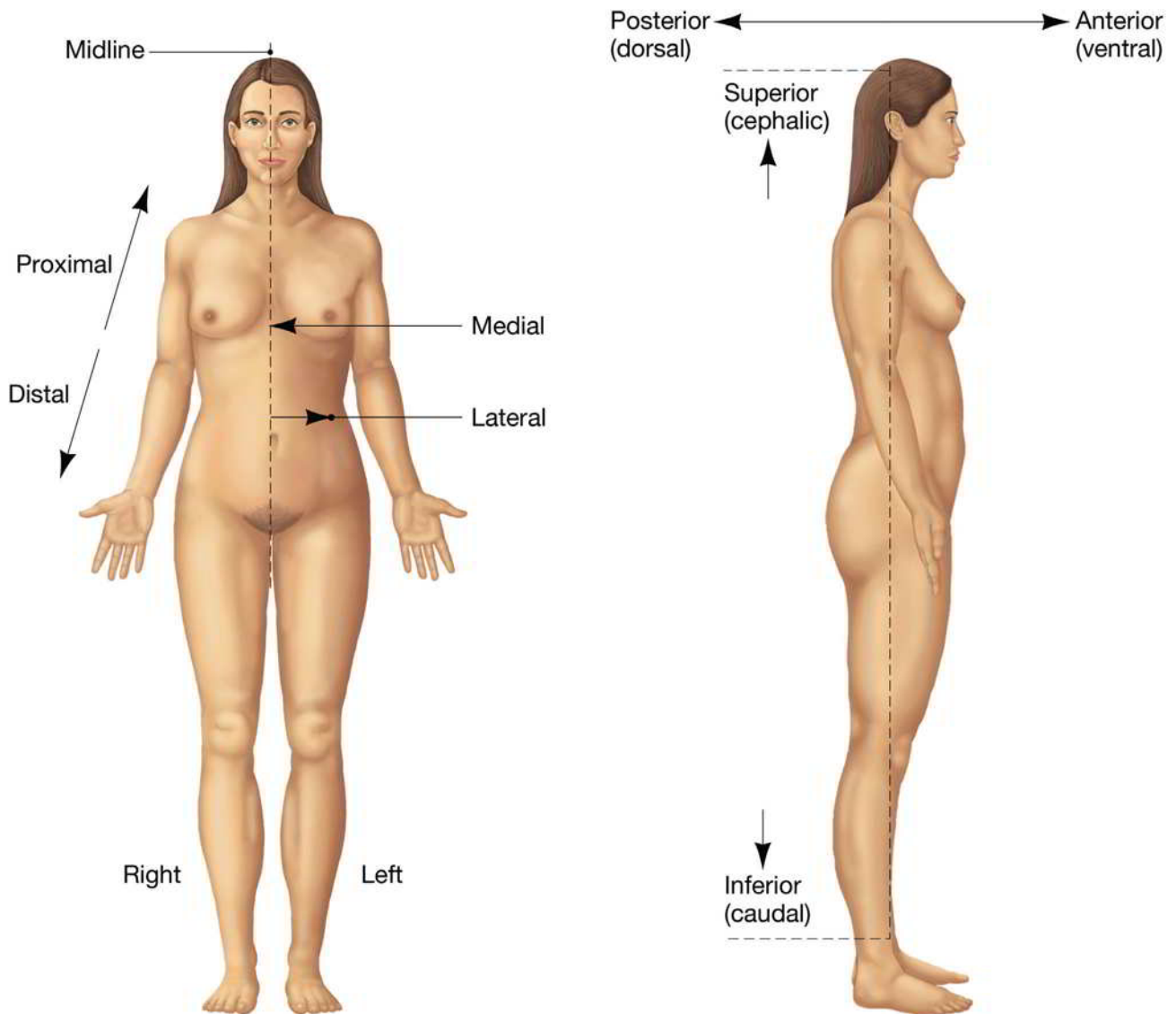
The terms **longitudinal section** and **cross-section** are often used to describe internal views of the body. A lengthwise slice along the long axis of a structure produces a longitudinal section. A cut down the length of the arm is an example of a longitudinal section. A cross-section is produced by a slice perpendicular to the long axis of a structure. A cut across the upper arm yields a cross-section view (refer to Figure 4-5 ■).

## Directional Terminology

Directional terms indicate the position of a structure *in relation* to another structure. For example, the heart is above the stomach. The position of these two organs relative to each other can be expressed as either the heart is superior to the stomach or the stomach is inferior to the heart. This example also demonstrates another characteristic of directional terms: They come in opposite pairs; for each directional term, there is a second term that means the opposite (refer to Figure 4-6 ■).

**TERMINOLOGY TIDBIT** Remember that when using directional terms, you assume that the patient is in the anatomical position unless otherwise noted.

**TERMINOLOGY TIDBIT** In radiology, the term *anteroposterior* (AP) is used to indicate that the image is taken from the front of the body through to the back. Likewise, the term *posteroanterior* (PA) indicates that the image is taken from the back of the body toward the front.



**Figure 4-6** Anterior and lateral views of the body illustrating directional terms.

## Building Directional Terms

Most directional terms are Latin-based terms and therefore can be built from word parts. They consist of a word root and an adjective suffix, usually **-ic**, **-ior**, or **-al**.

For each of the following word roots and suffixes, build the corresponding directional term on the first line. On the second line, write the translation of that term. Terms not built from word parts are simply presented with their definition. In this chapter, the word parts are being provided. Beginning with Chapter 5, terms will be built from only the definition. Pronunciations for these terms can be found in the Answer Key (Appendix IV) of this book.

1. **anter/o** + **-ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

2. **caud/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

3. **cephal/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

4. **deep** a term meaning *further below from the surface*

\_\_\_\_\_

5. **dist/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

6. **dors/o** + **-al**

**TERMINOLOGY TIDBIT** The combining form **dors/o** comes from the Latin word *dorsum*, meaning “the back.”

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

7. **infer/o** + **-ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

8. **later/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

9. **medi/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

10. **poster/o + -ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

11. **prone** term meaning to *lie face down* (refer to Figure 4-7A ■)

**TERMINOLOGY TIDBIT** The term *prone* comes from the Latin word *pronus*, meaning “leaning forward.”



**Figure 4-7A** The prone position. Note that instead of being face down, head is turned to the side for comfort. (Richard Logan/Pearson Education, Inc)

12. **proxim/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

13. **superficial** a term meaning *nearer the surface*

14. **super/o + -ior**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

15. **supine** a term meaning to *lie face up* (refer to Figure 4-7B ■)

**TERMINOLOGY TIDBIT** The term *supine* comes from the Latin word *supinus*, meaning “bent backward.”



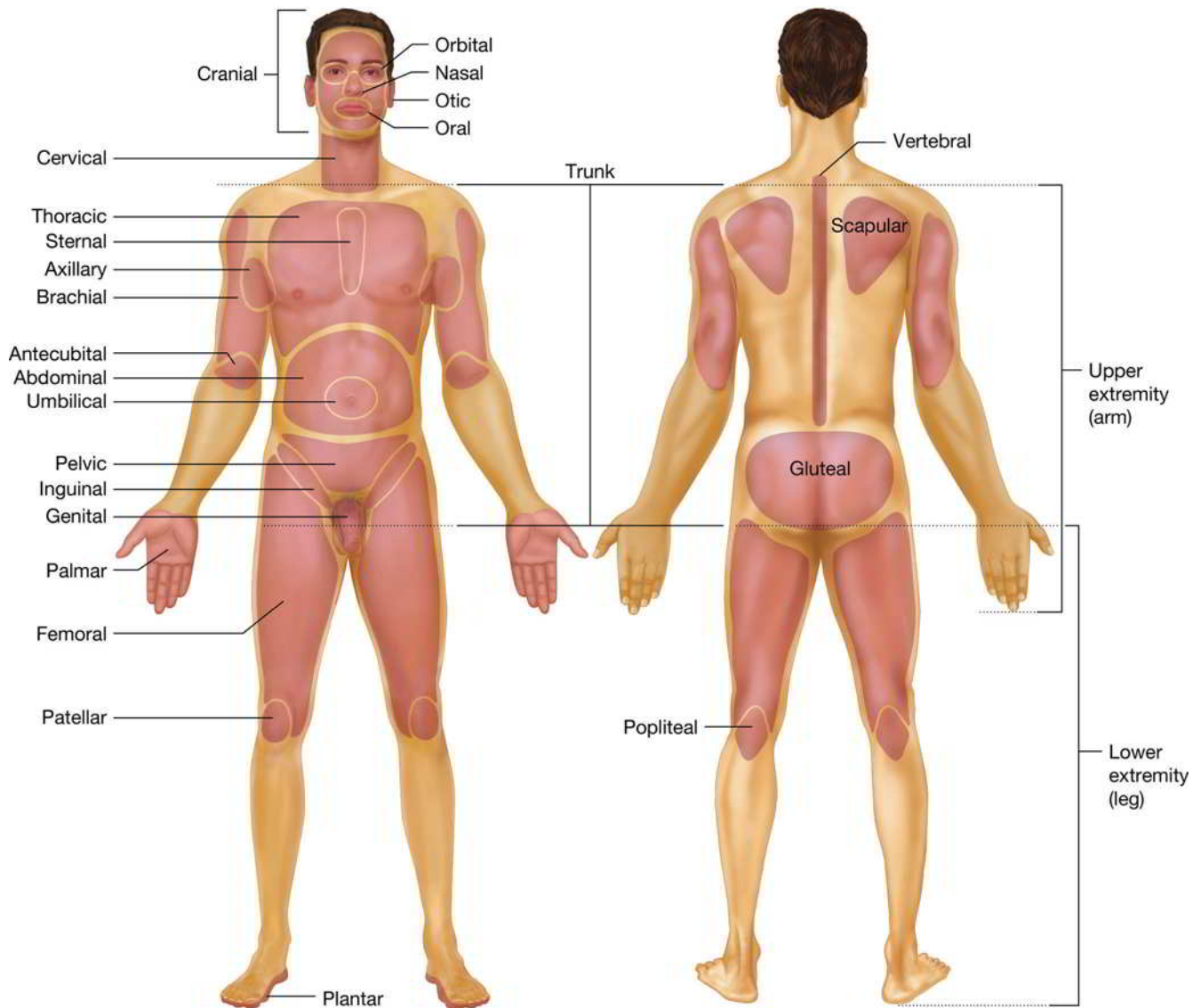
**Figure 4-7B** The supine position. (Richard Logan/Pearson Education, Inc)

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

## Body Region Terminology

The different regions of the body are named so that referring to them is easy and accurate. Many are named for a body structure underlying the region. For example, the sternal region overlies the sternum and the abdominal region overlies the abdominal cavity (refer to Figure 4-8 ■).



**Figure 4-8** Anterior and posterior views of the body illustrating the location of various body regions.

## Building Body Region Terms

Like directional terms, many body region terms are Latin-based words consisting of a word root and suffix.

For each of the following combinations of word parts, build the corresponding term on the first line. On the second line, write the translation of that term. Terms not built from word parts are simply defined. One cautionary note: Some of these terms may appear to be built from word parts, but they are not.

1. **abdomin/o** + **-al**

**TERMINOLOGY TIDBIT** Now that you are learning medical terminology, it is important to use these terms instead of common phrases and terms. Many people commonly say *stomach* (an organ) when they actually mean *abdomen* (a body region).

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

2. **ante-** + **cubit/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

3. **axillary** a term meaning *underarm area*

\_\_\_\_\_

4. **brachi/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

5. **cervic/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

6. **crani/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

7. **femor/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

8. **genit/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

9. **glute/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

10. **inguin/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

11. **lower extremity (LE)** a phrase used to refer to the entire leg

\_\_\_\_\_

---

12. **nas/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

13. **orbit/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

14. **or/o + -al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

15. **ot/o + -ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

16. **palmar** a term meaning *the palm of the hand*

\_\_\_\_\_



17. **patell/o** + **-ar**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

18. **pelv/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

19. **plantar** a term meaning *the sole of the foot*

\_\_\_\_\_

---

20. **popliteal** a term meaning *the creased area behind the knee*

\_\_\_\_\_

---

21. **scapul/o** + **-ar**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

22. **stern/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

23. **thorac/o** + **-ic**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

---

24. **trunk** a term meaning *the torso, excluding the head and extremities*

\_\_\_\_\_

---

25. **umbilical** a term meaning *the region around the navel*

\_\_\_\_\_

---

26. **upper extremity** a phrase used to refer to the entire arm

\_\_\_\_\_

---

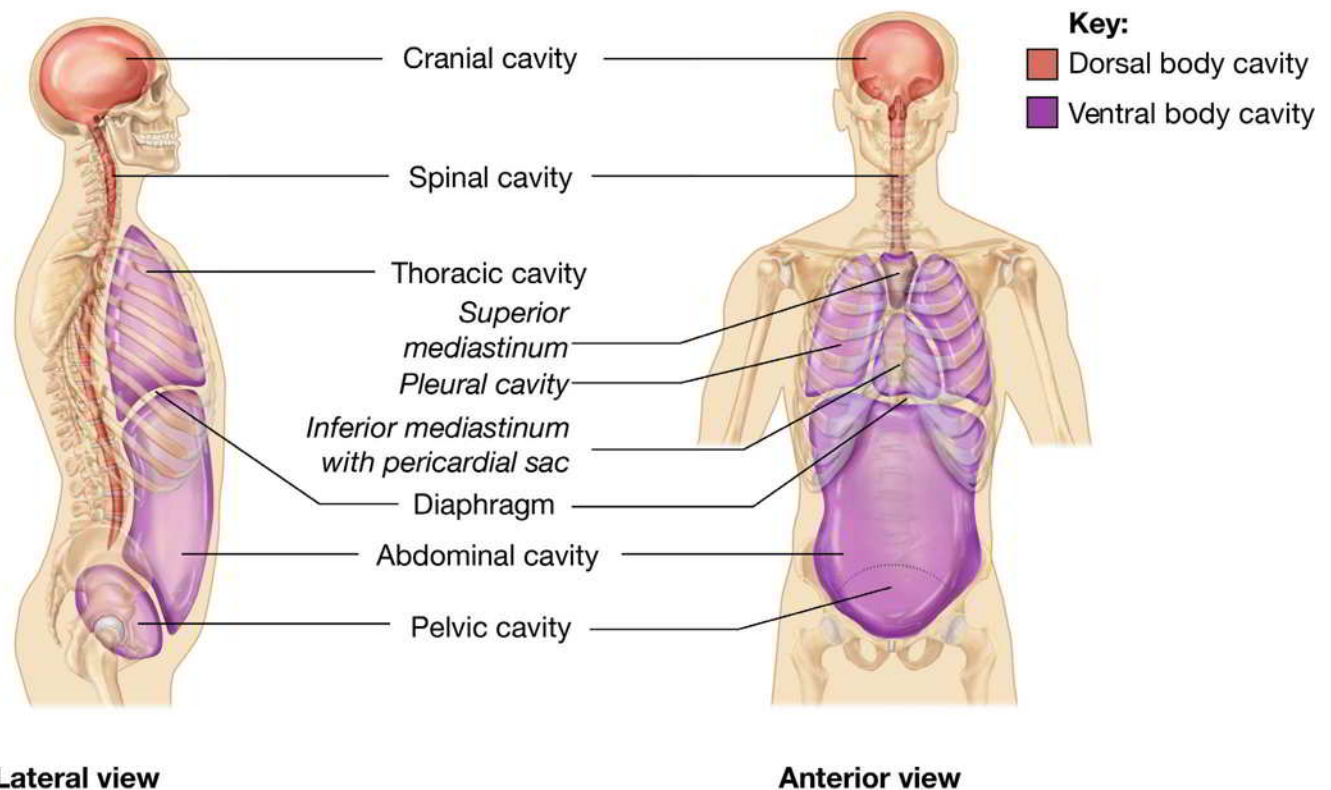
## 27. **vertebr/o** + **-al**

a. Term \_\_\_\_\_

b. Translation \_\_\_\_\_

## Body Cavities

The majority of the body's internal **organs**, or **viscera**, are found within one of four body cavities (refer to Figure 4-9 ■). Two of these cavities, the **cranial cavity** and **spinal cavity**, are on the dorsal side of the body. The other two, the **thoracic cavity** and **abdominopelvic cavity**, are **ventral**. The organs within the cavities are usually found within protective membrane sacs.



**Figure 4-9** The dorsal (in red) and ventral (in purple) body cavities.

CAVITY	DESCRIPTION
<b>Cranial</b> <b>crani/o</b> = skull <b>-al</b> = pertaining to	Dorsal cavity; lies inside the skull and contains the brain; the brain is protected by three layers of membranes called the <b>meninges</b> ( <i>men-IN-jeez</i> )
<b>Spinal</b> <b>spin/o</b> = spine <b>-al</b> = pertaining to	Dorsal cavity; formed by a canal through the vertebrae; contains the spinal cord; the spinal cord is also protected by the meninges

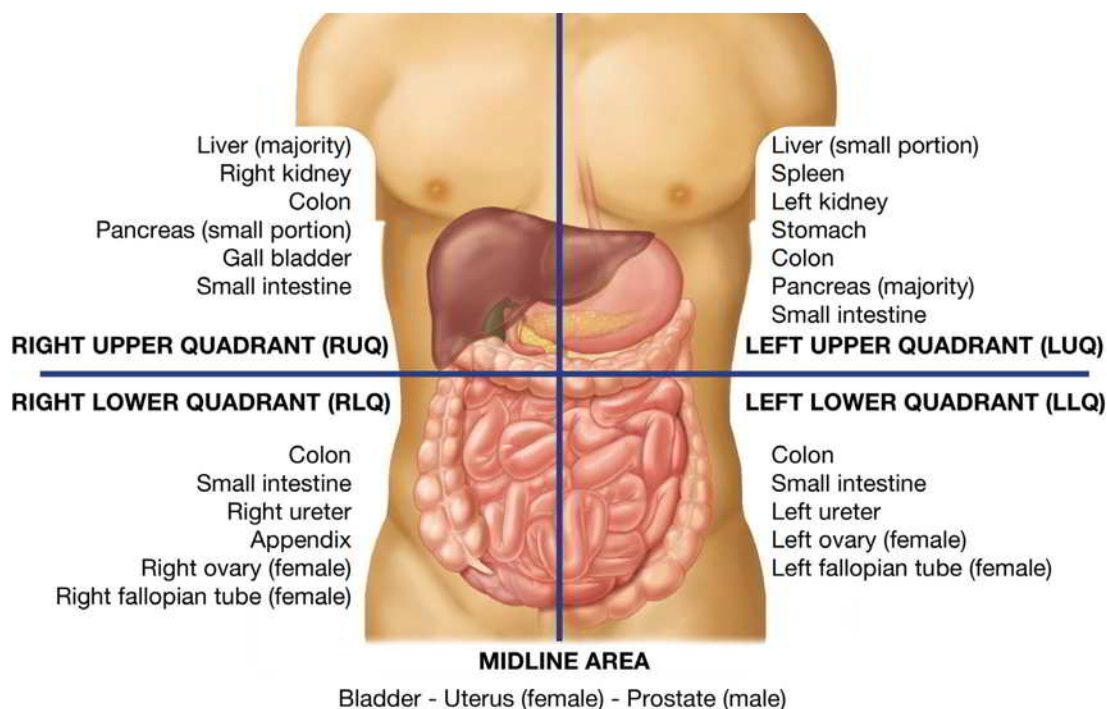
CAVITY	DESCRIPTION
<b>Thoracic</b> <b>thorac/o</b> = chest <b>-ic</b> = pertaining to	<p>Superior of two ventral cavities; found enclosed by the ribs and separated from the abdominopelvic cavity by the <b>diaphragm</b> (<i>DYE-ah-frag</i>) muscle; contains organs such as lungs, heart, esophagus, trachea, aorta, and thymus gland; can be subdivided into one central and two lateral regions</p> <ul style="list-style-type: none"> <li>• <b>Mediastinum</b> (<i>mee-dee-as-TYE-num</i>): central region; contains heart, trachea, esophagus, aorta, superior vena cava, and thymus gland; the heart is encased in the <b>pericardial sac</b> (<i>pair-ih-KAR-dee-al</i>)</li> <li>• <b>Pleural cavities</b> (<i>PLOO-ral</i>): lateral regions; each contains a lung; sac protecting the lungs is called the <b>pleura</b> (<i>PLOO-rah</i>)</li> </ul>
<b>Abdominopelvic</b> <b>abdomin/o</b> = abdomen <b>pelv/o</b> = pelvis <b>-ic</b> = pertaining to	<p>Inferior of two ventral cavities; large cavity generally subdivided into abdominal and pelvic cavities; however, there is no clear structure indicating where one cavity stops and the other begins; organs of abdominopelvic cavity are protected by a membrane covering called the <b>peritoneum</b> (<i>pair-ih-toh-NEE-um</i>)</p> <ul style="list-style-type: none"> <li>• <b>Abdominal cavity</b> (<i>ab-DOM-ih-nal</i>): houses the stomach, liver, gallbladder, spleen, pancreas, small intestine, and most of large intestine</li> <li>• <b>Pelvic cavity</b> (<i>PEL-vik</i>): contains the urinary bladder, ureters, urethra, and last portion of large intestine in both genders; in females also contains the uterus, ovaries, uterine (fallopian) tubes, and vagina; in males also contains the prostate gland, seminal vesicles, bulbourethral gland, and portion of the vas deferens</li> </ul>

The only major abdominopelvic organs that lie outside of the peritoneum are the kidneys. These organs are located along either side of the vertebral column just under the lower ribs. Because they are behind the peritoneum, their position is called **retroperitoneal** (*[ret-roh-pair-ih-toh-NEE-al]* **retro-** = backward, behind).

#### Divisions of the Abdominopelvic Cavity

Because it is so large, the abdominopelvic cavity is commonly divided into regions. Health personnel use one of two methods to do this: **clinical divisions** or **anatomical divisions**.

When using the clinical divisions, the abdominopelvic cavity is divided into four equal quadrants that cross at the navel refer to Figure 4-10 ■).



**Figure 4-10** The clinical divisions of the abdomen; the abdominopelvic cavity is divided into four quadrants.

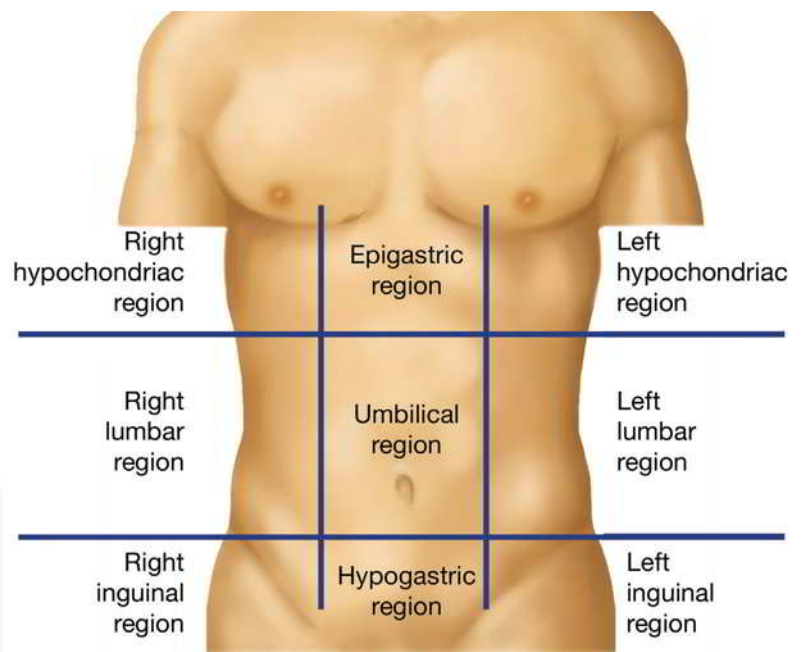
Each quadrant is named by its position as follows:

CLINICAL DIVISION	MAJOR ORGANS FOUND WITHIN
<b>Right upper quadrant (RUQ)</b>	Right lobe of liver (bulk of liver), right kidney, upper portion of right ureter, pancreas (small section), gallbladder, and portions of large and small intestines
<b>Right lower quadrant (RLQ)</b>	Lower portion of right ureter, portions of large and small intestines, appendix, right ovary and uterine tube (in females), and right vas deferens and seminal vesicle (in males)
<b>Left upper quadrant (LUQ)</b>	Stomach, spleen, left lobe of liver (smaller), pancreas (most of the organ), left kidney, upper portion of left ureter, portions of large and small intestines
<b>Left lower quadrant (LLQ)</b>	Lower portion of left ureter, portions of large and small intestines, sigmoid colon, left ovary and uterine tube (in females), and left vas deferens and seminal vesicle (in males)

Note, the urinary bladder, rectum, uterus (in females), and prostate gland (in males) are midline structures and therefore do not actually fall into any one quadrant.

Anatomical divisions are smaller. This system divides the abdominopelvic cavity into nine sections like a tic-tac-toe board (refer to Figure 4-11 ■).

**Figure 4-11** The anatomical divisions of the abdomen; the abdominopelvic cavity is divided into nine regions.



**TERMINOLOGY TIDBIT** The term *hypochondriac* is also used to describe a person who persistently believes they are ill when there is no obvious cause for illness. This usage originated with the ancient Greeks, who believed that imbalances in the organs of the hypochondriac region resulted in melancholy or morbid feelings.

The nine regions are as follows:

ANATOMICAL DIVISION	LOCATION
<b>Right hypochondriac</b> <i>(high-poh-KON-dree-ak)</i> <b>hypo-</b> = below, insufficient <b>chondr/o</b> = cartilage <b>-iac</b> = pertaining to	Right lateral side of upper row under lower ribs that are connected to the sternum by cartilage
<b>Epigastric</b> <i>(ep-ih-GAS-trik)</i> <b>epi-</b> = above <b>gastr/o</b> = stomach <b>-ic</b> = pertaining to	Middle area of upper row overlying stomach
<b>Left hypochondriac</b>	Left lateral side of upper row
<b>Right lumbar</b> ( <i>LUM-bar</i> ) <b>lumb/o</b> = low back <b>-ar</b> = pertaining to	Right lateral side of middle row near waist
<b>Umbilical</b> ( <i>um-BIL-ih-kal</i> )	Middle area of middle row containing navel (also called the <i>umbilicus</i> )
<b>Left lumbar</b>	Left lateral side of middle row
<b>Right iliac</b> ( <i>IL-ee-ak</i> ) <b>ili/o</b> = ilium <b>ac</b> = pertaining to	<ul style="list-style-type: none"> <li>• Right lateral side of lower row near groin</li> <li>• Also called <b>right inguinal</b> (<b>inguin/o</b> = groin; <b>-al</b> = pertaining to [<i>ING-gwih-nal</i>])</li> </ul>
<b>Hypogastric</b> <b>hypo-</b> = below, insufficient <b>gastr/o</b> = stomach <b>-ic</b> = pertaining to	Middle area of lower row
<b>Left iliac</b> <i>(IL-ee-ak)</i> <b>ili/o</b> = ilium <b>-ac</b> = pertaining to	<ul style="list-style-type: none"> <li>• Left lateral side of lower row near groin</li> <li>• Also called <b>left inguinal</b> (<b>inguin/o</b> = groin; <b>-al</b> = pertaining to)</li> </ul>

# Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

## PRACTICE

### Directional Terms

For each of the following directional terms, write a directional term that could be used to indicate the opposite direction.

1. anterior \_\_\_\_\_
2. caudal \_\_\_\_\_
3. cephalic \_\_\_\_\_
4. deep \_\_\_\_\_

(continued on next page)

5. distal \_\_\_\_\_

6. dorsal \_\_\_\_\_

7. inferior \_\_\_\_\_

8. lateral \_\_\_\_\_

9. medial \_\_\_\_\_

10. posterior \_\_\_\_\_

11. proximal \_\_\_\_\_

12. superficial \_\_\_\_\_

13. superior \_\_\_\_\_

14. ventral \_\_\_\_\_

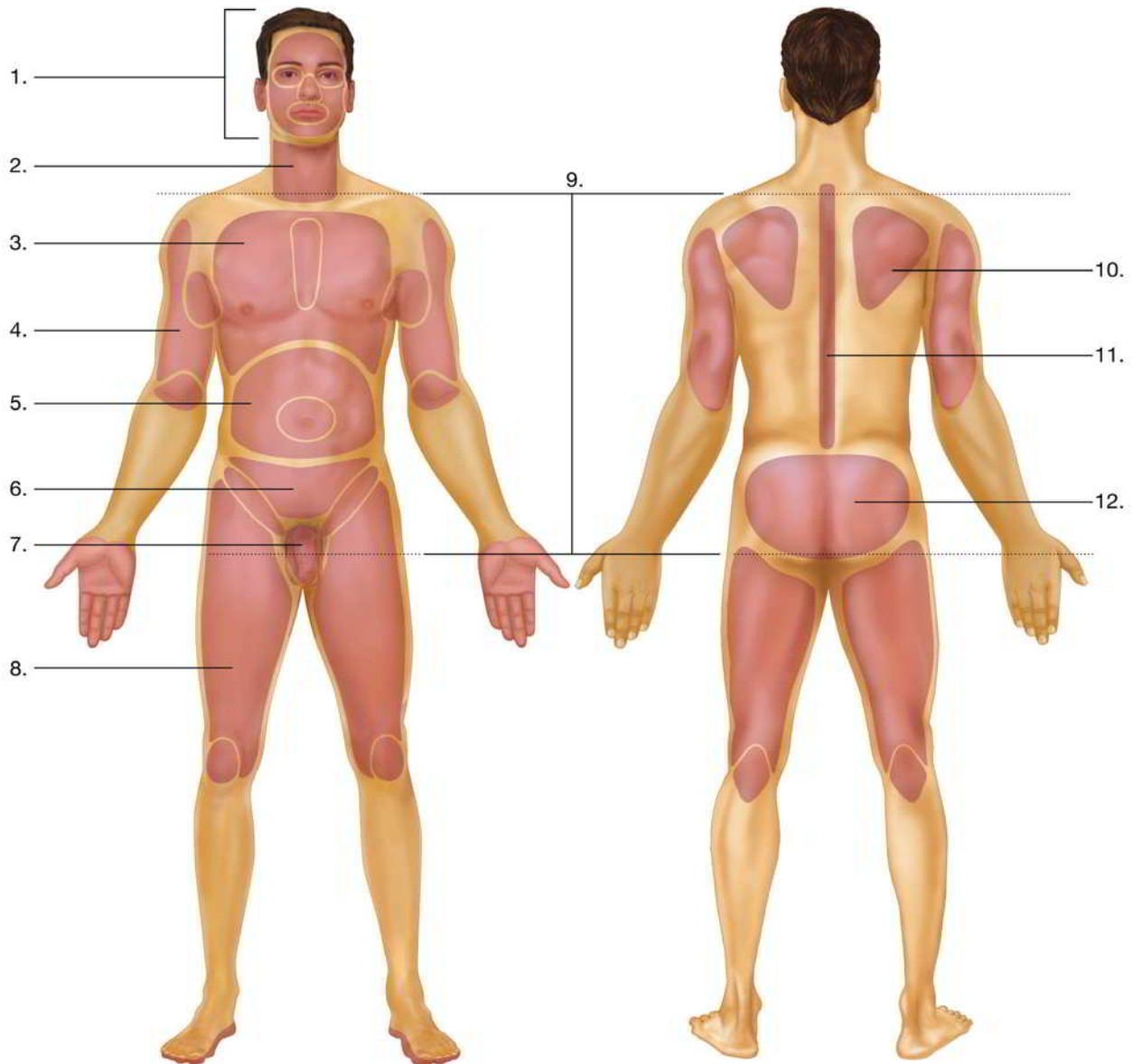
15. supine \_\_\_\_\_

Fill in the blank to complete each of the following sentences.

- 50 Chapter 4

## Labeling Exercise—External Surface Anatomy

Write the name of each area on the numbered line.



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

## Matching—Planes and Sections

Match each body plane and section to its definition. Answers may be used more than once.

- |  |                         |
|--|-------------------------|
| 1. Also called the <i>coronal plane</i> _____                                | A. Frontal plane        |
| 2. Section produced by cut at right angle to long axis of structure<br>_____ | B. Sagittal plane       |
| 3. Plane that divides the body into left and right portions<br>_____         | C. Transverse plane     |
| 4. The two vertical planes _____   | D. Longitudinal section |
| 5. Plane that divides the body into anterior and posterior portions<br>_____ | E. Frontal section      |
| 6. Section produced by the coronal plane _____                               | F. Cross-section        |
| 7. Divides the body into upper and lower portions<br>_____                   |                         |
| 8. The only horizontal plane _____   |                         |
| 9. Section cut along long axis of the structure _____                        |                         |
| 10. Also called the <i>axial plane</i> _____                                 |                         |

## Matching—Organs and Clinical Divisions of the Abdominopelvic Cavity

Match each organ to the quadrant in which you would expect to find the majority of that organ. Answers may be used more than once.

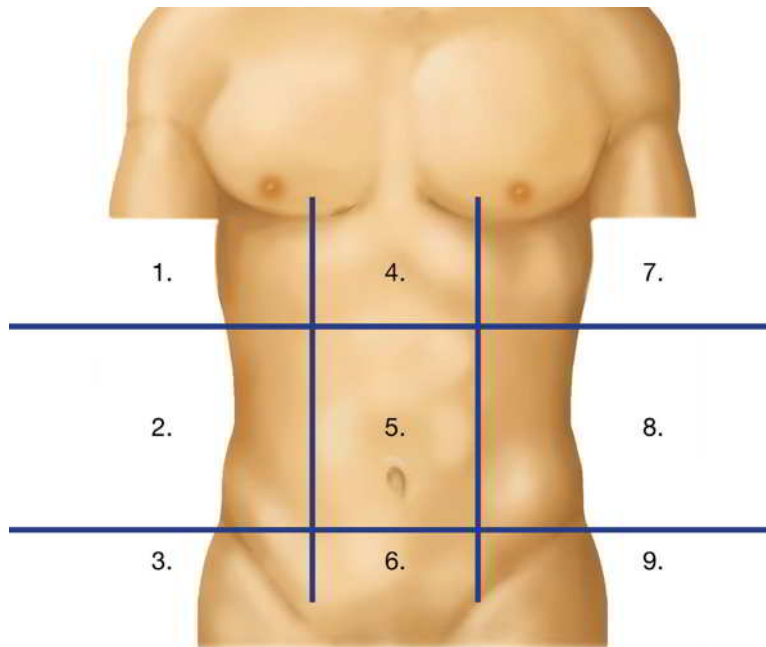
- |                          |                     |
|--------------------------|---------------------|
| 1. Liver _____           | A. RUQ              |
| 2. Left ureter _____     | B. RLQ              |
| 3. Spleen _____          | C. LUQ              |
| 4. Stomach _____         | D. LLQ              |
| 5. Large intestine _____ | E. In all quadrants |
| 6. Gallbladder _____     | F. Midline          |
| 7. Right ovary _____     |                     |
| 8. Sigmoid colon _____   |                     |
| 9. Left kidney _____     |                     |
| 10. Uterus _____         |                     |



- 11. Pancreas \_\_\_\_\_
- 12. Small intestine \_\_\_\_\_
- 13. Appendix \_\_\_\_\_

## Labeling Exercise—Anatomical Divisions of the Abdominopelvic Cavity

Write the name for each anatomical division of the abdominopelvic cavity on the line provided.



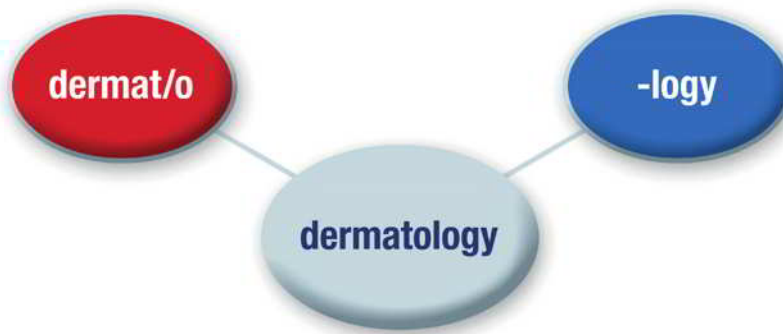
- |          |          |
|----------|----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ |          |

## SECTION II Medical Specialties

# 5

## Dermatology

### Integumentary System



### Learning Objectives

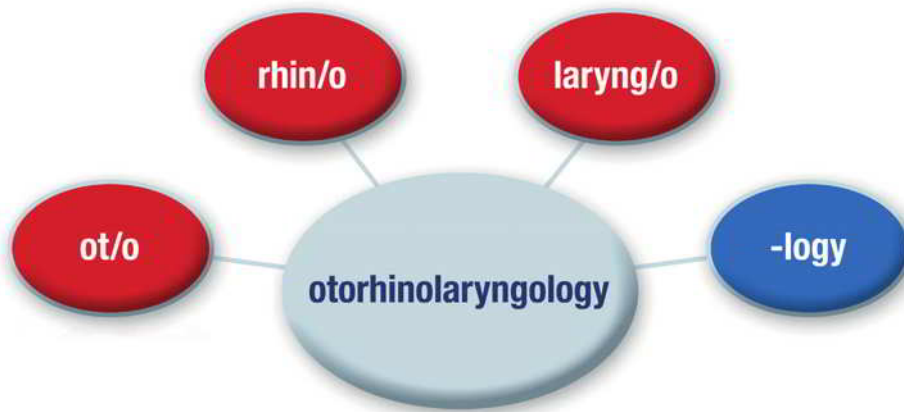
Upon completion of this chapter, you will be able to:

- 5-1 Explain the medical specialty of dermatology.
- 5-2 Understand the functions of the skin.
- 5-3 Identify the structures treated in dermatology.
- 5-4 Define dermatology-related combining forms, prefixes, and suffixes.
- 5-5 Build dermatology medical terms from word parts.
- 5-6 Explain dermatology medical terms.
- 5-7 Use dermatology abbreviations.
- 5-8 Apply new knowledge of dermatology terms to analyze real-world practice activities.

# 17

## Otorhinolaryngology

### The Ears, Nose, and Throat



### Learning Objectives

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

- 17-1** Explain the medical specialty of otorhinolaryngology.
- 17-2** Understand the function of the ears, nose, and throat.
- 17-3** Identify the organs and structures treated in otorhinolaryngology.
- 17-4** Define otorhinolaryngology-related combining forms, prefixes, and suffixes.
- 17-5** Build otorhinolaryngology medical terms from word parts.
- 17-6** Explain otorhinolaryngology medical terms.
- 17-7** Use otorhinolaryngology abbreviations.
- 17-8** Apply new knowledge of otorhinolaryngology terms to analyze real-world practice activities.

# A Brief Introduction to Otorhinolaryngology

The medical specialty of **otorhinolaryngology** (*oh-toh-rye-noh-lair-in-GALL-oh-jee* [ORL]) focuses on a specific region of the body, the head and the neck, rather than on a whole body system, such as gastroenterology is to the gastrointestinal system or neurology is to the nervous system. As a group, the organs in the head and neck are responsible for two main functions: to house sensory receptors and to provide passageways for air, food, and drink.

These organs and their functions include the:

- **Ears**—hearing and equilibrium (balance).
- **Nose**—smell and entrance for air into the body.
- **Pharynx** (*FAIR-inks*)—carries air to the larynx and trachea, and food and drink to the esophagus.
- **Larynx** (*LAIR-inks*)—speech.
- **Trachea** (*TRAY-kee-ah*)—brings air to the lungs.

**Otorhinolaryngologists** (*oh-toh-rye-noh-lair-in-GALL-oh-jists* [ORL]) are physicians who specialize in diagnosing and treating conditions affecting the organs of the head and neck. A family physician or an internist can also treat these conditions, but the ORL physician is a specialist in treating problems with hearing, balance, swallowing, and voice as well as head and neck tumors and problems affecting the upper airways (nose, sinuses, pharynx, larynx, and trachea). This medical specialty is also referred to as **otolaryngology** (*oh-toh-lair-in-GALL-oh-jee*) and commonly called an **ears, nose, and throat doctor** (ENT). To learn more about otorhinolaryngology, visit the website of the American Academy of Otolaryngology at [www.entnet.org](http://www.entnet.org).

**Audiology** (*aw-dee-ALL-oh-jee*) is the branch of science that studies hearing. **Audiologists** (*aw-dee-ALL-oh-jists*) perform tests to measure partial or complete hearing loss and determine the reason for hearing loss. Audiologists also prescribe and train people in the use of devices to improve hearing and provide hearing rehabilitation. To learn more about audiology, visit the consumer website of the American Academy of Audiology at [www.howsyourhearing.org](http://www.howsyourhearing.org).

## Otorhinolaryngology Combining Forms

The following list presents combining forms closely associated with the head and neck region and commonly used for building and defining otorhinolaryngology terms:

<b>adenoid/o</b>	adenoid	<b>laryng/o</b>	larynx (voice box)	<b>sinus/o</b>	sinus
<b>audi/o</b>	hearing	<b>myring/o</b>	tympanic membrane (eardrum)	<b>staped/o</b>	stapes
<b>audit/o</b>	hearing	<b>nas/o</b>	nose	<b>tonsill/o</b>	tonsil
<b>aur/o</b>	ear	<b>ot/o</b>	ear	<b>trache/o</b>	trachea
<b>cochle/o</b>	cochlea	<b>pharyng/o</b>	pharynx (throat)	<b>tympan/o</b>	tympanic membrane (eardrum)
<b>epiglott/o</b>	epiglottis	<b>rhin/o</b>	nose		
<b>labyrinth/o</b>	labyrinth (inner ear)				

The following list presents combining forms that are not specific to the ears, nose, or throat but are also commonly used for building and defining otorhinolaryngology terms:

<b>gastr/o</b>	stomach	<b>neur/o</b>	nerve
<b>myc/o</b>	fungus	<b>py/o</b>	pus

## Suffix Review

These suffixes introduced in Chapter 2 are being reviewed in this chapter because they are commonly used to build otorhinolaryngology terms:

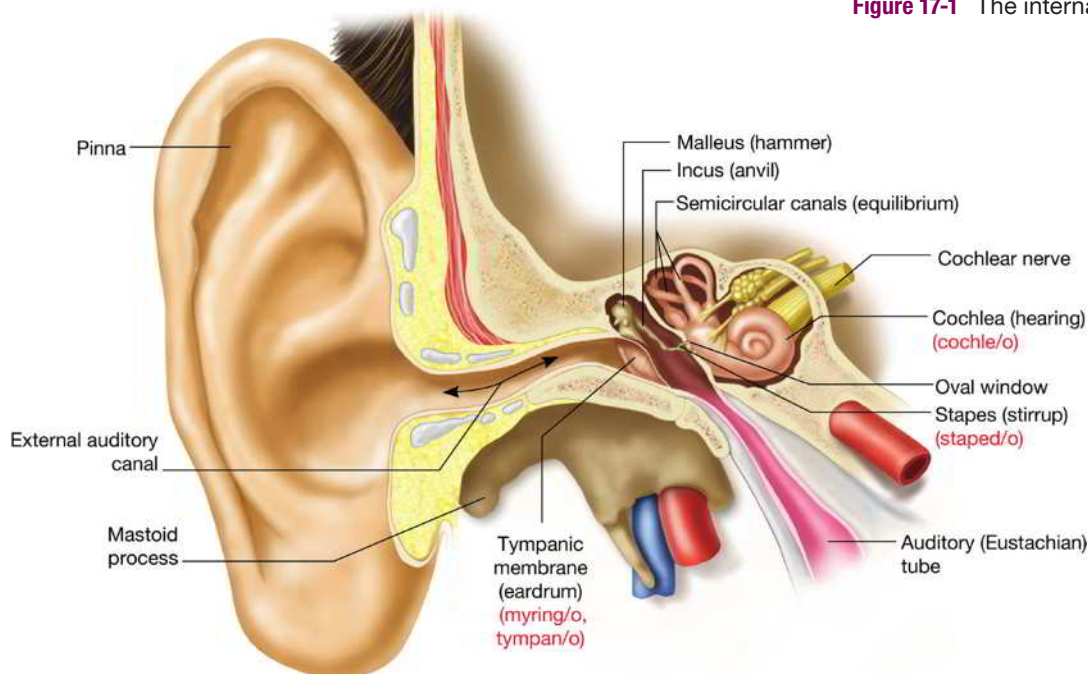
<b>-al</b>	pertaining to	<b>-megaly</b>	enlarged	<b>-plegia</b>	paralysis condition
<b>-algia</b>	pain condition	<b>-meter</b>	instrument for measuring	<b>-rrhea</b>	discharge
<b>-ar</b>	pertaining to	<b>-metry</b>	process of measuring	<b>-rrhexis</b>	rupture
<b>-eal</b>	pertaining to	<b>-oma</b>	tumor, mass	<b>-sclerosis</b>	hardening
<b>-ectomy</b>	surgical removal	<b>-ory</b>	pertaining to	<b>-scope</b>	instrument for viewing
<b>-emetic</b>	pertaining to vomiting	<b>-osis</b>	abnormal condition	<b>-scopy</b>	process of visually examining
<b>-gram</b>	a record	<b>-osmia</b>	sense of smell condition	<b>-spasm</b>	involuntary muscle contraction
<b>-ic</b>	pertaining to	<b>-phonia</b>	voice condition	<b>-stenosis</b>	narrowing
<b>-itis</b>	inflammation	<b>-plasty</b>	surgical repair	<b>-tomy</b>	cutting into
<b>-logist</b>	one who studies				
<b>-logy</b>	study of				

## Prefix Review

These prefixes introduced in Chapter 3 are being reviewed here because they are commonly used to build otorhinolaryngology terms:

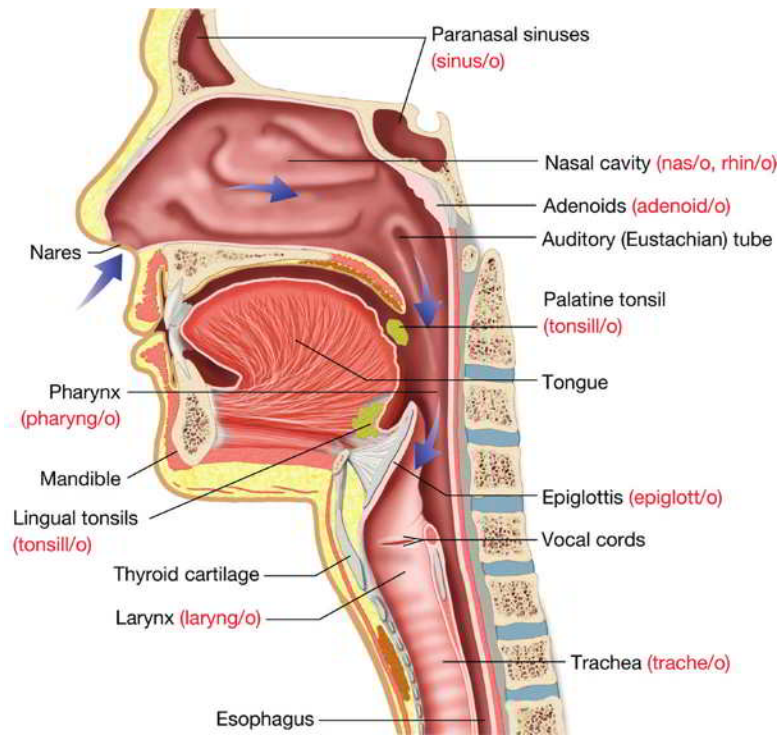
<b>a-</b>	without	<b>de-</b>	without	<b>hyper-</b>	excessive
<b>an-</b>	without	<b>dys-</b>	abnormal, difficult, painful	<b>pan-</b>	all
<b>anti-</b>	against	<b>endo-</b>	within, inner	<b>para-</b>	beside, two like parts of a pair

## Organs and Structures Commonly Treated in Otorhinolaryngology



**Figure 17-1** The internal structures of the ear.

**Figure 17-2** Sagittal section of head and neck showing the organs of the upper respiratory system: nasal cavity, pharynx, larynx, and trachea.



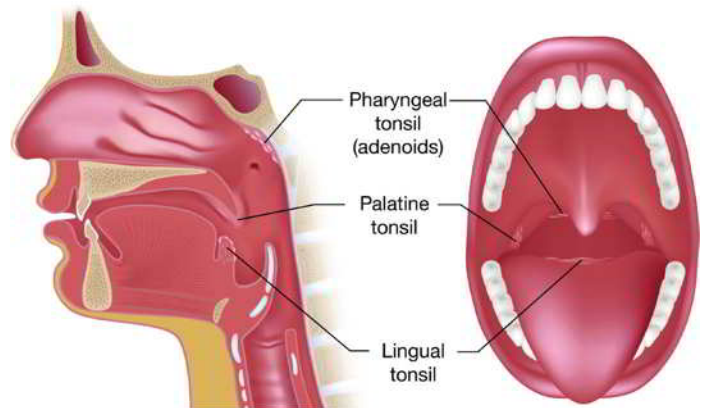
## Building Otorhinolaryngology Terms

This section presents word parts most often used to build otorhinolaryngology terms. Following the explanation of the term, you have the opportunity to begin building your medical vocabulary. Read the meaning for each term and then fill in the blanks to build a single medical term. Use the slashes to divide prefixes, word roots, combining vowels, and suffixes. To help you out, you will find a key to the word parts underneath the blanks: **wr** for word roots, **p** for prefix, **cv** for combining vowel, and **s** for suffix. Remember that not every term will contain all these word parts. As you gain experience, this process becomes easier. Pronunciations for these terms can be found in the Answer Key (Appendix IV) of this book.

- adenoid/o**—combining form meaning **adenoid** (AD-eh-noyd); plural is **adenoids** (AD-eh-noydz)

One of three types of **tonsils** (TAHN-sulls) located in pharynx; also called **pharyngeal tonsils** (fair-IN-jee-al / TAHN-sulls); tonsils house large number of white blood cells that protect body by removing foreign invaders from air, food, and drink passing through pharynx (refer also to Figure 17-2)

**Figure 17-3** Location of the three types of tonsils.  
(Alila Medical Media/Shutterstock)



- surgical removal of adenoid
- adenoid inflammation

_____ / _____
<b>wr</b> <span style="float: right;"><b>s</b></span>
_____ / _____
<b>wr</b> <span style="float: right;"><b>s</b></span>



## 2. **audi/o**—combining form meaning **hearing**

- a. study of hearing
- b. one who studies hearing
- c. process of measuring hearing
- d. instrument for measuring hearing
- e. record of hearing

<b>wr</b>	/	<b>cv</b>	/	<b>s</b>
<b>wr</b>	/	<b>cv</b>	/	<b>s</b>
<b>wr</b>	/	<b>cv</b>	/	<b>s</b>
<b>wr</b>	/	<b>cv</b>	/	<b>s</b>
<b>wr</b>	/	<b>cv</b>	/	<b>s</b>

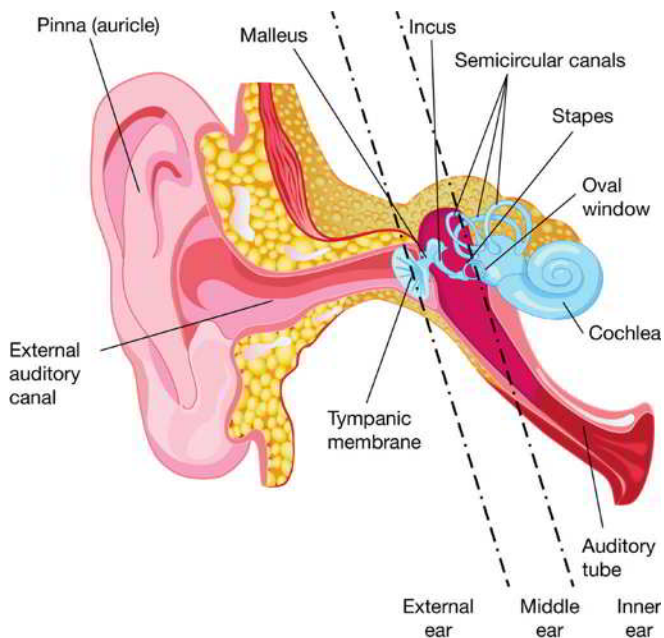
## 3. **audit/o**—combining form meaning **hearing**

pertaining to hearing

<b>wr</b>	/	<b>s</b>
-----------	---	----------

## 4. **aur/o**—combining form meaning **ear**; plural is **ears**

Responsible for both **hearing** and **equilibrium** (balance); divided into **external ear**, **middle ear**, and **inner ear**; **pinna** (*PIN-ah*) also called **auricle** (*AW-rih-kl*) captures sound waves and funnels them into **external auditory canal** (*AW-dih-tor-ee*); sound waves strike **tympanic membrane** (*tim-PAN-ik* [eardrum]), causing it to vibrate; three tiny bones (**ossicles** [*OSS-ih-kls*]) in middle ear—the **malleus** (*MAL-ee-us*), **incus** (*ING-kus*), and **stapes** (*STAY-pee-z*)—conduct this vibration across middle ear from tympanic membrane to **oval window**; oval window movement initiates vibrations in fluid inside inner ear; vibrating fluid bends hair cells in **cochlea** (*KOH-klee-ah*), which stimulates nerve endings; **cochlear nerve** (*KOH-klee-ar*) sends message to the brain; inner ear also contains organs for equilibrium, **semicircular canals** (refer also to Figure 17-1)



**Figure 17-4** Structure of the ear. (Snapgalleria/Shutterstock)

**TERMINOLOGY TIDBIT** The three ossicles in the middle ear are the tiniest true bones in the body and are commonly called by terms that describe their shape—the malleus is the hammer, the incus is the anvil, and the stapes is the stirrup.

pertaining to ear

<b>wr</b>	/	<b>s</b>
-----------	---	----------

5. **cochle/o**—combining form meaning **cochlea** (KOH-klee-ah); plural is **cochleae** (KOH-klee-ee) or **cochleas** (KOH-klee-ahz)

Part of inner ear containing hair cells responsible for hearing; shaped like a coiled snail shell (refer again to Figures 17-1 and 17-4)

- a. pertaining to cochlea

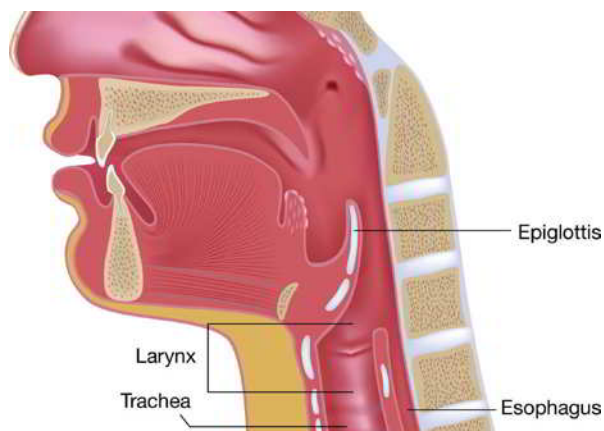
\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

- b. cochlea inflammation

\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

6. **epiglott/o**—combining form meaning **epiglottis** (ep-ih-GLOT-iss); plural is **epiglottides** (ep-ih-GLOT-ih-deez) or **epiglottises** (ep-ih-GLOT-tih-seez)

Cartilage flap that sits above larynx; rotates to cover larynx with each swallow; prevents food or drink from entering larynx and trachea; ensures food and liquids only enter the esophagus (refer also to Figure 17-2)



**Figure 17-5** Location of the epiglottis above the larynx.  
(Alila Medical Media/Shutterstock)

- a. pertaining to epiglottis

\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

- b. epiglottis inflammation

\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

7. **labyrinth/o**—combining form meaning **labyrinth** (LAB-ih-rinth)

Anatomical term for structures of inner ear; includes the **cochlea** (location of sensory receptors for hearing) and organs responsible for equilibrium and balance, including the **semicircular canals** (refer to Figures 17-1 and 17-4)

- a. labyrinth inflammation

\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

- b. surgical removal of labyrinth

\_\_\_\_\_ / \_\_\_\_\_  
**wr** **s**

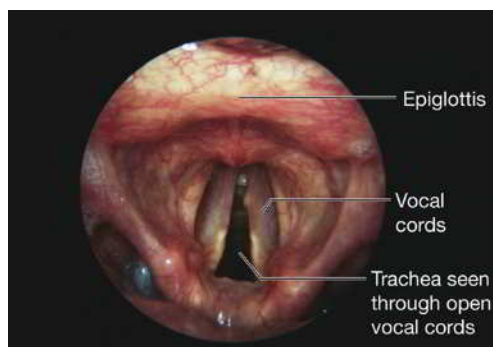
- c. cutting into labyrinth

\_\_\_\_\_ / \_\_\_\_ / \_\_\_\_\_  
**wr** **cv** **s**

8. **laryng/o**—combining form meaning **larynx** (LAIR-inks); plural is **larynges** (la-RIN-jeez) or **larynxes** (LAIR-ink-sihs)

Commonly called **voice box**; located between pharynx and trachea; contains paired **vocal cords** that vibrate as air passes through them to produce sound (refer also to Figures 17-2 and 17-5)





**Figure 17-6** The vocal cords within the larynx, superior view from the pharynx. (Patrick Watson/Pearson Education, Inc.)



**Figure 17-7** A laryngoscope.

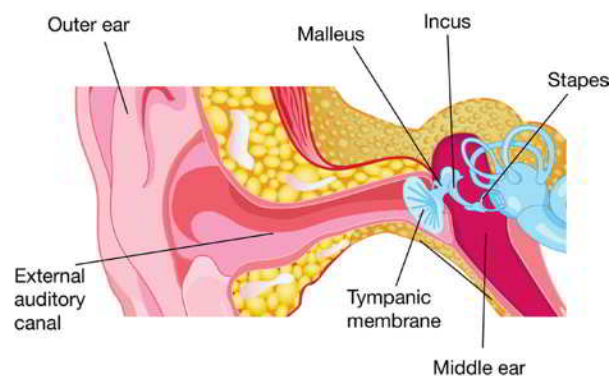
- a. pertaining to larynx
- b. larynx inflammation
- c. process of visually examining larynx
- d. instrument for viewing larynx
- e. surgical removal of larynx
- f. surgical repair of larynx
- g. condition of larynx paralysis
- h. involuntary muscle contraction of larynx

<b>wr</b>	/	<b>s</b>
<b>wr</b>	/	<b>s</b>
<b>wr</b>	/ <b>cv</b> /	<b>s</b>
<b>wr</b>	/ <b>cv</b> /	<b>s</b>
<b>wr</b>	/	<b>s</b>
<b>wr</b>	/ <b>cv</b> /	<b>s</b>
<b>wr</b>	/ <b>cv</b> /	<b>s</b>
<b>wr</b>	/ <b>cv</b> /	<b>s</b>

**9. myring/o**—combining form meaning **tympanic membrane** (*tim-PAN-ik*); plural is **tympanic membranes**

Located at end of external auditory canal; converts sound waves striking it into vibrations that move ossicles of middle ear; commonly called **eardrum** (refer also to Figure 17-1)

**TERMINOLOGY TIDBIT** The term *tympanic* comes from the Greek word *tympanon* meaning *drumhead*. This describes how this membrane vibrates like a drumhead.



**Figure 17-8** Location of the tympanic membrane between outer and middle ear. (Snapgalleria/Shutterstock)

- a. inflammation of eardrum
- b. surgical removal of eardrum

<b>wr</b>	/	<b>s</b>
<b>wr</b>	/	<b>s</b>

c. surgical repair of eardrum

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

d. hardening of eardrum

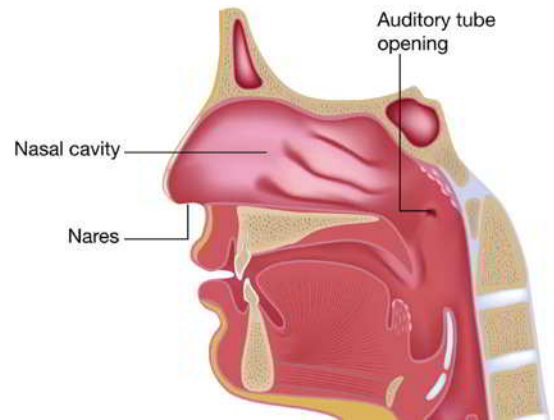
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

e. cutting into eardrum

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

10. **nas/o**—combining form meaning **nose**; plural is **noses**

Air enters nose through two openings called **nares** (NAIR-eez), passes through **nasal cavity**, and enters pharynx; divided down middle by cartilage plate called **nasal septum**; lined by **mucous membrane** (MYOO-kus); air is warmed, moisturized, and cleansed as it passes through; houses sensory receptors for sense of smell (refer also to Figure 17-2)



**Figure 17-9** Structures of the nasal cavity. (Alila Medical Media/Shutterstock)

a. pertaining to nose

\_\_\_\_\_ / \_\_\_\_\_  
wr s

b. pertaining to nose and stomach

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv wr s

c. pertaining to nose and throat

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv wr s

11. **-osmia**—suffix meaning **sense of smell condition**

Sensory receptors for smell are located in roof of nasal cavity

a. condition of (being) without sense of smell

\_\_\_\_\_ / \_\_\_\_\_  
p s

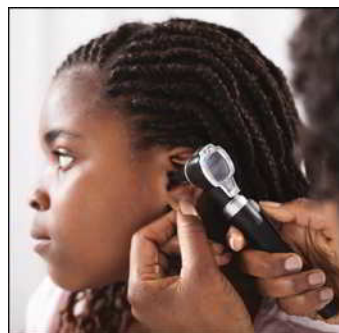
b. condition of (having) excessive sense of smell

\_\_\_\_\_ / \_\_\_\_\_  
p s

12. **ot/o**—combining form meaning **ear**



**A**



**B**



**C**



**D**

**Figure 17-10** An otoscope (A) can be used to examine the ears (B), nose (C), and pharynx (D). [(A) Patrick Watson/Pearson education (B) Andrey\_Popov/Shutterstock (C) Michal Heron/Pearson Education (D) Lisa F. Young/Shutterstock]

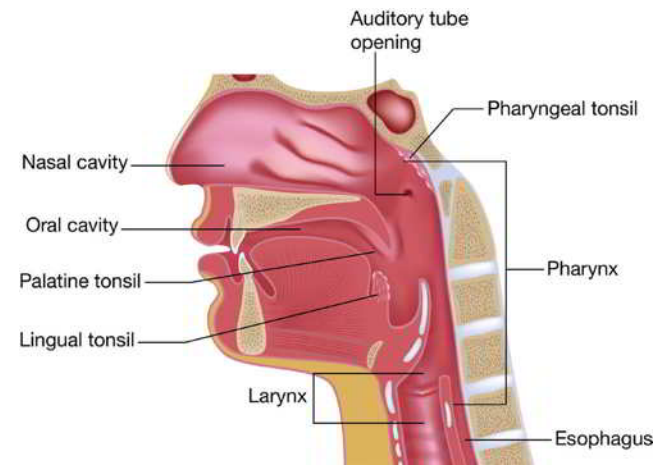
- a. pertaining to ear
- b. ear inflammation
- c. condition of ear pain
- d. study of ear
- e. one who studies ear
- f. process of visually examining ear
- g. instrument for viewing ear
- h. surgical repair of ear
- i. abnormal condition of ear fungus
- j. discharge of pus from ear

_____	/	_____
<b>wr</b>		<b>s</b>
_____	/	_____
<b>wr</b>		<b>s</b>
_____	/	_____
<b>wr</b>		<b>s</b>
_____	/	_____ / _____
<b>wr</b>		<b>cv</b> <b>s</b>
_____	/	_____ / _____
<b>wr</b>		<b>cv</b> <b>s</b>
_____	/	_____ / _____
<b>wr</b>		<b>cv</b> <b>s</b>
_____	/	_____ / _____
<b>wr</b>		<b>cv</b> <b>s</b>
_____	/	_____ / _____ / _____
<b>wr</b>		<b>cv</b> <b>wr</b> <b>s</b>
_____	/	_____ / _____ / _____
<b>wr</b>		<b>cv</b> <b>wr</b> <b>cv</b> <b>s</b>

13. **pharyng/o**—combining form meaning **pharynx** (FAIR-inks); plural is **pharynges** (fah-RIN-jeez) or **pharynxes** (FAIR-ink-sihs)

Muscular tube that receives air from nasal cavity and delivers it to larynx; also receives food from oral cavity and transports it to esophagus; location for three types of tonsils (adenoids, **palatine tonsils** [PAL-ah-tyne / TAHN-sulls], and **lingual tonsils** [LING-gwal / TAHN-sulls]); **auditory tube** (AW-dih-tor-ee) also called *Eustachian tube* (yoo-STAY-shee-en), which opens with each swallow to equalize air pressure in middle ear, connects middle ear to pharynx; commonly called the **throat** (refer also to Figures 17-2 and 17-3)

**TERMINOLOGY TIDBIT** Ears “popping” while driving through the mountains or riding in an elevator is caused by the sudden opening of the auditory tube due to quick changes in air pressure.



**Figure 17-11** Structure of the pharynx. (Alila Medical Media/ Shutterstock)

- a. pertaining to pharynx
- b. pharynx inflammation (commonly called sore throat)

_____	/	_____
<b>wr</b>		<b>s</b>
_____	/	_____
<b>wr</b>		<b>s</b>

c. surgical repair of pharynx

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

d. involuntary muscle contraction of pharynx

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

e. cutting into pharynx

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

14. **-phonia**—suffix meaning **voice condition**

a. condition of (being) without voice

\_\_\_\_\_ / \_\_\_\_\_  
p s

b. condition of (having) abnormal, difficult voice

\_\_\_\_\_ / \_\_\_\_\_  
p s

15. **rhin/o**—combining form meaning **nose**

a. nose inflammation

\_\_\_\_\_ / \_\_\_\_\_  
wr s

b. surgical repair of nose

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

c. discharge from nose

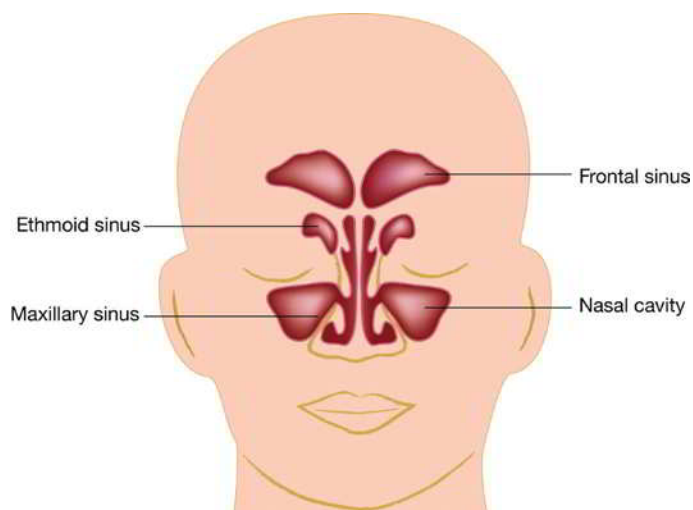
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv s

d. abnormal condition of nose fungus

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv wr s

16. **sinus/o**—combining form meaning **sinus**  
(SIGH-nus); plural is **sinuses** (SIGH-nus-ez)

**Paranasal sinuses** (pair-ah-NAY-zal / SIGH-nus-ez [**para-** = beside]) are air-filled cavities located within facial bones and connected to the nasal cavity; lined with mucous membrane; act as echo chamber for sound production (refer also to Figure 17-2)



**Figure 17-12** Location of the paranasal sinuses.  
(Alila Medical Media/Shutterstock)

a. sinus inflammation

\_\_\_\_\_ / \_\_\_\_\_  
wr s

b. inflammation of all sinuses

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
p wr s

c. nose and sinus inflammation

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
wr cv wr s

17. **tonsill/o**—combining form meaning **tonsil** (TAHN-sull); plural is **tonsils** (TAHN-sulls)

Part of immune system, as they contain cells to protect body from pathogens in air breathed and food and liquid swallowed; however, since located in the throat, conditions affecting the tonsils are often treated by an ORL (refer again to Figures 17-2 and 17-3)

- a. pertaining to tonsils

wr

/

s
- b. tonsil inflammation

wr

/

s
- c. surgical removal of tonsils

wr

/

s

18. **trache/o**—combining form meaning **trachea** (TRAY-kee-ah); plural is **tracheae** (TRAY-kee-ee) or **tracheas** (TRAY-kee-uhz)

Tube that carries air from larynx to lungs; due to its location, can be considered either last structure of upper respiratory system or first structure of lower respiratory system; conditions affecting it are treated by both ORL and pulmonology; lined with mucous membrane that warms, moisturizes, and cleanses air; commonly called *windpipe* (refer also to Figure 17-2)

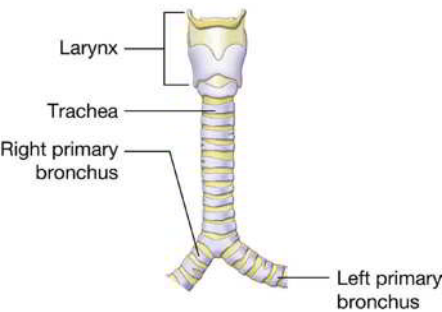


Figure 17-13 The trachea.

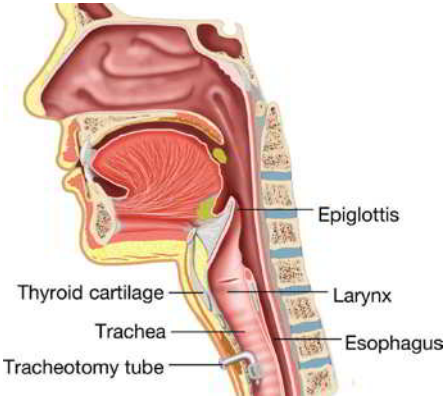


Figure 17-14 A tracheotomy tube is inserted through an opening in the front of the neck and anchored within the trachea.

- a. pertaining to trachea

wr

/

s
- b. enlarged trachea

wr

/

cv

/

s
- c. surgical repair of trachea

wr

/

cv

/

s
- d. cutting into trachea

wr

/

cv

/

s
- e. narrowing of trachea

wr

/

cv

/

s
- f. pertaining to within trachea

p

/

wr

/

s

19. **tympan/o**—combining form meaning **tympanic membrane** (*tim-PAN-ik*) (refer again to Figure 17-1)

a. pertaining to eardrum	<u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>s</b>
b. process of measuring eardrum (movement)	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>
c. instrument for measuring eardrum (movement)	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>
d. eardrum record	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>
e. surgical repair of eardrum	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>
f. eardrum rupture	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>
g. cutting into eardrum	<u>                    </u> / <u>                    </u> / <u>                    </u>
	<b>wr</b> / <b>cv</b> / <b>s</b>

## Otorhinolaryngology Vocabulary

The otorhinolaryngology terms presented in this section include eponyms, modern English words, and those that contain Latin or Greek word parts but are not constructed solely from these word parts. When you recognize word parts within a term, they will give you a hint about the word's meaning. In these instances, look for the word parts to follow the term.

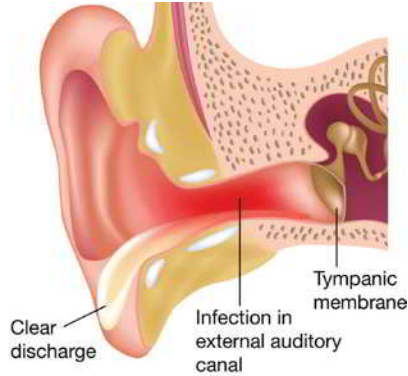
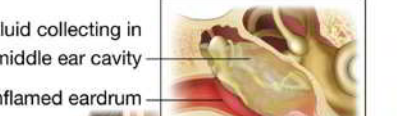

### PATHOLOGY

TERM	EXPLANATION
<b>acoustic neuroma</b> ( <i>ah-KOOS-tik / noo-ROH-mah</i> ) <b>neur/o</b> = nerve <b>-oma</b> = tumor	Benign tumor of cochlear nerve sheath; symptoms include tinnitus, headache, vertigo, and progressive hearing loss
<b>croup</b> (KROOP)	Acute respiratory condition common in infants and children; symptoms include barking cough
<b>deafness</b>	Inability to hear or having some degree of hearing impairment
<b>diphtheria</b> ( <i>dif-THEAR-ee-ah</i> )	Bacterial upper respiratory infection; characterized by formation of thick membranous film across throat and high mortality rate; uncommon now due to diphtheria, pertussis, tetanus (DPT) vaccine
<b>epistaxis</b> ( <i>ep-ih-STAK-sis</i> )	Nosebleed; also called <i>rhinorrhagia</i>
<b>Ménière disease</b> ( <i>may-nee-AIR</i> )	Acute or chronic inner ear condition; can lead to progressive hearing loss; symptoms include vertigo, hearing loss, and tinnitus

**TERMINOLOGY TIDBIT** The term *diphtheria* comes from the Greek word *diphthera*, meaning *leather hide*. This describes the thick membranous film that forms across the throat.

**TERMINOLOGY TIDBIT** Ménière disease is named for French physician Prosper Ménière, who first described the vertigo characteristic of this condition.



TERM	EXPLANATION	
<b>otitis externa</b> (OE) ( <i>oh-TYE-tis / eks-TER-nah</i> ) <b>ot/o</b> = ear <b>-itis</b> = inflammation	External ear infection; frequently caused by fungus; also called <i>otomycosis</i> ; common name is <i>swimmer's ear</i>	
<b>otitis interna</b> (OI) ( <i>oh-TYE-tis / in-TER-nah</i> ) <b>ot/o</b> = ear <b>-itis</b> = inflammation	Inflammation of inner ear; can affect both hearing and equilibrium; also called <i>labyrinthitis</i> ; commonly called <i>inner ear infection</i>	
<b>otitis media</b> (OM) ( <i>oh-TYE-tis / MEE-dee-ah</i> ) <b>ot/o</b> = ear <b>-itis</b> = inflammation	Bacterial or viral infection of middle ear; common in children; often preceded by upper respiratory infection during which pathogens move from pharynx to middle ear through auditory tube; commonly referred to as <i>middle ear infection</i>	
<b>otosclerosis</b> <i>(oh-toh-sklair-OH-sis)</i> <b>ot/o</b> = ear <b>-sclerosis</b> = hardening	Condition affecting stapes bone in middle ear; bone forms around the stapes and loses its ability to vibrate and conduct sound waves to inner ear; results in progressive loss of hearing	
<b>pertussis</b> ( <i>per-TUH-sis</i> )	Bacterial infection of upper respiratory tract; uncommon now due to diphtheria, pertussis, tetanus (DPT) vaccine; commonly called <i>whooping cough</i> due to “whoop” sound made when coughing	<b>TERMINOLOGY TIDBIT</b> The term <i>pertussis</i> comes from the Latin word <i>tussis</i> , meaning <i>cough</i> . Pertussis, or whooping cough, is recognized by its characteristic cough.
<b>tinnitus</b> ( <i>tin-EYE-tus</i> )	Ringing in the ears	<b>TERMINOLOGY TIDBIT</b> The term <i>tinnitus</i> comes from the Latin word <i>tinnire</i> , meaning <i>to ring, tinkle</i> . It is used to describe a ringing sensation in the ear.
<b>upper respiratory infection</b> (URI)	Affects any or all organs of the upper respiratory system, primarily the nose, sinuses, and pharynx; may be bacterial or viral	
<b>vertigo</b>	Sensation of spinning or whirling around; incorrectly used to mean dizziness	<b>TERMINOLOGY TIDBIT</b> The term <i>vertigo</i> comes from the Latin word <i>verto</i> , meaning <i>whirling</i> . Typically, a person with vertigo perceives the world as spinning around in a circle.

## DIAGNOSTIC TESTS

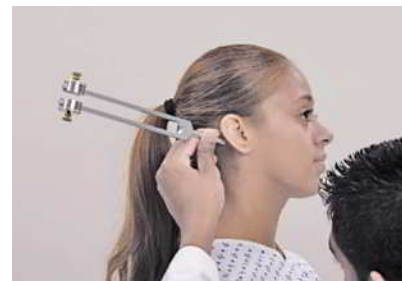
TERM	EXPLANATION
<b>falling test</b>	Group of assessments to evaluate balance and equilibrium; for example, balancing on one foot, heel-toe walking, and walking forward with eyes open; test is performed twice, once with patient's eye open and again with patient's eyes closed; swaying and falling with eyes closed can indicate equilibrium malfunction

### Rinne and Weber tuning fork tests (*RIN-eh and VAY-ber*)

**TERMINOLOGY TIDBIT** The Rinne test is named for German otologist Heinrich A. Rinne. The Weber test is named for German physician Ernst Weber.

Two tests that assess both function of cochlear nerve and ability of ear structures to conduct sound waves to inner ear; physician holds tuning fork against or near bones on side of patient's head

**Figure 17-17** Physician placing a tuning fork behind a patient's ear as part of the Rinne and Weber tuning fork tests. (Patrick Watson/Pearson education)



## MEDICAL AND SURGICAL TREATMENTS

TERM	EXPLANATION
<b>American Sign Language (ASL)</b>	Nonverbal method of communicating in which hands and fingers are used to indicate words and concepts; used by people with hearing impairment and/or speech impairment



**Figure 17-18** Two women having a conversation using American Sign Language. (Vladimir Mucibabic/Shutterstock)

### antiemetic drugs (an-tye-ee-MEH-tik)

**anti-** = against

**-emetic** = pertaining to vomiting

Medications used to treat the nausea associated with vertigo

### cochlear implant (KOH-klee-ar)

**cochle/o** = cochlea

**-ar** = pertaining to

Hearing device surgically placed under skin behind ear; converts sound signals into electrical impulses to stimulate cochlear nerve

**TERMINOLOGY TIDBIT** The term *cochlea* comes from the Latin word *cochlea*, meaning *snail shell*. This describes the coiled shape of the cochlea.

**Figure 17-19** Photograph of a child with a cochlear implant; this device sends electrical impulses directly to the brain. (George Dodson/Pearson Education)



### decongestant (dee-kon-JES-tant) **de-** = without

Medication to reduce nasal and sinus stuffiness and congestion



## TERM

## EXPLANATION

### endotracheal (ET) intubation

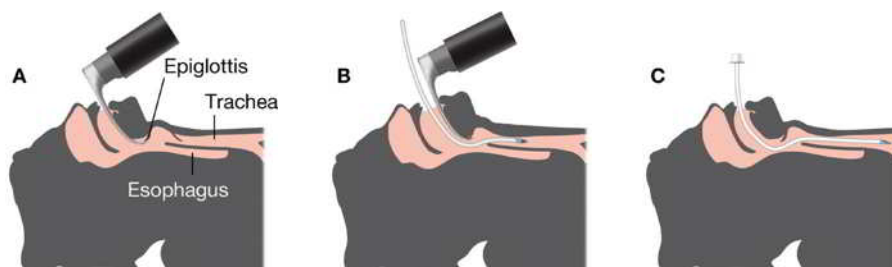
(en-doh-TRAY-kee-al / in-too-BAY-shun)

**endo-** = within

**trache/o** = trachea

**-al** = pertaining to

Insertion of tube through the mouth and into the trachea; creates open upper respiratory airway



**Figure 17-20** Endotracheal intubation: (A) a lighted scope is used to identify the larynx from the esophagus; (B) the tube is placed through the pharynx and larynx into the trachea; (C) the scope is removed, leaving the tube in place

### hearing aid

Device used by persons with impaired hearing to amplify sound; also called *amplification device*

### nasal cannula (KAN-yoo-lah)

**nas/o** = nose

**-al** = pertaining to

Two-pronged plastic device for delivering oxygen directly into the nose; one prong is inserted into each naris

**TERMINOLOGY TIDBIT** The term *cannula* comes from the Latin word *canna*, meaning *reed*. Reeds are hollow and can be used like a snorkel to breathe while underwater. This describes the hollow tube shape of a cannula.



**A**

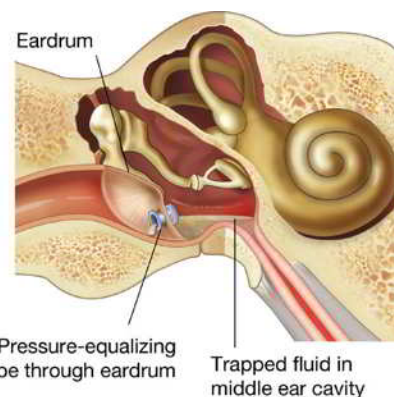


**B**

**Figure 17-21** (A) Two-pronged nasal cannula and (B) patient using a nasal cannula. [(A) Floyd Jackson/Pearson Education (B) Michal Heron/Pearson Education]

### pressure-equalizing tube (PE tube)

Small tube surgically placed in eardrum; assists in draining trapped fluid and equalizing pressure between middle ear cavity and atmosphere



**Figure 17-22** Illustration of a PE tube in place through the eardrum.

### stapedectomy

(stay-peh-DEK-toh-mee)

**staped/o** = stapes

**-ectomy** = surgical removal

Surgical treatment for otosclerosis; stapes bone is removed and replaced by a tiny prosthetic stapes

### wax emulsifiers

Medication used to soften earwax and prevent its buildup in outer ear canal

# Otorhinolaryngology Abbreviations

The following list presents common otorhinolaryngology abbreviations:

<b>ASL</b>	American Sign Language	<b>OI</b>	otitis interna
<b>DPT</b>	diphtheria, pertussis, tetanus	<b>OM</b>	otitis media
<b>EENT</b>	eyes, ears, nose, and throat	<b>ORL</b>	otorhinolaryngology; otorhinolaryngologist
<b>ENT</b>	ears, nose, and throat	<b>Oto</b>	otology
<b>ET</b>	endotracheal	<b>PE tube</b>	pressure-equalizing tube
<b>HEENT</b>	head, eyes, ears, nose, and throat	<b>T&amp;A</b>	tonsillectomy and adenoidectomy
<b>HOH</b>	hard of hearing	<b>URI</b>	upper respiratory infection
<b>OE</b>	otitis externa		

## Practice & Review

For answers to the activities in this section, see Appendix IV: Answer Key.

### CASE STUDY

#### History of Present Illness

A 30-year-old female reports a history of chronic fatigue and headaches for at least 10 years. Headaches are centered above her eyes and occasionally radiate into the teeth of her upper jaw. Recently she became concerned when she noted that she was unable to smell fish she was cooking. She denies fever or cough.

#### Past Medical History

Patient has no history of hypertension, dental problems, or neurological problems. No known allergies. No prior hospitalizations except for birth of child.

#### Family and Social History

Patient is a police officer. She is married with one healthy child. She does not drink alcohol but does smoke one to one and a half packs of cigarettes per day. Family history is noncontributory.

#### Physical Examination

Well-developed and well-nourished female who appears her stated age and is in no obvious distress. Temperature is 99°F, blood pressure is 115/65, pulse is 110 bpm, and breathing rate is 14 breaths per minute. There is tenderness over her brow ridge bilaterally. Examination with otoscope revealed normal-appearing tympanic membranes and no evidence of otitis externa or otitis media. There was no cervical lymphadenopathy.

#### Diagnostic Tests

Sinus cultures were positive for bacteria and negative for fungus.

#### Diagnosis

Pansinusitis, potentially chronic based on patient's chronic symptoms.



(Leungchopan/  
Shutterstock)

(continued on next page)

(continued)

### Plan of Treatment

1. Long-term course of oral antibiotic.
2. Corticosteroid nose spray.
3. Repeat culture in three months.
4. Strongly recommend patient seek medical assistance to stop smoking.
5. Refer to allergist to investigate whether she has allergies, which may have contributed to development of chronic infections.

### CRITICAL THINKING QUESTIONS

Answer the following questions regarding this case study. Do not just copy words out of the case study but translate all medical terms. To answer some of these questions, you may need to look up information from another chapter of this text, in a medical dictionary, or online.

1. How would you explain the history of this patient's present illness in your own words?

---

---

2. What is the medical term for the inability to smell?

---

---

3. Which of the following conditions was NOT mentioned in this patient's past medical history?

- a. Problems with brain, spinal cord, or nerves
- b. Problems with the thyroid gland
- c. High blood pressure
- d. Problems with the teeth

4. Refer to the immunology chapter of this book. What is cervical lymphadenopathy?

---

---

5. What does “**pan-**” mean in pansinusitis?

---

---

6. Go to National Institutes of Health Medline Plus Medical Encyclopedia at <http://www.nlm.nih.gov/medlineplus/encyclopedia.html>. Click on the letter “V,” scroll down the list, and click on “Vital Signs.” Compare this patient's vital signs to the normal ranges for the average healthy adult. Are any of her vital signs outside the normal ranges? If so, which one(s)?

---

---

7. What is a culture? What are the results of the sinus culture for this patient?

---

---

8. What is the purpose of each treatment?

---

---

## PRACTICE

### Sound It Out

The following are some of the key terms from this chapter written as their phonetic spelling. Sound out each term and write it in the blank.

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1. oh-TAL-jee-ah _____             | 14. TIM-pah-noh-gram _____         |
| 2. aw-dee-OM-eh-ter _____          | 15. tim-pah-NOM-eh-tree _____      |
| 3. dif-THEAR-ee-ah _____           | 16. oh-TOSS-koh-pee _____          |
| 4. fah-RING-oh-spazm _____         | 17. pan-sigh-nyoo-SIGH-tis _____   |
| 5. mir-IN-goh-skleh-roh-sis _____  | 18. per-TUH-sis _____              |
| 6. dis-FOH-nee-ah _____            | 19. rye-NYE-tis _____              |
| 7. ad-eh-noy-DEK-toh-mee _____     | 20. rye-noh-REE-ah _____           |
| 8. OH-toh-plas-tee _____           | 21. tin-EYE-tus _____              |
| 9. lair-in-JYE-tis _____           | 22. tahn-sih-LEK-toh-mee _____     |
| 10. lah-ring-goh-PLÉE-jee-ah _____ | 23. AW-dee-oh-gram _____           |
| 11. lah-RING-goh-skohp _____       | 24. tray-kee-oh-steh-NOH-sis _____ |
| 12. mir-IN-goh-plas-tee _____      | 25. tim-pah-noh-REK-sis _____      |
| 13. VER-tih-goh _____              |                                    |

### Transcription Practice

Each of the following sentences is written in common English. Underline any words or phrases that can be replaced by a medical term. Then rewrite the entire sentence using medical terms.

1. The new parents were quite concerned when their baby developed an acute respiratory condition with a barking cough.

---

---

(continued on next page)

(continued)

2. Meilin's inability to hear was caused by a benign tumor of the cochlear nerve sheath.  

---

---
3. The DPT vaccination protects children against a bacterial upper respiratory infection characterized by formation of a thick membranous film across the throat and whooping cough.  

---

---
4. The physician ordered supplemental oxygen to be delivered by a two-pronged plastic device directly in the nose.  

---

---
5. His physician became concerned when Mr. Janssen reported a sensation of spinning along with ringing in the ears.  

---

---
6. Carmen's physician recommended to her parents that she have tubes surgically placed in the eardrums because of her repeated bacterial infections of the middle ear.  

---

---
7. The paramedics had to quickly determine whether the patient's condition required a cutting into the trachea or a tube placed through the mouth and into the trachea.  

---

---
8. Ursula went for an examination by a specialist in the study of the ears, nose, and throat because of her repeated nosebleeds.  

---

---
9. For his inability to hear, Tariq needed a hearing device surgically placed under the skin behind the ear rather than a device that amplifies sound.  

---

---

10. After examining the external auditory canal with an instrument for examining the ear, it was obvious Jackson had swimmer's ear caused by a fungal infection.
- 
- 

## Fill in the Blank

Fill in the blank to complete each of the following sentences.

1. The ear is responsible for the senses of \_\_\_\_\_ and \_\_\_\_\_.
2. The \_\_\_\_\_ prevents food and drink from entering the larynx.
3. The \_\_\_\_\_ is commonly called the *voice box*.
4. The pharyngeal tonsils are also called the \_\_\_\_\_.
5. Sound waves traveling down the external auditory canal strike the \_\_\_\_\_.
6. The \_\_\_\_\_ nerve sends hearing messages to the brain.
7. Air enters the nasal cavity through two holes called \_\_\_\_\_.
8. The common name for epistaxis is \_\_\_\_\_.
9. A hearing aid is also referred to as a(n) \_\_\_\_\_.
10. The three small ossicles in the middle ear are the \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

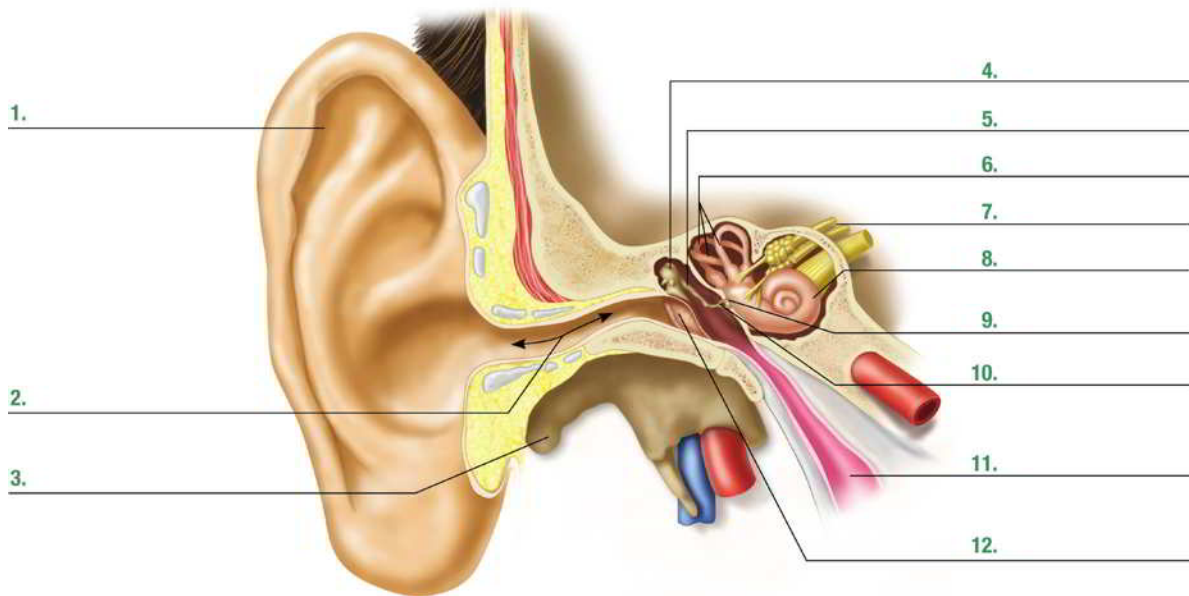
## Abbreviation Matching

Match each abbreviation with its meaning.

- |            |       |   |
|------------|-------|---|
| 1. URI     | _____ | A. otorhinolaryngology  |
| 2. OM      | _____ | B. study of the ear   |
| 3. ENT     | _____ | C. a surgical procedure for recurring tonsil infections       |
| 4. ASL     | _____ | D. vaccination for whooping cough, diphtheria, and tetanus    |
| 5. Oto     | _____ | E. infection of the respiratory organs of head and neck       |
| 6. PE tube | _____ | F. swimmer's ear  |
| 7. OE      | _____ | G. a method of nonverbal communication                        |
| 8. T&A     | _____ | H. term meaning <i>within the trachea</i>                     |
| 9. ET      | _____ | I. middle ear infection                                       |
| 10. DPT    | _____ | J. device that aids in removing trapped fluid from middle ear |

## Labeling Exercise

Write the name of each structure on the numbered line. Also, use this space to write the combining form where appropriate.



## Build Medical Terms

The combining form **ot/o** means *ear*. Use it to write a term that means:

1. study of ear \_\_\_\_\_
2. abnormal condition of ear fungus \_\_\_\_\_
3. surgical repair of ear \_\_\_\_\_
4. ear inflammation \_\_\_\_\_
5. process of visually examining ear \_\_\_\_\_

The combining form **pharyng/o** means *pharynx*. Use it to write a term that means:

6. involuntary muscle contraction of pharynx \_\_\_\_\_
7. pertaining to pharynx \_\_\_\_\_

The suffix **-phonia** means *voice condition*. Use it to write a term that means:

8. condition of (being) without voice \_\_\_\_\_
9. condition of (having) abnormal, difficult voice \_\_\_\_\_

The combining form **trache/o** means *trachea*. Use it to write a term that means:

10. narrowing of trachea \_\_\_\_\_
11. cutting into trachea \_\_\_\_\_
12. enlarged trachea \_\_\_\_\_

The combining form **tympan/o** means *tympanic membrane (eardrum)*. Use it to write a term that means:

13. surgical repair of eardrum \_\_\_\_\_
14. instrument for measuring eardrum \_\_\_\_\_
15. rupture of eardrum \_\_\_\_\_

## Multiple Choice

1. Otorhinolaryngologists treat problems with hearing, balance, swallowing, and voice.  
a. True    b. False
2. The \_\_\_\_\_ vibrate as air passes through them to produce sound.  
a. ossicles    b. tonsils    c. paranasal sinuses    d. vocal cords
3. The trachea is commonly called the throat.  
a. True    b. False
4. Which section of the ear contains the ossicles?  
a. external    b. distal    c. inner    d. middle
5. Air enters the nasal cavity through the \_\_\_\_\_.  
a. nares    b. auditory tube    c. nasal septum    d. oval window
6. Which organ of the ear contains the hair cells responsible for hearing?  
a. malleus    b. tympanic    c. cochlea    d. epiglottis
7. The \_\_\_\_\_ is commonly called the eardrum.  
a. epiglottis    b. pinna    c. tympanic membrane    d. auditory membrane
8. The adenoids are also called the lingual tonsils.  
a. True    b. False
9. The paranasal sinuses are air-filled cavities in the facial bones.  
a. True    b. False
10. The inner ear organ(s) for equilibrium is/are the \_\_\_\_\_.  
a. oval window    b. auricle    c. semicircular canals    d. tympanic membrane



## Medical Term Analysis

Examine each of the following terms. Begin by dividing it into its word parts and writing them in the indicated blanks (**P** = **prefix**; **WR** = **word root**; **CF** = **combining form**; **S** = **suffix**). Follow with the definition of each word part and then finally the meaning of the full term.

### 1. tympanotomy

**CF** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

### 2. cochlear

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

### 3. nasogastric

**CF** \_\_\_\_\_

means \_\_\_\_\_

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

### 4. endotracheal

**P** \_\_\_\_\_

means \_\_\_\_\_

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

### 5. rhinomycosis

**CF** \_\_\_\_\_

means \_\_\_\_\_

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

### 6. tonsillectomy

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

7. anosmia

**P** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

8. laryngoplegia

**CF** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

9. pansinusitis

**P** \_\_\_\_\_

means \_\_\_\_\_

**WR** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

10. myringosclerosis

**CF** \_\_\_\_\_

means \_\_\_\_\_

**S** \_\_\_\_\_

means \_\_\_\_\_

Term meaning: \_\_\_\_\_

\_\_\_\_\_

## Spelling

Some of the following terms are misspelled. Identify the incorrect terms and spell them correctly in the blank provided.

1. audiology \_\_\_\_\_

2. epitaxis \_\_\_\_\_

3. diptheria \_\_\_\_\_

4. otopyorhea \_\_\_\_\_

5. tracheostenosis \_\_\_\_\_

6. tympanotomy \_\_\_\_\_

7. vertigo \_\_\_\_\_

8. canula \_\_\_\_\_

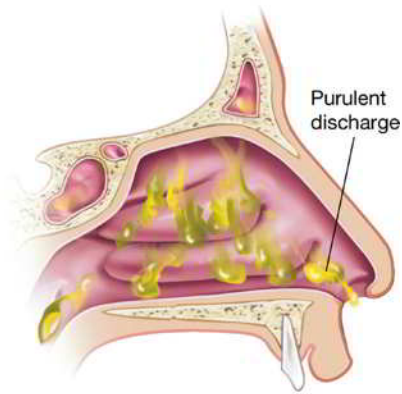
9. tinnitus \_\_\_\_\_

10. pertusiss \_\_\_\_\_

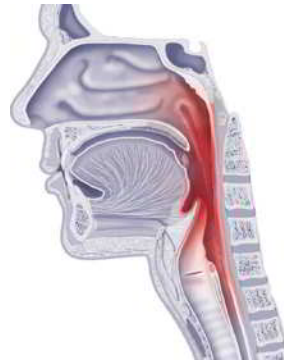
## Visual Identification Challenge

Match each upper respiratory condition with its name in the Word Bank.

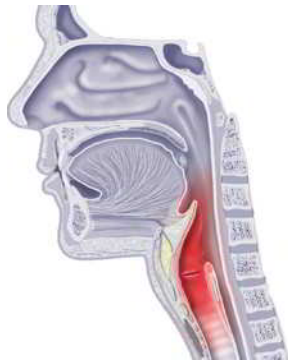
**WORD BANK:** epistaxis | laryngitis | pharyngitis | rhinitis | sinusitis | tonsillitis



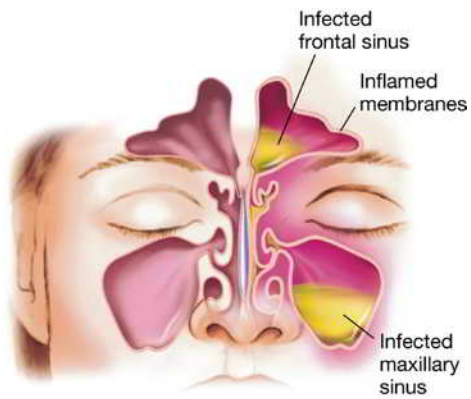
1. \_\_\_\_\_



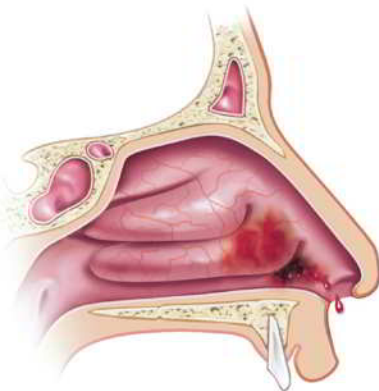
2. \_\_\_\_\_



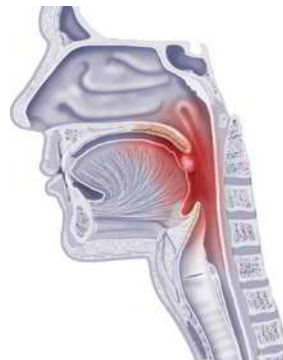
3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_

# SECTION III Appendices

## Appendix I

### Word Parts

#### Prefixes

<b>a-</b>	without
<b>ab-</b>	away from
<b>ad-</b>	toward
<b>an-</b>	without
<b>ante-</b>	before, in front of
<b>anti-</b>	against
<b>auto-</b>	self
<b>bi-</b>	two
<b>brady-</b>	slow
<b>contra-</b>	against
<b>de-</b>	without
<b>di-</b>	two
<b>dys-</b>	abnormal, difficult, painful
<b>e-</b>	outward
<b>echo-</b>	a repeated sound
<b>endo-</b>	inner, within
<b>epi-</b>	above
<b>eu-</b>	normal
<b>ex-</b>	outward

<b>extra-</b>	outside of
<b>hemi-</b>	half
<b>hetero-</b>	different
<b>homo-</b>	same
<b>hyper-</b>	excessive
<b>hypo-</b>	below, insufficient
<b>in-</b>	inward, not
<b>infra-</b>	below
<b>inter-</b>	between
<b>intra-</b>	within
<b>micro-</b>	small
<b>mono-</b>	one
<b>multi-</b>	many
<b>neo-</b>	new
<b>nulli-</b>	none
<b>pachy-</b>	thick
<b>pan-</b>	all
<b>para-</b>	beside, two like parts of a pair

<b>per-</b>	through
<b>peri-</b>	around
<b>poly-</b>	many
<b>post-</b>	after
<b>pre-</b>	before
<b>primi-</b>	first
<b>pseudo-</b>	false
<b>quadri-</b>	four
<b>retro-</b>	backward, behind
<b>sub-</b>	under
<b>supra-</b>	above
<b>tachy-</b>	fast
<b>trans-</b>	across
<b>tri-</b>	three
<b>ultra-</b>	beyond
<b>un-</b>	not
<b>uni-</b>	one

#### Combining Forms

<b>abdomin/o</b>	abdomen
<b>acr/o</b>	extremities
<b>aden/o</b>	gland
<b>adenoid/o</b>	adenoid
<b>adip/o</b>	fat
<b>adren/o</b>	adrenal gland
<b>adrenal/o</b>	adrenal gland
<b>aer/o</b>	air
<b>albumin/o</b>	albumin
<b>alges/o</b>	sense of pain
<b>alveol/o</b>	alveolus (air sac)
<b>ambly/o</b>	dim

<b>amni/o</b>	amnion
<b>an/o</b>	anus
<b>angi/o</b>	vessel
<b>ankyl/o</b>	stiff
<b>anter/o</b>	front (of body)
<b>aort/o</b>	aorta
<b>append/o</b>	appendix
<b>appendic/o</b>	appendix
<b>aque/o</b>	water
<b>arteri/o</b>	artery
<b>arteriol/o</b>	arteriole
<b>arthr/o</b>	joint

<b>atel/o</b>	incomplete
<b>ather/o</b>	fatty substance
<b>atri/o</b>	atrium
<b>audi/o</b>	hearing
<b>audit/o</b>	hearing
<b>aur/o</b>	ear
<b>azot/o</b>	nitrogen waste
<b>bacteri/o</b>	bacteria
<b>balan/o</b>	glans penis
<b>bar/o</b>	weight
<b>bas/o</b>	base
<b>bi/o</b>	life

<b>blephar/o</b>	eyelid
<b>brachi/o</b>	arm
<b>bronch/o</b>	bronchus
<b>bronchi/o</b>	bronchus
<b>bronchiol/o</b>	bronchiole
<b>burs/o</b>	bursa
<b>calc/o</b>	calcium
<b>carcin/o</b>	cancer
<b>cardi/o</b>	heart
<b>carp/o</b>	carpus (wrist)
<b>caud/o</b>	tail
<b>cephal/o</b>	head
<b>cerebell/o</b>	cerebellum
<b>cerebr/o</b>	cerebrum
<b>cervic/o</b>	cervix, neck
<b>chem/o</b>	chemical
<b>chol/e</b>	bile
<b>cholangi/o</b>	bile duct
<b>cholecyst/o</b>	gallbladder
<b>chole- doch/o</b>	common bile duct
<b>chondr/o</b>	cartilage
<b>chori/o</b>	chorion
<b>choroid/o</b>	choroid layer
<b>chrom/o</b>	color
<b>cis/o</b>	to cut
<b>clavicul/o</b>	clavicle (collar bone)
<b>coagul/o</b>	clotting
<b>coccyg/o</b>	coccyx (tailbone)
<b>cochle/o</b>	cochlea
<b>col/o</b>	colon
<b>colon/o</b>	colon
<b>colp/o</b>	vagina
<b>coni/o</b>	dust
<b>conjunctiv/o</b>	conjunctiva
<b>core/o</b>	pupil
<b>corne/o</b>	cornea
<b>coron/o</b>	heart
<b>corpor/o</b>	body
<b>cortic/o</b>	cortex
<b>cost/o</b>	rib
<b>crani/o</b>	skull
<b>crin/o</b>	to secrete
<b>cry/o</b>	cold
<b>crypt/o</b>	hidden
<b>cubit/o</b>	elbow
<b>cutane/o</b>	skin
<b>cyan/o</b>	blue

<b>cycl/o</b>	ciliary body
<b>cyst/o</b>	(urinary) bladder, sac
<b>cyt/o</b>	cell
<b>dacry/o</b>	tears
<b>derm/o</b>	skin
<b>dermat/o</b>	skin
<b>diaphrag- mat/o</b>	diaphragm
<b>dipl/o</b>	double
<b>dist/o</b>	away from (beginning of structure)
<b>diverticul/o</b>	diverticulum
<b>dors/i</b>	back (of body)
<b>dors/o</b>	back (of body)
<b>duct/o</b>	to lead
<b>duoden/o</b>	duodenum
<b>dur/o</b>	dura mater
<b>electr/o</b>	electricity
<b>embol/o</b>	embolus
<b>embryo/o</b>	embryo
<b>encephal/o</b>	brain
<b>enter/o</b>	intestine
<b>eosin/o</b>	rosy red
<b>epididym/o</b>	epididymis
<b>epiglott/o</b>	epiglottis
<b>episi/o</b>	vulva
<b>erythr/o</b>	red
<b>esophag/o</b>	esophagus
<b>esthesi/o</b>	sensation
<b>extens/o</b>	to stretch out
<b>fasci/o</b>	fascia
<b>femor/o</b>	femur (thigh bone)
<b>fet/o</b>	fetus
<b>fibr/o</b>	fibers
<b>fibul/o</b>	fibula (thinner lower leg bone)
<b>flex/o</b>	to bend
<b>gastr/o</b>	stomach
<b>genit/o</b>	genitals
<b>glomerul/o</b>	glomerulus
<b>gluc/o</b>	glucose
<b>glute/o</b>	buttocks
<b>glyc/o</b>	sugar
<b>glycos/o</b>	glucose, sugar
<b>gynec/o</b>	female
<b>hal/o</b>	to breathe
<b>hem/o</b>	blood
<b>hemat/o</b>	blood
<b>hepat/o</b>	liver

<b>hidr/o</b>	sweat
<b>humer/o</b>	humerus (upper arm bone)
<b>hydr/o</b>	water
<b>hyster/o</b>	uterus
<b>ichthy/o</b>	dry, scaly
<b>ile/o</b>	ileum
<b>ili/o</b>	ilium (part of pelvis)
<b>immun/o</b>	protection
<b>infer/o</b>	below
<b>inguin/o</b>	groin
<b>ir/o</b>	iris
<b>irid/o</b>	iris
<b>isch/o</b>	to hold back
<b>ischi/o</b>	ischium (part of pelvis)
<b>jejun/o</b>	jejunum
<b>kerat/o</b>	cornea, hard, hornlike
<b>ket/o</b>	ketones
<b>kyph/o</b>	hump
<b>labi/o</b>	lip
<b>labyrinth/o</b>	labyrinth (inner ear)
<b>lacrim/o</b>	tears
<b>lact/o</b>	milk
<b>lapar/o</b>	abdomen
<b>laryng/o</b>	larynx (voice box)
<b>later/o</b>	side
<b>leuk/o</b>	white
<b>lip/o</b>	fat
<b>lith/o</b>	stone
<b>lob/o</b>	lobe
<b>lord/o</b>	bent backward
<b>lumb/o</b>	low back
<b>lymph/o</b>	lymph
<b>lymphaden/o</b>	lymph node
<b>lymphangi/o</b>	lymph vessel
<b>mamm/o</b>	breast
<b>mandibul/o</b>	mandible (lower jaw)
<b>mast/o</b>	breast
<b>maxill/o</b>	maxilla (upper jaw)
<b>medi/o</b>	middle
<b>mediastin/o</b>	mediastinum
<b>medull/o</b>	medulla oblongata
<b>melan/o</b>	black
<b>men/o</b>	menstruation
<b>mening/o</b>	meninges
<b>meningi/o</b>	meninges
<b>menisc/o</b>	meniscus
<b>metacarp/o</b>	metacarpus (hand bones)

<b>metatars/o</b>	metatarsus (foot bones)
<b>metr/o</b>	uterus
<b>muc/o</b>	mucus
<b>muscul/o</b>	muscle
<b>my/o</b>	muscle
<b>myc/o</b>	fungus
<b>myel/o</b>	bone marrow, spinal cord
<b>myring/o</b>	tympanic membrane (eardrum)
<b>nas/o</b>	nose
<b>nat/o</b>	birth
<b>necr/o</b>	death
<b>nephro/o</b>	kidney
<b>neur/o</b>	nerve
<b>neutr/o</b>	neutral
<b>noct/i</b>	night
<b>o/o</b>	ovum
<b>ocul/o</b>	eye
<b>olig/o</b>	scanty
<b>onych/o</b>	nail
<b>oophor/o</b>	ovary
<b>ophthalm/o</b>	eye
<b>opt/o</b>	eye, vision
<b>or/o</b>	mouth
<b>orbit/o</b>	eye socket
<b>orch/o</b>	testis
<b>orchi/o</b>	testis
<b>orchid/o</b>	testis
<b>orth/o</b>	straight
<b>oste/o</b>	bone
<b>ot/o</b>	ear
<b>ovari/o</b>	ovary
<b>ox/i</b>	oxygen
<b>pancreat/o</b>	pancreas
<b>parathyroid/o</b>	parathyroid gland
<b>patell/o</b>	patella (kneecap)
<b>path/o</b>	disease
<b>pedicul/o</b>	lice
<b>pelv/o</b>	pelvis
<b>phac/o</b>	lens
<b>phag/o</b>	eating
<b>phalang/o</b>	phalanges (fingers and toes)
<b>pharyng/o</b>	pharynx (throat)
<b>phleb/o</b>	vein
<b>phot/o</b>	light
<b>pineal/o</b>	pineal gland
<b>pituitar/o</b>	pituitary gland

<b>plant/o</b>	sole of foot
<b>pleur/o</b>	pleura
<b>pneum/o</b>	lung, air
<b>pneumon/o</b>	lung
<b>polyp/o</b>	polyp
<b>pont/o</b>	pons
<b>poster/o</b>	back (of body)
<b>proct/o</b>	anus and rectum
<b>prostat/o</b>	prostate gland
<b>proxim/o</b>	near to (beginning of structure)
<b>pub/o</b>	pubis (part of pelvis)
<b>pulmon/o</b>	lung
<b>pupill/o</b>	pupil
<b>py/o</b>	pus
<b>pyel/o</b>	renal pelvis
<b>radi/o</b>	radius (part of forearm), ray (X-ray)
<b>radicul/o</b>	nerve root
<b>rect/o</b>	rectum
<b>ren/o</b>	kidney
<b>retin/o</b>	retina
<b>rhin/o</b>	nose
<b>sacr/o</b>	sacrum
<b>salping/o</b>	uterine (fallopian) tube
<b>scapul/o</b>	scapula (shoulder blade)
<b>scler/o</b>	hard, sclera
<b>scoli/o</b>	crooked
<b>seb/o</b>	sebum, oil
<b>semin/i</b>	semen
<b>septic/o</b>	infection
<b>sigmoid/o</b>	sigmoid colon
<b>sinus/o</b>	sinus
<b>somn/o</b>	sleep
<b>son/o</b>	sound
<b>sperm/o</b>	sperm
<b>spermat/o</b>	sperm
<b>sphygm/o</b>	pulse
<b>spin/o</b>	spine
<b>spir/o</b>	breathing
<b>splen/o</b>	spleen
<b>spondyl/o</b>	vertebra
<b>staped/o</b>	stapes
<b>stern/o</b>	sternum (breast bone)
<b>steth/o</b>	chest
<b>super/o</b>	above
<b>system/o</b>	system
<b>tars/o</b>	tarsus (ankle)

<b>ten/o</b>	tendon
<b>tendin/o</b>	tendon
<b>testicul/o</b>	testis
<b>thalam/o</b>	thalamus
<b>thorac/o</b>	chest
<b>thromb/o</b>	thrombus
<b>thym/o</b>	thymus gland
<b>thyr/o</b>	thyroid gland
<b>thyroid/o</b>	thyroid gland
<b>tibi/o</b>	tibia (shin bone, larger lower leg bone)
<b>tom/o</b>	to cut
<b>ton/o</b>	pressure
<b>tonsill/o</b>	tonsil
<b>tox/o</b>	poison
<b>toxic/o</b>	poison
<b>trache/o</b>	trachea
<b>trich/o</b>	hair
<b>tuss/o</b>	cough
<b>tympan/o</b>	tympanic membrane (eardrum)
<b>uln/o</b>	ulna (part of forearm)
<b>ungu/o</b>	nail
<b>ur/o</b>	urine
<b>ureter/o</b>	ureter
<b>urethr/o</b>	urethra
<b>urin/o</b>	urine
<b>uter/o</b>	uterus
<b>uve/o</b>	uvea
<b>vagin/o</b>	vagina
<b>valv/o</b>	valve
<b>valvul/o</b>	valve
<b>varic/o</b>	dilated vein
<b>vas/o</b>	(blood) vessel, vas deferens
<b>vascul/o</b>	blood vessel
<b>ven/o</b>	vein
<b>ventr/o</b>	belly (surface of body)
<b>ventricul/o</b>	ventricle
<b>venul/o</b>	venule
<b>vers/o</b>	to turn
<b>vertebr/o</b>	vertebra (backbone)
<b>vesic/o</b>	sac
<b>vesicul/o</b>	seminal vesicle
<b>vitre/o</b>	glassy
<b>xanth/o</b>	yellow
<b>xer/o</b>	dry

## Suffixes

<b>-ac</b>	pertaining to
<b>-al</b>	pertaining to
<b>-algia</b>	pain condition
<b>-an</b>	pertaining to
<b>-apheresis</b>	removal
<b>-ar</b>	pertaining to
<b>-arche</b>	beginning
<b>-ary</b>	pertaining to
<b>-asthenia</b>	weakness condition
<b>-atic</b>	pertaining to
<b>-capnia</b>	carbon dioxide condition
<b>-cele</b>	protrusion
<b>-centesis</b>	puncture to withdraw fluid
<b>-cide</b>	to kill
<b>-clasia</b>	surgical breaking
<b>-cle</b>	small
<b>-cyesis</b>	pregnancy
<b>-cyte</b>	cell
<b>-cytosis</b>	abnormal cell condition (too many)
<b>-derma</b>	skin condition
<b>-desis</b>	surgical fusing
<b>-dipsia</b>	thirst condition
<b>-dynia</b>	pain condition
<b>-eal</b>	pertaining to
<b>-ectasis</b>	dilated
<b>-ectomy</b>	surgical removal
<b>-edema</b>	swelling
<b>-emesis</b>	vomiting
<b>-emetic</b>	pertaining to vomiting
<b>-emia</b>	blood condition
<b>-er</b>	one who
<b>-esthesia</b>	sensation condition
<b>-gen</b>	that which produces
<b>-genesis</b>	produces
<b>-genic</b>	pertaining to producing
<b>-globin</b>	protein
<b>-globulin</b>	protein
<b>-gram</b>	a record
<b>-graph</b>	instrument for recording
<b>-graphy</b>	process of recording
<b>-gravida</b>	pregnancy
<b>-ia</b>	condition

<b>-iac</b>	pertaining to
<b>-iasis</b>	abnormal condition
<b>-iatric</b>	pertaining to medical treatment
<b>-iatrist</b>	physician
<b>-iatry</b>	medical treatment
<b>-ician</b>	specialist
<b>-ic</b>	pertaining to
<b>-ine</b>	pertaining to
<b>-ion</b>	action
<b>-ior</b>	pertaining to
<b>-ism</b>	state of
<b>-ist</b>	specialist
<b>-itis</b>	inflammation
<b>-kinesia</b>	movement condition
<b>-lith</b>	stone
<b>-logist</b>	one who studies
<b>-logy</b>	study of
<b>-lysis</b>	to destroy
<b>-lytic</b>	pertaining to destruction
<b>-malacia</b>	abnormally soft condition
<b>-manometer</b>	instrument to measure pressure
<b>-megaly</b>	enlarged
<b>-meter</b>	instrument for measuring
<b>-metry</b>	process of measuring
<b>-nic</b>	pertaining to
<b>-oid</b>	resembling
<b>-ole</b>	small
<b>-oma</b>	mass, tumor
<b>-opia</b>	vision condition
<b>-opsy</b>	view of
<b>-ory</b>	pertaining to
<b>-ose</b>	pertaining to
<b>-osis</b>	abnormal condition
<b>-osmia</b>	sense of smell condition
<b>-ous</b>	pertaining to
<b>-oxia</b>	oxygen condition
<b>-para</b>	to bear (offspring)
<b>-paresis</b>	weakness
<b>-partum</b>	childbirth
<b>-pathy</b>	disease
<b>-penia</b>	condition of too few

<b>-pepsia</b>	digestion condition
<b>-pexy</b>	surgical fixation
<b>-phagia</b>	eating or swallowing condition
<b>-phasia</b>	speech condition
<b>-phil</b>	attracted to
<b>-phobia</b>	fear condition
<b>-phonia</b>	voice condition
<b>-plasia</b>	condition of cell formation
<b>-plasm</b>	formation
<b>-plasty</b>	surgical repair
<b>-plegia</b>	paralysis condition
<b>-pnea</b>	breathing
<b>-poiesis</b>	formation
<b>-porosis</b>	porous
<b>-ptosis</b>	drooping
<b>-ptysis</b>	spitting
<b>-rrhage</b>	abnormal flow
<b>-rrhagia</b>	abnormal flow condition
<b>-rrhaphy</b>	to suture
<b>-rrhea</b>	discharge
<b>-rrhexis</b>	rupture
<b>-salpinx</b>	uterine tube
<b>-sclerosis</b>	hardening
<b>-scope</b>	instrument for viewing
<b>-scopy</b>	process of visually examining
<b>-spasm</b>	involuntary muscle contraction
<b>-stasis</b>	standing still
<b>-stenosis</b>	narrowing
<b>-stomy</b>	surgically create an opening
<b>-therapy</b>	treatment
<b>-thorax</b>	chest
<b>-tic</b>	pertaining to
<b>-tome</b>	instrument to cut
<b>-tomy</b>	cutting into
<b>-toxic</b>	pertaining to poison
<b>-tripsy</b>	surgical crushing
<b>-trophic</b>	pertaining to development
<b>-trophy</b>	development
<b>-ule</b>	small
<b>-uria</b>	urine condition

# Appendix II

## Abbreviations and Symbols

Abbreviations and symbols are commonly used when writing medical documents because they are convenient and save time; however, they can certainly be confusing. For example, *MS* may mean musculoskeletal, mitral stenosis, multiple sclerosis, or mental status. Use of an incorrect abbreviation can result in problems for a patient as well as insurance records and processing. If there is ever a concern that an abbreviation may be misinterpreted, it is always best to spell out the word or phrase instead.

It is never acceptable to use one's own abbreviations or symbols. All health care facilities have a list of approved abbreviations and symbols, and it is extremely important to become familiar with and follow this list closely. Just as importantly, there is also a list of abbreviations and symbols that should never be used. Abbreviations and symbols that have been shown to be misleading appear at the end of this appendix.

This appendix presents the abbreviations introduced in this text, as well as some common abbreviations and symbols used in medical documents that were not included in the text chapters. They have been grouped together into categories for ease of learning. Abbreviations are so essential to learning medical terminology that throughout this book, wherever possible, abbreviations are presented within the chapters immediately following terms. Additionally, a list of common abbreviations for each medical specialty appears in each chapter.

### Anatomy

<b>AE</b>	above elbow
<b>AK</b>	above knee
<b>ANS</b>	autonomic nervous system
<b>ant</b>	anterior
<b>AP</b>	anteroposterior
<b>AV, A-V</b>	atrioventricular
<b>BE</b>	below elbow
<b>BK</b>	below knee
<b>C1, C2, etc.</b>	first cervical vertebra, second cervical vertebra, etc.
<b>CBD</b>	common bile duct
<b>CNS</b>	central nervous system
<b>CSF</b>	cerebrospinal fluid
<b>CV</b>	cardiovascular
<b>Cx</b>	cervix
<b>EENT</b>	eyes, ears, nose, and throat
<b>ENT</b>	ear, nose, and throat
<b>ET</b>	endotracheal
<b>GB</b>	gallbladder

<b>GI</b>	gastrointestinal
<b>GU</b>	genitourinary
<b>HEENT</b>	head, eyes, ears, nose, and throat
<b>L</b>	left (can also mean liter)
<b>L1, L2, etc.</b>	first lumbar vertebra, second lumbar vertebra, etc.
<b>LA</b>	left arm
<b>lat</b>	lateral
<b>LE</b>	lower extremity
<b>LES</b>	lower esophageal sphincter
<b>LL</b>	left leg
<b>LLE</b>	left lower extremity
<b>LLL</b>	left lower lobe
<b>LUE</b>	left upper extremity
<b>LUL</b>	left upper lobe
<b>MS</b>	musculoskeletal (can also mean mitral stenosis, multiple sclerosis, or mental status)
<b>NG</b>	nasogastric

<b>PA</b>	posteroanterior (can also mean pernicious anemia or Physician Assistant)
<b>PNS</b>	peripheral nervous system
<b>post</b>	posterior
<b>R</b>	right
<b>RA</b>	right arm (can also mean rheumatoid arthritis or room air)
<b>RL</b>	right leg
<b>RLE</b>	right lower extremity
<b>RLL</b>	right lower lobe
<b>RML</b>	right middle lobe
<b>RUE</b>	right upper extremity
<b>RUL</b>	right upper lobe
<b>SA, S-A</b>	sinoatrial
<b>T1, T2, etc.</b>	first thoracic vertebra, second thoracic vertebra, etc.
<b>UE</b>	upper extremity



## Blood

<b>basos</b>	basophils
<b>eos</b>	eosinophils
<b>eosins</b>	eosinophils
<b>Ig</b>	immunoglobulins (IgA, IgD, IgE, IgG, IgM)
<b>LIMF</b>	lymph

<b>lymphs</b>	lymphocytes
<b>monos</b>	monocytes
<b>neut</b>	neutrophils
<b>PMN</b>	polymorphonuclear neutrophil
<b>polys</b>	polymorphonuclear neutrophil

<b>RBC</b>	red blood cell
<b>Rh—</b>	Rh-negative
<b>Rh+</b>	Rh-positive
<b>segs</b>	segmented neutrophils
<b>WBC</b>	white blood cell

## Chart Notes

<b>ADLs</b>	activities of daily living
<b>AMA</b>	against medical advice
<b>amb</b>	ambulate, walk
<b>ASL</b>	American Sign Language
<b>BR</b>	bathroom; bed rest
<b>BRP</b>	bathroom privileges
<b>c̄</b>	with
<b>c/o</b>	complains of
<b>CA</b>	chronological age (can also mean cancer)
<b>CBR</b>	complete bed rest
<b>CC</b>	chief complaint
<b>cont</b>	continue
<b>DISC, disc</b>	discontinue
<b>DNR</b>	do not resuscitate
<b>DOA</b>	dead on arrival
<b>DOB</b>	date of birth
<b>Dx</b>	diagnosis
<b>et</b>	and
<b>ETOH</b>	ethanol
<b>Ex</b>	examination
<b>f/u</b>	follow up
<b>FH</b>	family history
<b>GI, GII, etc.</b>	one pregnancy, two pregnancies, etc. (note that this abbreviation uses Roman numerals)
<b>grav I, grav II, etc.</b>	one pregnancy, two pregnancies, etc. (note that this abbreviation uses Roman numerals)

<b>H&amp;P</b>	history and physical
<b>h/o</b>	history of
<b>HOH</b>	hard of hearing
<b>HIPAA</b>	Health Insurance Portability and Accountability Act
<b>Hx</b>	history
<b>I&amp;O</b>	intake and output
<b>LMP</b>	last menstrual period
<b>MH</b>	marital history; mental health
<b>MS</b>	mental status (can also mean mitral stenosis, multiple sclerosis, or musculoskeletal)
<b>NB</b>	newborn
<b>neg</b>	negative
<b>NKA</b>	no known allergies
<b>p/o</b>	postoperative
<b>para I, para II, etc.</b>	one birth, two births, etc. (note that this abbreviation uses Roman numerals)
<b>PE</b>	physical exam (can also mean pulmonary embolism)
<b>per</b>	by; through; with
<b>PERRLA</b>	pupils equal, round, reactive to light and accommodation
<b>PI</b>	present illness
<b>PI, PII, etc.</b>	one birth, two births, etc. (note that this abbreviation uses Roman numerals)
<b>PMH</b>	past medical history
<b>pos</b>	positive

<b>post</b>	posterior
<b>post-op</b>	after operation
<b>prep</b>	prepare for
<b>pt</b>	patient
<b>PTA</b>	prior to admission
<b>r/o, R/O</b>	rule out
<b>RA</b>	room air (can also mean rheumatoid arthritis or right arm)
<b>REM</b>	rapid eye movement
<b>ROM</b>	range of motion
<b>ROS</b>	review of systems
<b>s̄</b>	without
<b>s/p</b>	status post (a previous disease condition)
<b>S/S</b>	signs and symptoms
<b>SH</b>	social history
<b>Sx</b>	symptoms; signs
<b>TO</b>	telephone order
<b>Tx</b>	treatment
<b>VO</b>	verbal order
<b>w/c</b>	wheelchair
<b>w/u</b>	work up
<b>WDWN</b>	well developed, well nourished
<b>WNL</b>	within normal limits
<b>y/o</b>	years old

## Chemical

<b>Ba</b>	barium
<b>C</b>	carbon
<b>C<sub>6</sub>H<sub>12</sub>O<sub>6</sub></b>	glucose
<b>Ca</b>	calcium
<b>CO<sub>2</sub></b>	carbon dioxide
<b>Cl<sup>-</sup></b>	chlorine
<b>Fe</b>	iron

<b>H</b>	hydrogen
<b>HCl</b>	hydrochloric acid
<b>HCO<sub>3</sub><sup>-</sup></b>	bicarbonate
<b>Hg</b>	mercury
<b>H<sub>2</sub>O</b>	water
<b>I</b>	iodine
<b>K<sup>+</sup></b>	potassium

<b>Mg</b>	magnesium
<b>N</b>	nitrogen
<b>Na<sup>+</sup></b>	sodium
<b>NaCl</b>	sodium chloride (salt)
<b>O<sub>2</sub></b>	oxygen
<b>P</b>	phosphorus (can also mean pulse)
<b>Pb</b>	lead

## Diagnostic Tests

<b>ABGs</b>	arterial blood gases
<b>ACG</b>	angiocardiology
<b>ANA</b>	antinuclear antibody
<b>BaE</b>	barium enema
<b>BDT</b>	bone density testing
<b>BE</b>	barium enema
<b>BMP</b>	basic metabolic panel
<b>Broncho</b>	bronchoscopy
<b>BS</b>	bowel sounds
<b>BSE</b>	breast self-examination
<b>BUN</b>	blood urea nitrogen
<b>BX, bx</b>	biopsy
<b>C&amp;S</b>	culture and sensitivity
<b>CBC</b>	complete blood count
<b>CK</b>	creatinine kinase
<b>CMP</b>	comprehensive metabolic panel
<b>crit</b>	hematocrit
<b>CT scan</b>	computed tomography scan
<b>CTA</b>	clear to auscultation
<b>CVS</b>	chorionic villus sampling
<b>CXR</b>	chest X-ray
<b>cysto</b>	cystoscopy
<b>DEXA</b>	dual-energy X-ray absorptiometry
<b>diff</b>	differential
<b>DRE</b>	digital rectal exam
<b>DTR</b>	deep tendon reflex (can also mean Dietetic Technician, Registered)
<b>DXA</b>	dual-energy X-ray absorptiometry
<b>ECG</b>	electrocardiogram; electrocardiography

<b>ECHO</b>	echocardiogram; echocardiography
<b>EEG</b>	electroencephalogram; electroencephalography
<b>EF</b>	ejection fraction
<b>EGD</b>	esophagogastroduodenoscopy
<b>EKG</b>	electrocardiogram; electrocardiography
<b>EMB</b>	endometrial biopsy
<b>EMG</b>	electromyogram; electromyography
<b>ERCP</b>	endoscopic retrograde cholangiopancreatography
<b>ESR</b>	erythrocyte sedimentation rate
<b>FBS</b>	fasting blood sugar
<b>FHR</b>	fetal heart rate
<b>FHT</b>	fetal heart tone
<b>FOBT</b>	fecal occult blood test
<b>GTT</b>	glucose tolerance test
<b>HCT, Hct</b>	hematocrit
<b>heart cath</b>	cardiac catheterization
<b>Hb</b>	hemoglobin
<b>Hgb</b>	hemoglobin
<b>HSG</b>	hysterosalpingography
<b>I&amp;O</b>	intake and output
<b>IVP</b>	intravenous pyelogram
<b>KUB</b>	kidneys, ureters, bladder (X-ray)
<b>LP</b>	lumbar puncture
<b>MRI</b>	magnetic resonance imaging
<b>NCS</b>	nerve conduction study
<b>NCV</b>	nerve conduction velocity

<b>O&amp;P</b>	ova and parasites
<b>Pap</b>	Papanicolaou test
<b>PET</b>	positron emission tomography
<b>PFT</b>	pulmonary function test
<b>PPD</b>	purified protein derivative
<b>pro-time</b>	prothrombin time
<b>PSA</b>	prostate-specific antigen
<b>PSG</b>	polysomnography
<b>PT</b>	prothrombin time
<b>RAIU</b>	radioactive iodine uptake
<b>RBC</b>	red blood cell; red blood count
<b>RIA</b>	radioimmunoassay
<b>RP</b>	retrograde pyelogram
<b>sed rate</b>	erythrocyte sedimentation rate
<b>T&amp;C</b>	type and crossmatch
<b>TEE</b>	transesophageal echocardiography
<b>TFT</b>	thyroid function test
<b>TTE</b>	transthoracic echocardiography
<b>U/A, UA</b>	urinalysis
<b>UC</b>	urine culture
<b>UGI</b>	upper gastrointestinal series
<b>US</b>	ultrasound; ultrasonography
<b>V/Q, VQ</b>	ventilation-perfusion
<b>VA</b>	visual acuity
<b>VCUG</b>	voiding cystourethrography
<b>VF</b>	visual field
<b>WBC</b>	white blood count

## Healthcare Providers, Services, or Units

<b>AuD</b>	Doctor of Audiology
<b>BM</b>	Behavioral Medicine
<b>BSN</b>	Bachelor of Science in Nursing
<b>CCS</b>	Certified Coding Specialist
<b>CCU</b>	Coronary Care Unit
<b>CLS</b>	Clinical Laboratory Scientist
<b>CLT</b>	Clinical Laboratory Technician
<b>CMA</b>	Certified Medical Assistant
<b>CNA</b>	Certified Nurse Aide
<b>CNMT</b>	Certified Nuclear Medicine Technologist
<b>COTA</b>	Certified Occupational Therapy Assistant
<b>CRT</b>	Certified Respiratory Therapist
<b>CV</b>	Cardiovascular
<b>DC</b>	Doctor of Chiropractic

<b>DDM</b>	Doctor of Dental Medicine
<b>DDS</b>	Doctor of Dental Surgery
<b>Derm, dermat</b>	Dermatology
<b>DO</b>	Doctor of Osteopathic Medicine
<b>DPM</b>	Doctor of Podiatric Medicine
<b>DPT</b>	Doctor of Physical Therapy (can also mean diphtheria, pertussis, tetanus)
<b>DTR</b>	Dietetic Technician, Registered (can also mean deep tendon reflex)
<b>ED</b>	Emergency Department
<b>EMR</b>	Emergency Medical Responder
<b>EMS</b>	Emergency Medical Services
<b>EMT</b>	Emergency Medical Technician
<b>EMT-A</b>	Emergency Medical Technician—Advanced

<b>ENT</b>	Otorhinolaryngology; ear, nose, and throat doctor
<b>ER</b>	Emergency Room
<b>GYN, gyn</b>	Gynecology
<b>ICU</b>	Intensive Care Unit
<b>LPN</b>	Licensed Practical Nurse
<b>LVN</b>	Licensed Vocational Nurse
<b>MD</b>	Doctor of Medicine (can also mean muscular dystrophy)
<b>MLS</b>	Medical Laboratory Scientist
<b>MLT</b>	Medical Laboratory Technician
<b>MSN</b>	Master of Science in Nursing
<b>MSW</b>	Medical Social Worker
<b>MT</b>	Medical Technologist
<b>NA</b>	Nurse Anesthetist
<b>NICU</b>	Neonatal Intensive Care Unit

<b>NP</b>	Nurse Practitioner
<b>OB</b>	Obstetrics
<b>OB-GYN</b>	Obstetrics and Gynecology
<b>OD</b>	Doctor of Optometry
<b>Ophth</b>	Ophthalmology
<b>OR</b>	Operating Room
<b>ORL</b>	Otorhinolaryngology, Otorhinolaryngologist
<b>Orth, Ortho</b>	Orthopedics
<b>OT</b>	Occupational Therapy; Occupational Therapist

<b>OTA</b>	Occupational Therapy Assistant
<b>PA</b>	Physician Assistant (can also mean pernicious anemia or posteroanterior)
<b>Path</b>	Pathology
<b>Peds</b>	Pediatrics
<b>Pharm D</b>	Doctor of Pharmacy
<b>PM</b>	Paramedic
<b>PT</b>	Physical Therapy; Physical Therapist
<b>PTA</b>	Physical Therapy Assistant
<b>RD</b>	Registered Dietitian Nutritionist

<b>RDH</b>	Registered Dental Hygienist
<b>Rehab</b>	Rehabilitation Unit
<b>RHIA</b>	Registered Health Information Administrator
<b>RN</b>	Registered Nurse
<b>RPh</b>	Registered Pharmacist
<b>RRT</b>	Registered Respiratory Therapist; Registered Radiologic Technologist
<b>RR</b>	Recovery Room (can also mean respiratory rate)
<b>X-ray</b>	Radiology

## Hormones

<b>ACTH</b>	adrenocorticotrophic hormone
<b>ADH</b>	antidiuretic hormone
<b>FSH</b>	follicle-stimulating hormone
<b>GH</b>	growth hormone

<b>LH</b>	luteinizing hormone
<b>MSH</b>	melanocyte-stimulating hormone
<b>OXT</b>	oxytocin
<b>PRL</b>	prolactin

<b>PTH</b>	parathyroid hormone
<b>T3</b>	triiodothyronine
<b>T4</b>	thyroxine
<b>TSH</b>	thyroid-stimulating hormone

## Medical and Surgical Treatments

<b>BiPAP</b>	bilevel positive airway pressure
<b>BMT</b>	bone marrow transplant
<b>c.gl.</b>	correction with glasses
<b>CABG</b>	coronary artery bypass graft
<b>CPAP</b>	continuous positive airway pressure
<b>CPR</b>	cardiopulmonary resuscitation
<b>C-section</b>	cesarean section
<b>CS</b>	cesarean section
<b>cyl</b>	cylindrical lens
<b>D</b>	diopter (lens strength)
<b>D&amp;C</b>	dilation and curettage
<b>DPT</b>	diphtheria, pertussis, tetanus (vaccine) (can also mean Doctor of Physical Therapy)
<b>ECCE</b>	extracapsular cataract extraction
<b>ERT</b>	estrogen replacement therapy
<b>ESWL</b>	extracorporeal shockwave lithotripsy
<b>FTND</b>	full-term normal delivery

<b>FTSG</b>	full-thickness skin grafting
<b>HD</b>	hemodialysis
<b>HRT</b>	hormone replacement therapy
<b>I&amp;D</b>	incision and drainage
<b>ICCE</b>	intracapsular cataract extraction
<b>ICD</b>	implantable cardioverter-defibrillator
<b>IOL</b>	intraocular lens
<b>IUD</b>	intrauterine device
<b>IVF</b>	in vitro fertilization
<b>LASIK</b>	laser-assisted in situ keratomileusis
<b>MDI</b>	metered-dose inhaler
<b>NIPPV</b>	noninvasive positive pressure ventilation
<b>NIV</b>	noninvasive ventilation
<b>OCps</b>	oral contraceptive pills
<b>ORIF</b>	open reduction–internal fixation
<b>PE tube</b>	pressure-equalizing tube
<b>PRK</b>	photorefractive keratectomy

<b>PTCA</b>	percutaneous transluminal coronary angioplasty
<b>RK</b>	radial keratotomy
<b>s.gl.</b>	without correction or glasses
<b>SG</b>	skin graft
<b>SK</b>	streptokinase
<b>STSG</b>	split-thickness skin graft
<b>T&amp;A</b>	tonsillectomy and adenoidectomy
<b>TAH-BSO</b>	total abdominal hysterectomy–bilateral salpingo-oophorectomy
<b>THA</b>	total hip arthroplasty
<b>THR</b>	total hip replacement
<b>TKA</b>	total knee arthroplasty
<b>TKR</b>	total knee replacement
<b>tPA</b>	tissue plasminogen activator
<b>TPN</b>	total parenteral nutrition
<b>TUR</b>	transurethral resection
<b>TURP</b>	transurethral resection of the prostate

## Pathology

<b>AB</b>	abortion
<b>Acc</b>	accommodation
<b>AD</b>	Alzheimer disease
<b>A-fib</b>	atrial fibrillation
<b>AF</b>	atrial fibrillation
<b>AIDS</b>	acquired immunodeficiency syndrome
<b>ALS</b>	amyotrophic lateral sclerosis

<b>ARC</b>	AIDS-related complex
<b>ARD</b>	acute respiratory disease
<b>ARDS</b>	acute respiratory distress syndrome
<b>ARF</b>	acute respiratory failure; acute renal failure
<b>AS</b>	arteriosclerosis
<b>ASCVD</b>	arteriosclerotic cardiovascular disease

<b>ASD</b>	atrial septal defect
<b>ASHD</b>	arteriosclerotic heart disease
<b>Astigm</b>	astigmatism
<b>BCC</b>	basal cell carcinoma
<b>BNO</b>	bladder neck obstruction
<b>BPH</b>	benign prostatic hyperplasia
<b>C. diff</b>	<i>Clostridium difficile</i>

<b>CA</b>	cancer (can also mean chronological age)
<b>CAD</b>	coronary artery disease
<b>CF</b>	cystic fibrosis
<b>CHD</b>	congestive heart disease
<b>CHF</b>	congestive heart failure
<b>COLD</b>	chronic obstructive lung disease
<b>COPD</b>	chronic obstructive pulmonary disease
<b>COVID-19</b>	coronavirus disease
<b>CP</b>	cerebral palsy; chest pain
<b>CRF</b>	chronic renal failure
<b>CSD</b>	congenital septal defect
<b>CTE</b>	chronic traumatic encephalopathy
<b>CTS</b>	carpal tunnel syndrome
<b>CUC</b>	chronic ulcerative colitis
<b>CVA</b>	cerebrovascular accident
<b>CVD</b>	cerebrovascular disease
<b>DI</b>	diabetes insipidus
<b>DJD</b>	degenerative joint disease
<b>DM</b>	diabetes mellitus
<b>DMD</b>	Duchenne muscular dystrophy
<b>DOE</b>	dyspnea on exertion
<b>DVT</b>	deep vein thrombosis
<b>ED</b>	erectile dysfunction
<b>ESRD</b>	end-stage renal disease
<b>flu</b>	influenza
<b>FX, Fx</b>	fracture
<b>GERD</b>	gastroesophageal reflux disease
<b>H. pylori</b>	<i>Helicobacter pylori</i>
<b>HA</b>	headache
<b>HAI</b>	health care-associated infection
<b>HCT, Hct</b>	hematocrit
<b>HD</b>	Hodgkin disease
<b>HDN</b>	hemolytic disease of the newborn
<b>HIV</b>	human immunodeficiency virus
<b>HMD</b>	hyaline membrane disease
<b>HNP</b>	herniated nucleus pulposus
<b>HPV</b>	human papillomavirus
<b>HSV</b>	herpes simplex virus

## Pharmacy

<b>aq</b>	aqueous (water)
<b>APAP</b>	acetaminophen (Tylenol™)
<b>ASA</b>	aspirin
<b>cap(s)</b>	capsule(s)
<b>Chemo</b>	chemotherapy
<b>disp</b>	dispense
<b>dtd</b>	give of such a dose
<b>ETOH</b>	ethanol

<b>HTN</b>	hypertension
<b>IBD</b>	inflammatory bowel disease
<b>IBS</b>	irritable bowel syndrome
<b>ICP</b>	intracranial pressure
<b>IDDM</b>	insulin-dependent diabetes mellitus
<b>IOP</b>	intraocular pressure
<b>IRDS</b>	infant respiratory distress syndrome
<b>IUD</b>	intrauterine device
<b>JRA</b>	juvenile rheumatoid arthritis
<b>KS</b>	Kaposi sarcoma
<b>LVH</b>	left ventricular hypertrophy
<b>lymphs</b>	lymphocytes
<b>MD</b>	muscular dystrophy (can also mean Doctor of Medicine)
<b>mets</b>	metastases
<b>MG</b>	myasthenia gravis
<b>MI</b>	myocardial infarction
<b>MM</b>	malignant melanoma
<b>mono</b>	mononucleosis
<b>monos</b>	monocytes
<b>MRSA</b>	methicillin-resistant <i>Staphylococcus aureus</i>
<b>MS</b>	mitral stenosis; multiple sclerosis (can also musculoskeletal or mental status)
<b>MVP</b>	mitral valve prolapse
<b>MY</b>	myopia
<b>N&amp;V</b>	nausea and vomiting
<b>NHL</b>	non-Hodgkin lymphoma
<b>NIDDM</b>	non-insulin-dependent diabetes mellitus
<b>OA</b>	osteoarthritis
<b>OI</b>	otitis interna
<b>OM</b>	otitis media
<b>PA</b>	pernicious anemia (can also mean posteroanterior or Physician Assistant)
<b>PCOS</b>	polycystic ovary syndrome
<b>PCP</b>	pneumocystis pneumonia

<b>ID</b>	intra dermal
<b>IM</b>	intramuscular
<b>inj</b>	injection
<b>IV</b>	intravenous
<b>no sub</b>	no substitute
<b>non rep</b>	do not repeat
<b>NPH</b>	neutral protamine Hagedorn (insulin)
<b>NPO</b>	nothing by mouth

<b>PE</b>	pulmonary embolism (can also mean physical exam)
<b>PID</b>	pelvic inflammatory disease
<b>PIH</b>	pregnancy-induced hypertension
<b>PKD</b>	polycystic kidney disease
<b>PMS</b>	premenstrual syndrome
<b>PUD</b>	peptic ulcer disease
<b>PVC</b>	premature ventricular contraction
<b>PVD</b>	peripheral vascular disease
<b>RA</b>	rheumatoid arthritis (can also mean right arm or room air)
<b>RD</b>	respiratory disease
<b>RDS</b>	respiratory distress syndrome
<b>RMD</b>	repetitive motion disorder
<b>RSI</b>	repetitive strain injury
<b>SARS</b>	severe acute respiratory syndrome
<b>SB</b>	stillbirth
<b>SCC</b>	squamous cell carcinoma
<b>SCI</b>	spinal cord injury
<b>SCID</b>	severe combined immunodeficiency
<b>SIDS</b>	sudden infant death syndrome
<b>SLE</b>	systemic lupus erythematosus
<b>SOB</b>	shortness of breath
<b>STD</b>	sexually transmitted disease
<b>STI</b>	sexually transmitted infection
<b>STSG</b>	split-thickness skin graft
<b>TB</b>	tuberculosis
<b>TBI</b>	traumatic brain injury
<b>TIA</b>	transient ischemic attack
<b>TSS</b>	toxic shock syndrome
<b>URI</b>	upper respiratory infection
<b>UTI</b>	urinary tract infection
<b>VD</b>	venereal disease
<b>VF, V-fib</b>	ventricular fibrillation
<b>VSD</b>	ventricular septal defect
<b>V-tach</b>	ventricular tachycardia
<b>VT</b>	ventricular tachycardia
<b>VZV</b>	varicella zoster virus
<b>WBC</b>	white blood cell; white blood count

<b>NS</b>	normal saline (can also mean nephrotic syndrome)
<b>NSAIDs</b>	non-steroidal anti-inflammatory drugs
<b>OD, od</b>	overdose
<b>oint</b>	ointment
<b>OTC</b>	over-the-counter
<b>PCA</b>	patient-controlled administration

<b>PDR</b>	<i>Physician's Desk Reference</i>
<b>po, PO</b>	by mouth; phone order
<b>Rx</b>	prescription; treatment
<b>Sig</b>	label as follows/directions
<b>sl</b>	under the tongue (sublingual)

<b>sol</b>	solution
<b>ss</b>	one-half
<b>subcut</b>	subcutaneous
<b>suppos, supp</b>	suppository

<b>tab(s)</b>	tablet(s)
<b>TD</b>	transdermal
<b>top</b>	apply topically

## Symbols

=	equal
≠	not equal
+	positive
−	negative
±	plus or minus
↑	increase
↓	decrease
#	pounds; number
♀	female
♂	male

→	from-to (in the direction of)
<b>1°</b>	primary
<b>2°</b>	secondary
<b>3°</b>	tertiary
%	percent
°C	degrees Celsius
°F	degrees Fahrenheit
≈	approximately
Δ	change

α	alpha
β	beta
×	times
"	inch
'	feet
i	one
ii	two
iii	three
Ⓕ	left
Ⓖ	right

## Time or Frequency

<b>ā</b>	before
<b>ac</b>	before meals
<b>ad lib</b>	as desired
<b>am, AM</b>	morning
<b>ante</b>	before

<b>bid</b>	twice a day
<b>d</b>	day
<b>noc</b>	night
<b>noct</b>	night
<b>p̄</b>	after

<b>pc</b>	after meals
<b>pm, PM</b>	evening
<b>prn</b>	as needed
<b>q</b>	every
<b>qh</b>	every hour

<b>qid</b>	four times a day
<b>STAT, stat</b>	at once/immediately
<b>tid</b>	three times a day
<b>yr</b>	year

## Units of Measurement

<b>cg</b>	centigram
<b>cm</b>	centimeter
<b>dr</b>	dram
<b>ft</b>	foot; feet
<b>g, gm</b>	gram
<b>gr</b>	grain
<b>gt</b>	drop

<b>gtt</b>	drops
<b>h, hr</b>	hour
<b>in</b>	inch
<b>kg</b>	kilogram
<b>L</b>	liter (can also mean left)
<b>lb</b>	pound
<b>m</b>	meter

<b>mcg</b>	microgram
<b>mEq</b>	milliequivalent
<b>mg</b>	milligram
<b>min</b>	minutes
<b>mL</b>	milliliter
<b>mm</b>	millimeter
<b>mmHg</b>	millimeters of mercury

<b>oz</b>	ounce
<b>pt</b>	pint
<b>qt</b>	quart
<b>sec</b>	seconds
<b>T, tbsp</b>	tablespoon
<b>t, tsp</b>	teaspoon
<b>yd</b>	yard

## Vital Signs

<b>BP</b>	blood pressure
<b>BPM, bpm</b>	beats per minute
<b>HR</b>	heart rate
<b>ht</b>	height
<b>NTP</b>	normal temperature and pressure

<b>NSR</b>	normal sinus rhythm
<b>P</b>	pulse (can also mean phosphorus)
<b>R</b>	respirations
<b>RR</b>	respiratory rate (can also mean Recovery Room)

<b>T</b>	temperature
<b>TPR</b>	temperature, pulse, and respiration
<b>VS</b>	vital signs
<b>wt</b>	weight

## Abbreviations to Be Avoided

Abbreviations make writing notes faster, but they also create the possibility of being misunderstood. For this reason, the Joint Commission (TJC) (formerly known as the Joint Commission on Accreditation of Healthcare Organizations [JCAHO]) and the Institute for Safe Medication Practices (ISMP) publishes lists of error-prone abbreviations that are not to be used. The following table presents these abbreviations and what should be used instead. The Joint

Commission has determined that the first seven abbreviations (marked with an \*) must appear on an accredited institution's "Do Not Use" list of abbreviations.

ABBREVIATION	INTENDED MEANING	POTENTIAL PROBLEM	RECOMMENDATION
<b>IU*</b>	International unit	Mistaken for "IV" or "10"	Write "international unit"
<b>MS, MSO<sub>4</sub> and MgSO<sub>4</sub>*</b>	Morphine sulfate, magnesium sulfate	Mistaken for each other	Write "morphine sulfate" or "magnesium sulfate"
<b>Not using a zero before a decimal point (0.X)*</b>	.X mg	Decimal point is missed	Always write a zero before a decimal point (0.X mg)
<b>q.d. or QD*</b>	Every day	Mistaken for "qid"	Write "daily"
<b>q.o.d. or QOD*</b>	Every other day	Mistaken for "qd" or for "qid"	Write "every other day"
<b>U or u*</b>	Unit	Mistaken for "0," "4," or "cc"	Write "unit"
<b>Using a zero after a decimal point*</b>	X.0 mg	Decimal point is missed	Never write a zero by itself after a decimal point (X mg is correct)
↑	increase	Mistaken as opposite of intended, letter "T," or numbers "4" or "7"	Write "increase"
↓	decrease	Mistaken as opposite of intended	Write "decrease"
#	pounds	Mistaken as number sign	Write "lb" or "pounds"
@	at	Mistaken for "2"	Write "at"
&	and	Mistaken for "2"	Write "and"
< and >	lesser than and greater than	Mistakenly read as the opposite symbol	Write "lesser than" and "greater than"
+	and	Mistaken for "4"	Write "and"
o	hour	Mistaken for "0"	Write "hr," "h," or "hour"
i/d	one daily	Mistaken for "tid"	Write "one daily"
Mg	microgram	Mistaken for "mg"	Write "mcg"
3	dram	Mistaken for "3"	Use the metric system
<b>AD, AS, AU and OD, OS, OU</b>	Left ear, right ear, both ears and left eye, right eye, both eyes	Mistaken for each other (for example, "AS" and "OS")	Write "left ear," "right ear," "both ears," "left eye," "right eye," and "both eyes"
<b>BT</b>	bedtime	Mistaken for "bid"	Write "bedtime"
<b>cc</b>	Cubic centimeter	Mistaken for "U" (units) Meanings can be mistaken for each other	Since a cubic centimeter is equal to a milliliter, write "mL"
<b>D/C</b>	discharge or discontinue	Mistaken for each other	Write "discharge" or "discontinue"
<b>Dose and unit of measure run together (such as 10mg or 100mL)</b>	10 mg or 100 mL	Mistaken for "100 mg" or "1000 mL"	Use adequate space between dose and unit of measure
<b>Drug name and dose run together (such as Inderal40mg)</b>	Inderal 40 mg	Mistaken for "Inderal 140 mg"	Use adequate space between drug name and dose
<b>hs or HS</b>	Half-strength or at bedtime	Meanings can be mistaken for each other	Write "half-strength" or "at bedtime"
<b>IJ</b>	injection	Mistaken for "IV"	Write "injection"

ABBREVIATION	INTENDED MEANING	POTENTIAL PROBLEM	RECOMMENDATION
<b>IN</b>	Intranasal	Mistaken for “IM” or “IV”	Write “intranasal” or “NAS”
<b>Large numbers without proper comma (such as 100000)</b>	100,000	Mistaken for “1,000,000”	Always use commas in large numbers or use words such as “100 thousand”
<b>o.d. or OD</b>	once daily	Mistaken for “right eye (OD)” or “overdose”	write “daily”
<b>OJ</b>	orange juice	Mistaken for “right eye (OD)”	write “orange juice”
<b>Per os</b>	by mouth	“os” can be mistaken to mean “left eye”	write “PO,” “orally,” or “by mouth”
<b>Period following abbreviation such as mg. or mL.</b>	mg or mL	Period mistaken for “1”	Write “mg” or “mL”
<b>qhs</b>	every bedtime	Mistaken for “qhr”	Write “bedtime”
<b>qn</b>	every night	Mistaken for “qh”	Write “nightly”
<b>q1d</b>	every day	Mistaken for “qid”	Write “daily”
<b>q6PM</b>	every day at 6:00 p.m.	Mistaken to mean “every 6 hours”	Write “daily at 6 p.m.”
<b>SC, SQ, sq, sub q</b>	Subcutaneous	SC mistaken for “SL,” SQ mistaken for “5 every,” the separate q mistaken for “every”	Write “SubQ,” “subcut,” or “subcutaneous”
<b>ss</b>	sliding scale or one-half	Mistaken for each other and for “55”	Write “sliding scale,” “one-half,” or “1/2”
<b>SSRI and SSI</b>	sliding scale regular insulin and sliding scale insulin	Mistaken for “selective-serotonin reuptake inhibitor” and “strong solution of iodine”	Write “sliding scale (insulin)”
<b>tiw or TIW</b>	Three times a week	Mistaken for “three times a day” or “twice weekly”	Write “3 times weekly”
<b>UD</b>	as directed ( <i>ut dictum</i> )	Mistaken for unit dose	Write “as directed”
<b>x3d</b>	for three days	Mistaken to mean “for 3 doses”	Write “for three days”

(Source: Institute for Safe Medication Practices: ISMP’s list of error-prone abbreviations, symbols, and dose designations. [www.ismp.org/recommendations/error-prone-abbreviations-list](http://www.ismp.org/recommendations/error-prone-abbreviations-list))

# Appendix III

## Selected English/Spanish Glossary

English	Spanish
<b>abdomen (belly)</b>	vientre
<b>acute</b>	agudo
<b>AIDS (Acquired Immune Deficiency Syndrome)</b>	SIDA (Síndrome de Immune Deficiencia Adquirida)
<b>allergy</b>	alergia
<b>anemia</b>	anemia; sangre delgada
<b>angina</b>	angina
<b>ankle</b>	tobillo
<b>anxiety</b>	ansiedad
<b>appendix</b>	apéndice
<b>arm</b>	brazo
<b>artery</b>	arteria
<b>arthritis</b>	artritis
<b>asphyxia</b>	asfixia; sofocación
<b>asthma</b>	asma; ansia
<b>back</b>	espalda; lomo
<b>bad</b>	malo
<b>benign</b>	benigno; de poca gravedad
<b>better</b>	major
<b>black</b>	negro
<b>bladder</b>	vejiga
<b>blood</b>	sangre
<b>blood pressure</b>	presión sanguínea; presión arterial
<b>blood test</b>	prueba de sangre
<b>blue</b>	azul
<b>body</b>	cuerpo
<b>bone</b>	hueso
<b>brain</b>	cerebro
<b>breast</b>	pecho; seno
<b>breathe</b>	respirar; inhalar
<b>bronchitis</b>	bronquitis; catarro de pecho
<b>bruise</b>	contusión; morado
<b>burning</b>	ardiente
<b>cancer</b>	cáncer
<b>capillary</b>	capilar
<b>cardiology</b>	cardiología
<b>cartilage</b>	cartílago

English	Spanish
<b>cataract</b>	catarata
<b>cheek</b>	mejilla; cachete
<b>chest</b>	pecho; tórax
<b>chickenpox</b>	varicela; viruela loca
<b>cholesterol</b>	colesterol
<b>chronic</b>	crónico
<b>clavicle</b>	clavícula
<b>closed</b>	cerrado
<b>clot</b>	coágulo; trombo
<b>cold</b>	frío; catarro
<b>common cold</b>	resfriado común
<b>concussion</b>	concusión; conmoción
<b>convulsion</b>	convulsión; ataque
<b>cough</b>	tos
<b>croup</b>	crup
<b>CT scan</b>	tomografía axial computarizada
<b>dark</b>	oscuro
<b>dead</b>	muerto
<b>deaf</b>	sordo(a)
<b>deep breath</b>	respirar profundo
<b>deficient</b>	deficiente
<b>dermatology</b>	dermatología
<b>diabetes</b>	diabetes
<b>diagnosis</b>	diagnóstico
<b>dialysis</b>	díalisis
<b>diarrhea</b>	diarrea; estómago suelto
<b>difficulty in breathing</b>	dificultad de la respiración
<b>diphtheria</b>	difteria
<b>dizziness</b>	mareo; vértigo
<b>double vision</b>	visión doble; ver doble
<b>dry</b>	seco
<b>dysuria</b>	disuria; emisión de la orina
<b>ear</b>	oreja; oído
<b>earache</b>	dolor de oído
<b>edema</b>	edema
<b>elbow</b>	codo
<b>endocrinology</b>	endocrinología



English	Spanish
<b>epilepsy</b>	epilepsia
<b>equilibrium</b>	equilibrio
<b>esophagus</b>	esófago
<b>excessive</b>	excesivo; desmesurado
<b>exhale</b>	exhalar
<b>external</b>	externo
<b>eye</b>	ojo
<b>fainting</b>	desmayo
<b>fast</b>	rápido(a)
<b>fatigue</b>	fatiga; cansancio
<b>fever</b>	fiebre; calentura
<b>finger</b>	dedo de la mano
<b>foot</b>	pie
<b>forearm</b>	antebrazo
<b>fracture</b>	fractura
<b>gallbladder</b>	vesícula biliar
<b>gallstones</b>	cálculos biliar
<b>gastroenterology</b>	gastroenterología
<b>genital</b>	genital
<b>gland</b>	glándula
<b>glaucoma</b>	glaucoma
<b>good</b>	bueno
<b>gray</b>	gris
<b>green</b>	verde
<b>gums</b>	encías
<b>gynecology</b>	ginecología
<b>hand</b>	mano
<b>hard</b>	duro
<b>head</b>	cabeza
<b>headache</b>	dolor de cabeza
<b>healthy</b>	sana
<b>hearing</b>	audición; oído
<b>heart</b>	corazón
<b>hematology</b>	hematología
<b>hemorrhage</b>	hemorragia; desangramiento
<b>hepatitis</b>	hepatitis
<b>hip</b>	cadera
<b>hormone</b>	hormona
<b>hot</b>	caliente; calor
<b>hypertension</b>	hipertensión; presión arterial alta
<b>immunology</b>	immunología
<b>incision</b>	corte; incisión
<b>infection</b>	infección
<b>inflammation</b>	inflamación
<b>influenza</b>	gripe; influenza
<b>inhale</b>	inhalar
<b>injection</b>	inyección; piquete

English	Spanish
<b>inner</b>	interior
<b>insulin</b>	insulina
<b>internal</b>	interno
<b>intestine</b>	intestino; tripa
<b>intravenous</b>	intravenoso
<b>itching</b>	comezón; picazón
<b>jaundice</b>	ictericia
<b>joint</b>	articulación; coyuntura
<b>kidney</b>	riñón
<b>kidney stone</b>	cálculo renales
<b>knee</b>	rodilla; gozne
<b>large</b>	grande
<b>larynx</b>	laringe
<b>left</b>	izquierdo(a)
<b>leg</b>	pierna
<b>ligament</b>	ligamento
<b>lips</b>	labios
<b>liver</b>	hígado
<b>lump</b>	bolita; abultamiento; nudo; protuberancia
<b>lung</b>	pulmón; bofe
<b>lymph node</b>	nódulo; ganglio linfático
<b>lymphatic</b>	linfático
<b>malignant</b>	maligno; pernicioso
<b>mandible</b>	mandíbula
<b>maxilla</b>	maxilar
<b>measles</b>	sarampión
<b>middle</b>	medio
<b>mouth</b>	boca
<b>mumps</b>	paperas; parotiditis
<b>murmur</b>	soplo; murmullo del corazón
<b>muscle</b>	músculo
<b>muscle spasm</b>	espasmo muscular
<b>narrow</b>	estrecho
<b>nausea</b>	náusea; mareo
<b>navel</b>	ombligo
<b>neck</b>	cuello; pescuezo
<b>nephrology</b>	nefrología
<b>nerve</b>	nervio
<b>neurology</b>	neurología
<b>nose</b>	nariz
<b>nosebleed</b>	hemorragia nasal
<b>obstetrics</b>	obstetricia
<b>oncology</b>	oncología
<b>open</b>	abierto
<b>ophthalmology</b>	oftalmología
<b>orange-yellow</b>	cirrho
<b>orthopedics</b>	ortopedia

English	Spanish
<b>otorhinolaryngology</b>	otorrinolaringología
<b>ovary</b>	ovario
<b>oxygen</b>	oxígeno
<b>pain</b>	dolor
<b>palpitation</b>	palpitación
<b>pancreas</b>	páncreas
<b>paralysis</b>	parálisis
<b>parathyroid</b>	paratiroideo
<b>pathology</b>	patología
<b>pelvis</b>	pelvis
<b>penis</b>	pene
<b>phlegm</b>	flemón; inflamación difusa
<b>pituitary</b>	pituitaria
<b>pneumonia</b>	neumonía; inflamación de los pulmones
<b>pregnancy</b>	embarazo
<b>prostate gland</b>	próstata
<b>pulmonology</b>	neumología
<b>pulse</b>	pulso
<b>purple</b>	morado
<b>rash</b>	salpullido; sarpullido; erupción cutánea
<b>rectum</b>	recto; guía de atrás
<b>red</b>	rojo
<b>redness</b>	enrojecimiento; piel colorada
<b>respiration</b>	respiración
<b>rib</b>	costilla
<b>right</b>	derecha
<b>sacrum</b>	sacro; rabadilla
<b>scapula</b>	escápula; hueso de la espaldilla
<b>shoulder</b>	hombro
<b>sick</b>	enfermo(a); mal(a)
<b>side</b>	costado
<b>skeleton</b>	esqueleto
<b>skin</b>	piel; cuero; pellejo; cutis
<b>skull</b>	cráneo; calavera
<b>slow</b>	lento(a); pausado(a)
<b>small</b>	pequeño(a)
<b>soft</b>	blando(a)
<b>sore throat</b>	dolor de garganta
<b>spasm</b>	espasmo
<b>spine</b>	espinazo
<b>spleen</b>	bazo
<b>sprain</b>	torcedura; falseamiento; falseado
<b>sternum</b>	esternón
<b>stiff</b>	tieso(a); rígido(a)
<b>stomach</b>	estómago
<b>stroke</b>	apoplejía; embolia; derrame cerebral
<b>strong</b>	fuerte

English	Spanish
<b>surgery</b>	cirugía
<b>swallow</b>	ingerir; pasar; tragar
<b>sweating</b>	sudar
<b>swelling</b>	hinchar
<b>symptom</b>	síntoma
<b>teeth</b>	dientes
<b>temperature</b>	temperatura
<b>tendon</b>	cuello
<b>test</b>	puerba
<b>testes</b>	testículos; huevos; bolas
<b>tetanus</b>	tétano
<b>thigh</b>	muslo
<b>thorax</b>	tórax
<b>throat</b>	garganta
<b>thyroid</b>	tiroides
<b>toe</b>	dedo del pie
<b>tongue</b>	lengua
<b>tonsil</b>	tonsila; amígdala
<b>tonsillitis</b>	tonsilitis; amigdalitis
<b>trachea</b>	tráquea
<b>treatment</b>	tratamiento
<b>tremor</b>	temblor
<b>tuberculosis</b>	tuberculosis
<b>ulcer</b>	úlcera
<b>ultrasound</b>	ecografía; ultrasonido
<b>unconscious</b>	inconsciente
<b>urethra</b>	uretra; canal
<b>urinalysis</b>	análisis de orina
<b>urination</b>	urinación
<b>urine</b>	orina; pipí
<b>urology</b>	urología
<b>uterus</b>	útero
<b>vaccination</b>	vacunación
<b>vagina</b>	vagina
<b>vein</b>	vena
<b>vertebral column</b>	columna vertebral
<b>vision</b>	visión
<b>vomit</b>	vómito
<b>weakness</b>	debilidad
<b>white</b>	blanco
<b>whooping cough</b>	tos ferina
<b>worse</b>	peor
<b>wound</b>	herida
<b>wrist</b>	muñeca
<b>X-ray</b>	radiografía; rayos equis
<b>yellow</b>	amarillo

# Appendix IV

## Answer Keys

### CHAPTER 1

#### PRACTICE EXERCISES

##### Recognizing Types of Medical Terms (p. 9)

- |                   |                |                |                   |                   |
|-------------------|----------------|----------------|-------------------|-------------------|
| 1. Latin/Greek    | 3. eponym      | 5. Latin/Greek | 7. modern English | 9. modern English |
| 2. modern English | 4. Latin/Greek | 6. eponym      | 8. eponym         | 10. Latin/Greek   |

##### Forming Plurals (p. 9)

- |           |                |            |            |            |              |            |
|-----------|----------------|------------|------------|------------|--------------|------------|
| 1. bursae | 2. diverticula | 3. adenoma | 4. ganglia | 5. indices | 6. diagnosis | 7. nucleus |
|-----------|----------------|------------|------------|------------|--------------|------------|

##### Practice Defining Medical Terms (pp. 10–11)

- |   |  |
|---|--|
| 1. word root, combining vowel, suffix, condition of abnormally soft brain | 7. word root, combining vowel, suffix, enlarged heart  |
| 2. prefix, word root, suffix, pertaining to under the skin                | 8. word root, combining vowel, suffix, surgical repair of the nose                                 |
| 3. word root, combining vowel, suffix, surgical fixation of the uterus    | 9. word root, combining vowel, word root, combining vowel, suffix, study of stomach and intestines |
| 4. prefix, word root, suffix, inflammation of all the sinuses             | 10. prefix, word root, suffix, pertaining to within a vein   |
| 5. word root, combining vowel, suffix, to suture a vessel                 |  |
| 6. prefix, word root, suffix, pertaining to between the ventricles        |  |

##### Practice Building Medical Terms (p. 12)

- |  |   |   |
|--|---|---|
| 1. <b>laryng/o/plasty</b> , laryngoplasty<br>(lah-RING-goh-plas-tee) | 5. <b>neur/oma</b> , neuroma (noo-ROH-mah)                          | 9. <b>laryng/itis</b> , laryngitis (lair-in-JYE-tis)  |
| 2. <b>arthr/o/scope</b> , arthroscope (AR-throh-skohp)               | 6. <b>intra/muscul/ar</b> , intramuscular<br>(in-trah-MUS-kyoo-lar) | 10. <b>arthr/algia</b> , arthralgia (ar-THRAL-jee-ah) |
| 3. <b>sub/scapul/ar</b> , subscapular<br>(sub-SKAP-yoo-lar)          | 7. <b>pan/sinus/itis</b> , pansinusitis<br>(pan-sigh-nus-EYE-tis)   |   |
| 4. <b>ophthalm/o/logy</b> , ophthalmology<br>(off-thal-MALL-oh-jee)  | 8. <b>neur/o/plasty</b> , neuroplasty<br>(NOOR-oh-plas-tee)         |   |

### CHAPTER 2

#### PRACTICE EXERCISES

##### Recognizing Categories of Suffixes (pp. 18–19)

- |  |   |  |
|--|---|--|
| 1. disease/abnormal condition, paralysis condition | 5. disease/abnormal condition, stone    | 10. surgical, to surgically break          |
| 2. diagnostic, process of measuring                | 6. diagnostic, instrument for viewing   | 11. disease/abnormal condition, to destroy |
| 3. general, cell                                   | 7. general, chest                       | 12. surgical, surgical removal             |
| 4. surgical, cutting into                          | 8. diagnostic, process of recording     |  |
|  | 9. disease/abnormal condition, vomiting |  |

##### Matching (p. 19)

- |      |      |      |      |       |       |
|------|------|------|------|-------|-------|
| 1. E | 3. F | 5. C | 7. I | 9. K  | 11. B |
| 2. L | 4. H | 6. D | 8. A | 10. G | 12. J |

##### Choosing the Correct Adjective Form (pp. 19–20)

- |            |                |               |            |             |
|------------|----------------|---------------|------------|-------------|
| 1. cardiac | 3. duodenal    | 5. pulmonary  | 7. gastric | 9. venous   |
| 2. ovarian | 4. ventricular | 6. esophageal | 8. uterine | 10. hepatic |

## Building Terms with Suffixes (pp. 20–24)

1. **gastr/ectomy**, gastrectomy (*gas-TREK-toh-mee*)
2. **gastr/o/scope**, gastroscope (*GAS-troh-skohp*)
3. **gastr/o/scopy**, gastroscopy (*gas-TROSS-koh-pee*)
4. **gastr/algia** OR **gastr/o/dynia**, gastralgia (*gas-TRAL-jee-ah*) OR **gastrodynia**, (*gas-troh-DIN-ee-ah*)
5. **cyst/o/lith**, cystolith (*SIS-toh-lith*)
6. **cyst/o/scope**, cystoscope (*SIS-toh-skohp*)
7. **cyst/o/scopy**, cystoscopy (*sis-TOSS-koh-pee*)
8. **cyst/o/stomy**, cystostomy (*sis-TOSS-toh-mee*)
9. **cyst/ic**, cystic (*SIS-tik*)
10. **angi/o/plasty**, angioplasty (*AN-jee-oh-plas-tee*)
11. **angi/oma**, angioma (*AN-jee-oh-mah*)
12. **angi/o/graphy**, angiography (*an-jee-OG-rah-fee*)
13. **angi/o/gram**, angiogram (*AN-jee-oh-gram*)
14. **angi/o/stenosis**, angiostenosis (*an-jee-oh-steh-NOH-sis*)
15. **arteri/o/sclerosis**, arteriosclerosis (*ar-tee-ree-oh-skleh-ROH-sis*)
16. **arteri/o/spasm**, arteriospasm (*ar-tee-ree-oh-SPAZM*)
17. **arteri/o/rrhexis**, arteriorrhexis (*ar-tee-ree-oh-REK-sis*)
18. **arteri/ole**, arteriole (*ar-TEER-ee-ohl*)
19. **arthr/itis**, arthritis (*ar-THRY-tis*)
20. **arthr/o/scope**, arthroscope (*AR-throh-skohp*)
21. **arthr/o/scopy**, arthroscopy (*ar-THROS-koh-pee*)
22. **arthr/o/plasty**, arthroplasty (*AR-throh-plas-tee*)
23. **arthr/o/centesis**, arthrocentesis (*ar-throh-sen-TEE-sis*)
24. **dermat/o/logy**, dermatology (*der-mah-TALL-oh-jee*)
25. **dermat/o/logist**, dermatologist (*der-mah-TALL-oh-jist*)
26. **dermat/itis**, dermatitis (*der-mah-TYE-tis*)
27. **dermat/osis**, dermatosis (*der-mah-TOH-sis*)
28. **hepat/itis**, hepatitis (*hep-ah-TYE-tis*)
29. **hepat/oma**, hepatoma (*hep-ah-TOH-mah*)
30. **hepat/o/megaly**, hepatomegaly (*hep-ah-toh-MEG-ah-lee*)
31. **hepat/o/cyte**, hepatocyte (*hep-ah-toh-SIGHT*)
32. **hepat/ic**, hepatic (*heh-PAT-ik*)
33. **rhin/o/rhea**, rhinorrhea (*rye-noh-REE-ah*)
34. **rhin/o/plasty**, rhinoplasty (*RYE-noh-plas-tee*)
35. **rhin/o/rrhagia**, rhinorrhagia (*rye-noh-RAY-jee-ah*)
36. **bronch/itis**, bronchitis (*brong-KIGH-tis*)
37. **bronch/o/scope**, bronchoscope (*BRONG-koh-skohp*)
38. **bronch/o/scopy**, bronchoscopy (*brong-KOSS-koh-pee*)
39. **trache/o/stomy**, tracheostomy (*tray-kee-OSS-toh-mee*)
40. **trache/o/tomy**, tracheotomy (*tray-kee-OT-oh-mee*)
41. **trache/o/cele**, tracheocele (*TRAY-kee-oh-seel*)
42. **trache/o/malacia**, tracheomalacia (*TRAY-kee-oh-mah-LAY-shee-ah*)
43. **trache/al**, tracheal (*TRAY-kee-al*)
44. **col/o/stomy**, colostomy (*koh-LOSS-toh-mee*)
45. **col/ectomy**, colectomy (*koh-LEK-toh-mee*)
46. **col/o/pexy**, colopexy (*KOH-loh-pek-see*)
47. **nephrology**, nephrology (*neh-FROL-oh-jee*)
48. **nephrologist**, nephrologist (*neh-FROL-oh-jist*)
49. **nephro/malacia**, nephromalacia (*nef-roh-mah-LAY-shee-ah*)
50. **nephro/osis**, nephrosis (*neh-FROH-sis*)
51. **nephro/pathy**, nephropathy (*neh-FROP-ah-thee*)
52. **nephro/pexy**, nephropexy (*NEF-roh-pek-see*)
53. **thorac/o/tomy**, thoracotomy (*thor-ah-KOT-oh-mee*)
54. **thorac/o/centesis**, thoracocentesis (*thor-ah-koh-sen-TEE-sis*)
55. **thorac/o/dynia** OR **thorac/algia**, thoracodynia (*thor-ah-koh-DIN-ee-ah*) OR **thoracalgia** (*thor-ah-KAL-jee-ah*)
56. **neur/o/logy**, neurology (*noo-RALL-oh-jee*)
57. **neur/o/logist**, neurologist (*noo-RALL-oh-jist*)
58. **neur/o/plasty**, neuroplasty (*NOOR-oh-plas-tee*)
59. **neur/o/tripsy**, neurotripsy (*noo-roh-TRIP-see*)
60. **neur/algia** OR **neur/o/dynia**, neuralgia (*noo-RAL-jee-ah*) OR **neurodynia** (*noo-roh-DIN-ee-ah*)
61. **my/o/rrhaphy**, myorrhaphy (*my-OR-ah-fee*)
62. **my/o/pathy**, myopathy (*my-OP-ah-thee*)
63. **my/algia** OR **my/o/dynia**, myalgia (*my-AL-jee-ah*) OR **myodynia** (*my-oh-DIN-ee-ah*)
64. **my/o/tome**, myotome (*MY-oh-tohm*)
65. **my/o/graph**, myograph (*MY-oh-graf*)
66. **my/o/gram**, myogram (*MY-oh-gram*)
67. **my/o/graphy**, myography (*my-OG-rah-fee*)

## CHAPTER 3

### PRACTICE EXERCISES

#### Recognizing Categories of Prefixes (p. 29)

- |  |                                 |                                     |                                     |
|--|---------------------------------|-------------------------------------|-------------------------------------|
| 1. disease/abnormality, painful/difficult/abnormal | 4. disease/abnormality, slow    | 7. direction/body position, between | 10. direction/body position, around |
| 2. number/quantity, excessive                      | 5. disease/abnormality, without | 8. time, after                      | 11. direction/body position, above  |
| 3. number, none                                    | 6. time, new                    | 9. number, small                    | 12. disease/abnormality, against    |

#### Matching (pp. 29–30)

- |      |      |      |      |       |       |
|------|------|------|------|-------|-------|
| 1. G | 3. L | 5. J | 7. E | 9. F  | 11. I |
| 2. D | 4. A | 6. K | 8. B | 10. H | 12. C |

#### Building Terms with Prefixes (pp. 30–32)

- |   |   |   |
|---|---|---|
| 1. <b>tachy/cardia</b> , tachycardia ( <i>tak-ee-KAR-dee-ah</i> )     | 6. <b>intra/cellular</b> , intracellular ( <i>in-trah-SELL-yoo-lar</i> )  | 10. <b>intra/dermal</b> , intradermal ( <i>in-trah-DER-mal</i> )  |
| 2. <b>brady/cardia</b> , bradycardia ( <i>brad-ee-KAR-dee-ah</i> )    | 7. <b>extra/cellular</b> , extracellular ( <i>eks-trah-SELL-yoo-lar</i> ) | 11. <b>sub/dermal</b> , subdermal ( <i>sub-DER-mal</i> )          |
| 3. <b>endo/carditis</b> , endocarditis ( <i>en-doh-kar-DYE-tis</i> )  | 8. <b>multi/cellular</b> , multicellular ( <i>mull-tih-SELL-yoo-lar</i> ) | 12. <b>epi/dermal</b> , epidermal ( <i>ep-ih-DER-mal</i> )        |
| 4. <b>peri/carditis</b> , pericarditis ( <i>pair-ih-kar-DYE-tis</i> ) | 9. <b>uni/cellular</b> , unicellular ( <i>YOO-nih-SELL-yoo-lar</i> )      | 13. <b>homo/graft</b> , homograft ( <i>HOH-moh-graft</i> )        |
| 5. <b>pan/carditis</b> , pancarditis ( <i>PAN-kar-dye-tis</i> )       |   | 14. <b>hetero/graft</b> , heterograft ( <i>HET-eh-roh-graft</i> ) |
|   |   | 15. <b>auto/graft</b> , autograft ( <i>AW-toh-graft</i> )         |
|   |   | 16. <b>bi/lateral</b> , bilateral ( <i>bye-LAT-er-al</i> )        |
|   |   | 17. <b>uni/lateral</b> , unilateral ( <i>yoo-nih-LAT-er-al</i> )  |

18. **pre/operative**, preoperative (*pree-OP-er-ah-tiv*)
19. **post/operative**, postoperative (*post-OP-er-ah-tiv*)
20. **intra/operative**, intraoperative (*in-trah-OP-er-ah-tiv*)
21. **primi/para**, primipara (*prye-MIP-ah-rah*)
22. **nulli/para**, nullipara (*null-IP-ah-rah*)
23. **multi/para**, multipara (*mull-TIP-ah-rah*)
24. **a/phagia**, aphagia (*ah-FAY-jee-ah*)
25. **dys/phagia**, dysphagia (*dis-FAY-jee-ah*)
26. **poly/phagia**, polyphagia (*pol-ee-FAY-jee-ah*)
27. **a/pepsia**, aepsia (*ay-PEP-see-ah*)
28. **dys/pepsia**, dyspepsia (*dis-PEP-see-ah*)
29. **brady/pepsia**, bradypepsia (*brad-ee-PEP-see-ah*)
30. **a/trophy**, atrophy (*AT-rah-fee*)
31. **dys/trophy**, dystrophy (*DIS-troh-fee*)
32. **hemi/plegia**, hemiplegia (*hem-ee-PLÉE-jee-ah*)
33. **quadri/plegia**, quadriplegia (*kwod-rih-PLÉE-jee-ah*)
34. **mono/plegia**, monoplegia (*mon-oh-PLÉE-jee-ah*)
35. **a/pnea**, apnea (*AP-nee-ah*)
36. **eu/pnea**, eupnea (*yoop-NEE-ah*)
37. **tachy/pnea**, tachypnea (*tak-ip-NEE-ah*)
38. **brady/pnea**, bradypnea (*brad-ip-NEE-ah*)
39. **hyper/pnea**, hyperpnea (*high-PERP-nee-ah*)
40. **hypo/pnea**, hypopnea (*high-POP-nee-ah*)
41. **infra/scapular**, infrascapular (*in-frah-SKAP-yoo-lar*)
42. **supra/scapular**, suprascapular (*soo-prah-SKAP-yoo-lar*)
43. **sub/scapular**, subscapular (*sub-SKAP-yoo-lar*)
44. **an/uria**, anuria (*an-YOO-ree-ah*)
45. **poly/uria**, polyuria (*pol-ee-YOO-ree-ah*)
46. **dys/uria**, dysuria (*dis-YOOR-ee-ah*)

## CHAPTER 4

### Building Directional Terms (pp. 40–42)

1. **anterior** (*an-TEER-ee-or*), pertaining to the front (of body)
2. **caudal** (*KAUD-al*), pertaining to the tail
3. **cephalic** (*seh-FAL-ik*), pertaining to the head
5. **distal** (*DIS-tal*), pertaining to away from (beginning of structure)
6. **dorsal** (*DOR-sal*), pertaining to back (of body)
7. **inferior** (*in-FEER-ee-or*), pertaining to below
8. **lateral** (*LAT-er-al*), pertaining to the side
9. **medial** (*MEE-dee-al*), pertaining to the middle
10. **posterior** (*poss-TEER-ee-or*), pertaining to back (of body)
12. **proximal** (*PROK-sim-al*), pertaining to near to (beginning of a structure)
14. **superior** (*soo-PEER-ee-or*), pertaining to above
16. **ventral** (*VEN-tral*), pertaining to belly (surface of body)

### Building Body Region Terms (pp. 42–46)

1. **abdominal** (*ab-DOM-ih-nal*), pertaining to abdomen
2. **antecubital** (*an-tee-KYOO-bih-tal*), pertaining to front of elbow
4. **brachial** (*BRAY-kee-al*), pertaining to arm
5. **cervical** (*SER-vih-kal*), pertaining to neck
6. **cranial** (*KRAY-nee-al*), pertaining to skull
7. **femoral** (*FEM-or-al*), pertaining to femur (thigh)
8. **genital** (*JEN-ih-tal*), pertaining to genital
9. **gluteal** (*GLOO-tee-al*), pertaining to buttocks
10. **inguinal** (*ING-gwih-nal*), pertaining to groin
12. **nasal** (*NAY-zal*), pertaining to nose
13. **orbital** (*OR-bih-tal*), pertaining to eye socket
14. **oral** (*OR-al*), pertaining to mouth
15. **otic** (*OH-tik*), pertaining to ear
17. **patellar** (*pah-TEL-ar*), pertaining to patella (kneecap)
18. **pelvic** (*PEL-vik*), pertaining to pelvis
21. **scapular** (*SKAP-yoo-lar*), pertaining to scapula (shoulder blade)
22. **sternal** (*STER-nal*), pertaining to sternum (breast bone)
23. **thoracic** (*tho-RASS-ik*), pertaining to chest
27. **vertebral** (*VER-the-bral*), pertaining to vertebrae (backbone)

## PRACTICE EXERCISES

### Directional Terms (pp. 49–50)

- |                         |                        |                         |                         |                         |
|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| 1. posterior OR dorsal  | 4. superficial         | 7. superior OR cephalic | 10. anterior OR ventral | 13. inferior OR caudal  |
| 2. cephalic OR superior | 5. proximal            | 8. medial               | 11. distal              | 14. dorsal OR posterior |
| 3. caudal OR inferior   | 6. ventral OR anterior | 9. lateral              | 12. deep                | 15. prone               |

### Fill in the Blank (p. 50)

- |           |                                    |               |               |                 |
|-----------|------------------------------------|---------------|---------------|-----------------|
| 1. spinal | 4. cells, tissues, organs, systems | 6. peritoneum | 9. pelvic     | 12. mediastinum |
| 2. pleura | 5. thoracic                        | 7. brain      | 10. meninges  |                 |
| 3. dorsal |                                    | 8. heart      | 11. abdominal |                 |

### Labeling Exercise—Body Regions (p. 51)

- |             |             |              |            |              |               |
|-------------|-------------|--------------|------------|--------------|---------------|
| 1. Cranial  | 3. Thoracic | 5. Abdominal | 7. Genital | 9. Trunk     | 11. Vertebral |
| 2. Cervical | 4. Brachial | 6. Pelvic    | 8. Femoral | 10. Scapular | 12. Gluteal   |

### Matching—Planes and Sections (p. 52)

- |      |         |      |      |       |
|------|---------|------|------|-------|
| 1. A | 3. B    | 5. A | 7. C | 9. D  |
| 2. F | 4. A, B | 6. E | 8. C | 10. C |

### Matching—Organs and Clinical Divisions of the Abdominopelvic Cavity (pp. 52–53)

- |      |      |      |      |       |       |       |
|------|------|------|------|-------|-------|-------|
| 1. A | 3. C | 5. E | 7. B | 9. C  | 11. C | 13. B |
| 2. D | 4. C | 6. A | 8. D | 10. F | 12. E |       |

## Labeling Exercise—Anatomical Divisions of the Abdominopelvic Cavity (p. 53)

1. Right hypochondriac region
2. Right lumbar region
3. Right iliac/inguinal region
4. Epigastric region
5. Umbilical region
6. Hypogastric region
7. Left hypochondriac region
8. Left lumbar region
9. Left iliac/inguinal region

## CHAPTER 5

### Building Dermatology Terms (pp. 57–62)

1. **a. aden/ectomy**, adenectomy (*ad-eh-NEK-toh-mee*); **b. aden/itis**, adenitis (*ad-eh-NIGH-tis*); **c. aden/oma**, adenoma (*ad-eh-NOH-mah*); **d. aden/o/pathy**, adenopathy (*ad-eh-NOP-ah-thee*); **e. aden/o/megaly**, adenomegaly (*ad-eh-noh-MEG-ah-lee*)
2. **a. adip/ose**, adipose (*AD-ih-pohs*) OR **adip/ic**, adipic (*ah-DIP-ik*); **b. adip/o/cyte** adipocyte (*AD-ih-POH-sight*); **c. adip/oma**, adipoma (*ad-ih-POH-mah*)
3. **a. cutane/ous**, cutaneous (*kyoo-TAY-nee-us*); **b. sub/cutane/ous**, subcutaneous (*sub-kyoo-TAY-nee-us*); **c. per/cutane/ous**, percutaneous (*per-kyoo-TAY-nee-us*)
4. **a. ichthy/o/derma**, ichthyoderma (*IK-thee-oh-derm-ah*); **b. scler/o/derma**, scleroderma (*sklair-ah-DER-mah*); **c. xanth/o/derma**, xanthoderma (*ZAN-thoh-der-mah*); **d. xer/o/derma**, xeroderma (*zeer-oh-DER-mah*); **e. pachy/derma**, pachyderma (*pak-ee-DER-mah*); **f. erythr/o/derma**, erythroderma (*eh-rith-roh-DER-mah*); **g. py/o/derma**, pyoderma (*pye-oh-DER-mah*); **h. leuk/o/derma**, leukoderma (*loo-koh-DER-mah*)
5. **a. derm/al**, dermal (*DER-mal*) OR **derm/ic**, dermic (*DER-mik*); **b. epi/derm/al**, epidermal (*ep-ih-DER-mal*); **c. intra/derm/al**, intradermal (*in-trah-DER-mal*); **d. hypo/derm/ic**, hypodermic (*high-poh-DER-mik*) OR **sub/derm/al**, subdermal (*sub-DER-mal*); **e. trans/derm/al**, transdermal (*tranz-DER-mal*)
6. **a. dermat/itis**, dermatitis (*der-mah-TYE-tis*); **b. dermat/o/logy**, dermatology (*der-mah-TALL-oh-jee*); **c. dermat/o/logist**, dermatologist (*der-mah-TALL-oh-jist*); **d. dermat/osis**, dermatosis (*der-mah-TOH-sis*); **e. dermat/o/plasty**, dermatoplasty (*DER-mah-toh-plas-tee*); **f. dermat/o/myc/osis**, dermatomycosis (*der-mah-toh-my-KOH-sis*); **g. dermat/o/pathy**, dermatopathy (*der-mah-TOP-ah-thee*)
7. **a. hidr/osis**, hidrosis (*high-DROH-sis*); **b. an/hidr/osis**, anhidrosis (*an-high-DROH-sis*); **c. hidr/aden/itis**, hidradenitis (*high-drad-ee-NIGH-tis*); **d. hyper/hidr/osis**, hyperhidrosis (*high-per-high-DROH-sis*)
8. **a. kerat/o/derma**, keratoderma (*kair-ah-toh-DER-mah*); **b. kerat/osis**, keratosis (*kair-ah-TOH-sis*)
9. **a. lip/ectomy**, lipectomy (*lih-PEK-toh-mee*); **b. lip/oma**, lipoma (*lih-POH-mah*); **c. lip/o/cyte**, lipocyte (*LIP-oh-sight*)
10. **a. melan/oma**, melanoma (*mel-ah-NOH-mah*); **b. melan/o/cyte**, melanocyte (*mel-AN-oh-sight*); **c. melan/o/tic**, melanotic (*mel-ah-NOT-ik*)
11. **a. onych/ectomy**, onychectomy (*on-ih-KEK-toh-mee*); **b. onych/itis**, onychitis (*on-ih-KIGH-tis*); **c. onych/o/malacia**, onychomalacia (*on-ih-koh-mah-LAY-shee-ah*); **d. onych/o/myc/osis**, onychomycosis (*on-ih-koh-my-KOH-sis*); **e. onych/o/phagia**, onychophagia (*on-ih-koh-FAY-jee-ah*)
12. **a. py/o/genic**, pyogenic (*pye-oh-JEN-ik*); **b. py/o/rrhea**, pyorrhea (*pye-oh-REE-ah*)
13. **seb/o/rrhea**, seborrhea (*seb-or-EE-ah*)
14. **a. trich/o/myc/osis**, trichomycosis (*trik-oh-my-KOH-sis*); **b. trich/o/phagia**, trichophagia (*trik-oh-FAY-jee-ah*)
15. **a. ungu/al**, ungual (*UNG-gwal*); **b. sub/ungu/al**, subungual (*sub-UNG-gwal*)

### CASE STUDY CRITICAL THINKING QUESTIONS (PP. 72–73)

1. First appeared as painful, reddened, raised spots with pus in them
2. Antibiotic pills taken by mouth, ointments to reduce inflammation rubbed into skin, swirling water baths to clean ulcers
3. Diabetes mellitus
4. A
5. C&S—C means culture, growing bacteria in a petri dish to identify what kind of bacteria it is; S means sensitivity, determining which antibiotic will best kill the bacteria; in this case, penicillin will not kill it, so vancomycin is recommended
6. Staph is common bacteria found on skin and in nose and throat; can become serious infection if it gets down into layers of skin or invades bloodstream, urinary tract, lungs, and heart; some strains of staph have become resistant to many common antibiotics
7. Gangrene occurs when tissue does not have sufficient circulation to keep tissue healthy; as a result, tissue dies
8. Antibiotics to fight infection given into vein, treatments in whirlpool bath to clean up ulcers, go to surgery to remove dead and infected tissue

### PRACTICE EXERCISES

#### Sound It Out (p. 74)

- |               |               |                  |               |                  |
|---------------|---------------|------------------|---------------|------------------|
| 1. abrasion   | 6. cellulitis | 11. onychophagia | 16. nodule    | 21. dermatology  |
| 2. adipoma    | 7. ulcer      | 12. gangrene     | 17. macule    | 22. seborrhea    |
| 3. cyst       | 8. abscess    | 13. hypodermic   | 18. necrosis  | 23. subcutaneous |
| 4. anhidrosis | 9. dermatome  | 14. vesicle      | 19. papule    | 24. tine         |
| 5. biopsy     | 10. fissure   | 15. lipoma       | 20. psoriasis | 25. ungual       |

#### Transcription Practice (pp. 74–75)

1. The dermatologist took a biopsy to determine that the patient has a nevus rather than malignant melanoma.
2. A culture and sensitivity was performed to determine how best to treat the infected ulcer.
3. The patient had a very large boil (or furuncle) surrounded by a large area of cellulitis.
4. Ms. Marks was lucky, when she tripped off the curb she received only abrasions and contusions.



- Mr. Brown's chronic exposure to toxins at work had left him with xeroderma, ichthyoderma, and pachyderma.
- After years of onychophagia, the patient developed onychomalacia and onychomycosis that required onychectomy.
- To repair the areas of third-degree burns, a skin graft was necessary.
- Mr. Strong was concerned that the lump he could feel under his skin was an adenoma, but it turned out to only be a lipoma/adipoma, and it was removed with a lipectomy/adipectomy.
- The plastic surgeon helped Mr. Marsh decide whether to use chemabrasion or dermabrasion for his face-lift.
- New medical students often have difficulty telling the difference between a macule, a papule, and a cyst.

### Labeling Exercise (p. 76)

- |                       |                                     |                                  |            |
|-----------------------|-------------------------------------|----------------------------------|------------|
| 1. Epidermis          | 4. Sweat gland ( <b>hidr/o</b> )    | 7. Arrector pili muscle          | 10. Vein   |
| 2. Dermis             | 5. Sensory receptors                | 8. Hair shaft ( <b>trich/o</b> ) | 11. Artery |
| 3. Subcutaneous layer | 6. Sebaceous gland ( <b>seb/o</b> ) | 9. Nerve                         |            |

### Build Medical Terms (pp. 76–77)

- |                 |                  |               |                   |                   |
|-----------------|------------------|---------------|-------------------|-------------------|
| 1. xeroderma    | 4. scleroderma   | 7. anhidrosis | 10. dermatopathy  | 13. onychomalacia |
| 2. erythroderma | 5. pachyderma    | 8. melanocyte | 11. dermatoplasty | 14. onychomycosis |
| 3. pyoderma     | 6. hyperhidrosis | 9. melanoma   | 12. dermatology   | 15. onychectomy   |

### Spelling (p. 77)

- |                      |                      |                      |              |                      |
|----------------------|----------------------|----------------------|--------------|----------------------|
| 1. impetigo          | 3. wheal             | 5. correctly spelled | 7. petechiae | 9. correctly spelled |
| 2. correctly spelled | 4. correctly spelled | 6. tinea             | 8. gangrene  | 10. necrosis         |

### Fill in the Blank (pp. 77–78)

- |                        |                                   |                              |                    |
|------------------------|-----------------------------------|------------------------------|--------------------|
| 1. fissure, laceration | 4. third-degree or full-thickness | 7. ecchymosis                | 10. pressure ulcer |
| 2. herpes simplex      | 5. macule                         | 8. biopsy                    |                    |
| 3. dermabrasion        | 6. debridement                    | 9. papule or nodule, pustule |                    |

### Abbreviation Matching (p. 78)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. E | 3. H | 5. J | 7. A | 9. F  |
| 2. I | 4. G | 6. B | 8. D | 10. C |

### Medical Term Analysis (pp. 78–80)

- |   |  |   |
|---|--|---|
| 1. <b>aden/o</b> , gland, <b>-megaly</b> , enlarged, enlarged gland                               | 5. <b>kerat</b> , hard, hornlike, <b>-osis</b> , abnormal condition, hornlike abnormal condition | 8. <b>erythr/o</b> , red, <b>-derma</b> , skin condition, red skin condition  |
| 2. <b>adip/o</b> , fat, <b>-cyte</b> , cell, fat cell   | 6. <b>lip</b> , fat, <b>-ectomy</b> , surgical removal, surgical removal of fat                  | 9. <b>trich/o</b> , hair, <b>myc</b> , fungus, <b>-osis</b> , abnormal condition, abnormal condition of hair fungus |
| 3. <b>melan</b> , black, <b>-oma</b> , tumor, black tumor   | 7. <b>py/o</b> , pus, <b>-rrhea</b> , discharge, pus discharge                                   | 10. <b>sub-</b> , under, <b>cutane</b> , skin, <b>-ous</b> , pertaining to, pertaining to under the skin            |
| 4. <b>hypo-</b> , below, <b>derm</b> , skin, <b>-ic</b> , pertaining to, pertaining to below skin |  |   |

### Multiple Choice (p. 80)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. b | 5. c | 7. d | 9. b  |
| 2. d | 4. a | 6. a | 8. a | 10. c |

### Visual Identification Challenge (p. 81)

- |            |            |            |
|------------|------------|------------|
| 1. cyst    | 3. macule  | 5. ulcer   |
| 2. fissure | 4. pustule | 6. vesicle |

## CHAPTER 6

### Building Orthopedic Terms (pp. 87–97)

- |   |  |
|---|--|
| 1. <b>a. ili/ac</b> , iliac ( <i>IL-ee-ak</i> ); <b>b. sub/ili/ac</b> , subiliac ( <i>sub-IL-ee-ak</i> )  | 3. <b>a. clavicul/ar</b> , clavicular ( <i>klah-VIK-yoo-lar</i> ); <b>b. fibul/ar</b> , fibular ( <i>FIB-yoo-lar</i> ); <b>c. mandibul/ar</b> , mandibular ( <i>man-DIB-yoo-lar</i> ); <b>d. sub/mandibul/ar</b> , submandibular ( <i>sub-man-DIB-yoo-lar</i> ); <b>e. patell/ar</b> , patellar ( <i>pah-TEL-ar</i> ); <b>f. scapul/ar</b> , scapular ( <i>SKAP-yoo-lar</i> ); <b>g. sub/scapul/ar</b> , subscapular ( <i>sub-SKAP-yoo-lar</i> ); <b>h. uln/ar</b> , ulnar ( <i>UL-nar</i> ) |
| 2. <b>a. carp/al</b> , carpal ( <i>KAR-pal</i> ); <b>b. cost/al</b> , costal ( <i>KOS-tal</i> ); <b>c. inter/cost/al</b> , intercostal ( <i>in-ter-KOS-tal</i> ); <b>d. femor/al</b> , femoral ( <i>FEM-or-al</i> ); <b>e. humer/al</b> , humeral ( <i>HYOO-mer-al</i> ); <b>f. ischi/al</b> , ischial ( <i>ISS-kee-al</i> ); <b>g. metacarp/al</b> , metacarpal ( <i>met-ah-KAR-pal</i> ); <b>h. metatars/al</b> , metatarsal ( <i>met-ah-TAR-sal</i> ); <b>i. radi/al</b> , radial ( <i>RAY-dee-al</i> ); <b>j. sacr/al</b> , sacral ( <i>SAY-kral</i> ); <b>k. stern/al</b> , sternal ( <i>STER-nal</i> ); <b>l. sub/stern/al</b> , substernal ( <i>sub-STER-nal</i> ); <b>m. tars/al</b> , tarsal ( <i>TAR-sal</i> ); <b>n. tibi/al</b> , tibial ( <i>TIB-ee-al</i> ); <b>o. vertebr/al</b> , vertebral ( <i>VER-teh-bral</i> ); <b>p. inter/vertebr/al</b> , intervertebral ( <i>in-ter-VER-teh-bral</i> ) | 4. <b>a. arthr/o/centesis</b> , arthrocentesis ( <i>ar-throh-sen-TEE-sis</i> ); <b>b. arthr/o/clasia</b> , arthroclasia ( <i>ar-throh-KLAY-zee-ah</i> ); <b>c. arthr/o/desis</b> , arthrodesis ( <i>ar-throh-DEE-sis</i> ); <b>d. arthr/o/graphy</b> , arthrography ( <i>ar-THROG-rah-fee</i> ); <b>e. arthr/o/gram</b> , arthrogram   |

- (AR-throh-gram); **f. arthr/itis**, arthritis (ar-THRY-tis); **g. arthr/o/scopy**, arthroscopy (ar-THROS-koh-pee); **h. arthr/o/scope**, arthroscope (AR-throh-skohp); **i. arthr/o/plasty**, arthroplasty (AR-throh-plas-tee); **j. arthr/algia**, arthralgia (ar-THRAL-jee-ah)
5. **a. maxill/ary**, maxillary (MAK-sih-lair-ee); **b. supra/maxill/ary**, supramaxillary (soo-prah-MAK-sih-lair-ee)
6. **a. burs/al**, bursal (BER-sal); **b. burs/itis**, bursitis (ber-SIGH-tis); **c. burs/ectomy**, bursectomy (ber-SEK-toh-mee)
7. **a. chondr/al**, chondral (KON-dral); **b. chondr/itis**, chondritis (kon-DRIGH-tis); **c. chondr/ectomy**, chondrectomy (kon-DREK-toh-mee); **d. chondr/o/malacia**, chondromalacia (kon-droh-mah-LAY-shee-ah); **e. chondr/oma**, chondroma (kon-DROH-mah); **f. chondr/o/plasty**, chondroplasty (KON-droh-plas-tee)
8. **a. crani/al**, cranial (KRAY-nee-al); **b. intra/crani/al**, intracranial (in-trah-KRAY-nee-al); **c. crani/o/tomy**, craniotomy (kray-nee-OT-oh-mee)
9. **a. coccyg/eal**, coccygeal (kok-SIH-jee-al); **b. phalang/eal**, phalangeal (fah-LAN-jee-al)
10. **a. fasci/itis**, fasciitis (fash-ee-EYE-tis); **b. fasci/o/tomy**, fasciotomy (fash-ee-OT-oh-mee)
11. **a. pub/ic**, pubic (PYOO-bik); **b. supra/pub/ic**, suprapubic (soo-prah-PYOO-bik)
12. **a. ab/duct/ion**, abduction (ab-DUK-shun); **b. ad/duct/ion**, adduction (ah-DUK-shun); **c. dors/i/flex/ion**, dorsiflexion (dor-sih-FLEK-shun); **d. e/vers/ion**, eversion (ee-VER-zhun); **e. extens/ion**, extension (eks-TEN-shun); **f. flex/ion**, flexion (FLEK-shun); **g. in/vers/ion**, inversion (in-VER-zhun); **h. plant/ar flex/ion**, plantar flexion (PLAN-tar / FLEK-shun); **i. pronation** (proh-NAY-shun); **j. supination** (soo-pih-NAY-shun)
13. **a. brady/kinesia**, bradykinesia (brad-ee-kih-NEE-zee-ah); **b. dys/kinesia**, dyskinesia (dis-kih-NEE-zee-ah); **c. hyper/kinesia**, hyperkinesia (high-per-kih-NEE-zee-ah)
14. **a. menisc/ectomy**, meniscectomy (men-ih-SEK-toh-mee); **b. menisc/itis**, meniscitis (men-ih-SIGH-tis)
15. **a. muscul/ar**, muscular (MUS-kyoo-lar); **b. intra/muscul/ar**, intramuscular (in-trah-MUS-kyoo-lar [IM])
16. **a. myel/oma**, myeloma (my-eh-LOH-mah); **b. myel/o/genic**, myelogenic (my-eh-loh-JEN-ik); **c. myel/o/pathy**, myelopathy (my-eh-LOP-ah-thee)
17. **a. my/algia**, myalgia (my-AL-jee-ah); **b. my/asthenia**, myasthenia (my-as-THÉE-nee-ah); **c. electr/o/my/o/gram**, electromyogram (ee-lek-troh-MY-oh-gram [EMG]); **d. electr/o/my/o/graphy**, electromyography (ee-lek-troh-my-OG-rah-fee [EMG]); **e. my/o/pathy**, myopathy (my-OP-ah-thee); **f. my/o/rrhaphy**, myorrhaphy (my-OR-ah-fee); **g. my/o/rrhexis**, myorrhexis (my-oh-REK-sis)
18. **a. ankyl/osis**, ankylosis (ang-kih-LOH-sis); **b. kyph/osis**, kyphosis (kye-FOH-sis); **c. lord/osis**, lordosis (lor-DOH-sis); **d. scoli/osis**, scoliosis (skoh-lee-OH-sis)
19. **a. oste/algia**, ostealgia (oss-tee-AL-jee-ah); **b. oste/o/cyte**, osteocyte (OSS-tee-oh-sight); **c. oste/o/genic**, osteogenic (oss-tee-oh-JEN-ik); **d. oste/o/arthr/itis**, osteoarthritis (oss-tee-oh-ar-THRY-tis); **e. oste/o/chondr/itis**, osteochondritis (oss-tee-oh-kon-DRIGH-tis); **f. oste/o/chondr/oma**, osteochondroma (oss-tee-oh-kon-DROH-mah); **g. oste/o/clasia**, osteoclasia (oss-tee-oh-KLAY-zee-ah); **h. oste/o/myel/itis**, osteomyelitis (oss-tee-oh-my-eh-LYE-tis); **i. oste/o/pathy**, osteopathy (oss-tee-OP-ah-thee); **j. oste/o/tome**, osteotome (OSS-tee-oh-tohm); **k. oste/o/malacia**, osteomalacia (oss-tee-oh-mah-LAY-shee-ah); **l. oste/o/porosis**, osteoporosis (oss-tee-oh-poh-ROH-sis)
20. **a. spondyl/osis**, spondylosis (spon-dih-LOH-sis); **b. spondyl/itis**, spondylitis (spon-dih-LYE-tis)
21. **a. ten/algia**, tenalgia (ten-AL-jee-ah); **b. ten/o/dynia**, tenodynia (ten-oh-DIN-ee-ah); **c. ten/o/desis**, tenodesis (ten-oh-DEE-sis); **d. ten/o/rrhaphy**, tenorrhaphy (teh-NOR-ah-fee)
22. **a. tendin/ous**, tendinous (TEN-dih-nus); **b. tendin/itis**, tendinitis (ten-dih-NIGH-tis); **c. tendin/o/plasty**, tendinoplasty (ten-dih-noh-PLAS-tee); **d. tendin/osis**, tendinosis (ten-dih-NOH-sis)
23. **a. a/trophy**, atrophy (AT-rah-fee); **b. dys/trophy**, dystrophy (DIS-troh-fee); **c. hyper/trophy**, hypertrophy (high-PER-troh-fee)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 106–108)

- Osteoporosis—means “porous bones”; the thinning and loss of bone density that occurs slowly over time as more minerals such as calcium are removed from bone than are deposited; very common in postmenopausal women  
Compression fracture—loss of height of vertebral body; osteoporosis makes bones less strong, and they collapse easily
- Answers will vary; example of a correct answer is Actonel—slows bone loss and increases bone mass
- RL—right leg; FX or Fr—fracture; T10—10th thoracic vertebra; NSAIDs—nonsteroidal anti-inflammatory drugs; LE—lower extremity; DTRs—deep tendon reflexes; MRI—magnetic resonance imaging; L4–5—between 4th and 5th lumbar vertebrae; HNP—herniated nucleus pulposus
- B
- Myocardial infarction—heart attack; renal failure—kidneys stop filtering waste from blood; Alzheimer disease—progressive dementia; spina bifida—vertebrae do not fully form around spinal cord
- X-ray—radiation is passed through body to produce image by exposing a photographic plate—it showed spondylosis but no arthritis MRI—image created by strong magnetic field and radiowaves—showed herniated nucleus pulposus at L4–5
- Pain relief, traction, back-strengthening exercises
- Use of thin catheter tube inserted into intervertebral disk through skin to suck out pieces of herniated or ruptured disk; or laser is used to vaporize disk

## PRACTICE EXERCISES

### Sound It Out (pp. 108–109)

- |                   |                   |                    |                 |                  |
|-------------------|-------------------|--------------------|-----------------|------------------|
| 1. fibromyalgia   | 6. iliac          | 11. bursitis       | 16. scoliosis   | 21. chondroma    |
| 2. chondroplasty  | 7. intervertebral | 12. metacarpal     | 17. patellar    | 22. osteoporosis |
| 3. electromyogram | 8. intramuscular  | 13. fibular        | 18. prosthesis  | 23. tenodynia    |
| 4. femoral        | 9. lordosis       | 14. myeloma        | 19. pubic       | 24. contracture  |
| 5. arthroplasty   | 10. mandibular    | 15. arthrocentesis | 20. radiography | 25. tibial       |



### Transcription Practice (pp. 109–110)

1. The comminuted fracture required open reduction and internal fixation.
2. Radiography revealed a femoral osteochondroma.
3. The patient's chronic bursitis eventually required a bursectomy.
4. Mary's hand deformities from rheumatoid arthritis were improved by wearing an orthosis.
5. When Otto's osteoarthritis in his knee prevented him from walking, he had a total knee arthroplasty.
6. What first appeared to be an oblique fracture turned out to be a spiral fracture.
7. A bone scan was necessary to identify the stress fracture.
8. Jean's vertebral osteoporosis was diagnosed by dual-energy absorptiometry.
9. The child's dyskinesia caused the physician to suspect muscular dystrophy.
10. The ankle strain was severe enough to require tenodesis.

### Spelling (p. 110)

- |                      |                      |                      |                 |                 |
|----------------------|----------------------|----------------------|-----------------|-----------------|
| 1. correctly spelled | 3. correctly spelled | 5. correctly spelled | 7. chondrectomy | 9. dyskinesia   |
| 2. bursectomy        | 4. correctly spelled | 6. correctly spelled | 8. coccygeal    | 10. spondylosis |

### Labeling Exercise (p. 111)

- |   |   |   |
|---|---|---|
| 1. Maxilla—upper jaw ( <b>maxill/o</b> )      | 10. Scapula—shoulder blade ( <b>scapul/o</b> )  | 19. Ischium ( <b>ischi/o</b> )                  |
| 2. Mandible—lower jaw ( <b>mandibul/o</b> )   | 11. Humerus ( <b>humer/o</b> )                  | 20. Femur—thigh bone ( <b>femor/o</b> )         |
| 3. Sternum—breast bone ( <b>stern/o</b> )     | 12. Radius—forearm ( <b>radi/o</b> )            | 21. Patella—kneecap ( <b>patell/o</b> )         |
| 4. Rib ( <b>cost/o</b> )                      | 13. Ulna—forearm ( <b>uln/o</b> )               | 22. Tibia—shin bone ( <b>tibi/o</b> )           |
| 5. Vertebrae ( <b>spondyl/o, vertebr/o</b> )  | 14. Carpus—wrist bones ( <b>carp/o</b> )        | 23. Fibula ( <b>fibul/o</b> )                   |
| 6. Sacrum ( <b>sacr/o</b> )                   | 15. Metacarpus—hand bones ( <b>metacarp/o</b> ) | 24. Tarsus—ankle bones ( <b>tars/o</b> )        |
| 7. Coccyx—tailbone ( <b>coccyg/o</b> )        | 16. Phalanges—finger bones ( <b>phalang/o</b> ) | 25. Metatarsus—foot bones ( <b>metatars/o</b> ) |
| 8. Cranium—skull ( <b>crani/o</b> )           | 17. Ilium ( <b>ili/o</b> )                      | 26. Phalanges—toe bones ( <b>phalang/o</b> )    |
| 9. Clavicle—collar bone ( <b>clavicul/o</b> ) | 18. Pubis ( <b>pub/o</b> )                      |   |

### Build Medical Terms (p. 112)

- |                   |                 |                 |                  |                    |
|-------------------|-----------------|-----------------|------------------|--------------------|
| 1. arthrocentesis | 4. arthroplasty | 7. myorrhaphy   | 10. osteotome    | 13. chondromalacia |
| 2. arthritis      | 5. arthrography | 8. hyperkinesia | 11. osteoporosis | 14. chondroma      |
| 3. arthroscope    | 6. myasthenia   | 9. bradykinesia | 12. osteogenic   | 15. chondroplasty  |

### Fill in the Blank (pp. 112–113)

- |                     |             |                           |               |                      |
|---------------------|-------------|---------------------------|---------------|----------------------|
| 1. closed or simple | 3. kyphosis | 5. Carpal tunnel syndrome | 7. Greenstick | 9. internal fixation |
| 2. osteoporosis     | 4. orthosis | 6. prosthesis             | 8. shoulder   | 10. spasm            |

### Abbreviation Matching (p. 113)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. D | 3. F | 5. A | 7. I | 9. H  |
| 2. G | 4. J | 6. C | 8. B | 10. E |

### Multiple Choice (pp. 113–114)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. d | 3. d | 5. a | 7. b | 9. c  |
| 2. c | 4. b | 6. b | 8. d | 10. a |

### Medical Term Analysis (pp. 114–115)

- |   |   |   |
|---|---|---|
| 1. <b>arthr/o</b> , joint, <b>-desis</b> , surgical fusing, surgical fusing of a joint                      | 5. <b>oste/o</b> , bone, <b>myel</b> , bone marrow, <b>-itis</b> , inflammation, inflammation of bone and bone marrow | 8. <b>sub-</b> , below, <b>stern</b> , sternum, <b>-al</b> , pertaining to, pertaining to below the sternum         |
| 2. <b>burs</b> , bursa, <b>-ectomy</b> , surgical removal, surgical removal of bursa                        | 6. <b>ten</b> , tendon, <b>-algia</b> , pain condition, condition of tendon pain                                      | 9. <b>inter-</b> , between, <b>vertebr</b> , vertebrae, <b>-al</b> , pertaining to, pertaining to between vertebrae |
| 3. <b>electr/o</b> , electricity, <b>my/o</b> , muscle, <b>-gram</b> , record, record of muscle electricity | 7. <b>spondyl</b> , vertebra, <b>-osis</b> , abnormal condition, vertebra abnormal condition                          | 10. <b>supra-</b> , above, <b>maxill</b> , maxilla, <b>-ary</b> , pertaining to, pertaining to above the maxilla    |
| 4. <b>intra-</b> , within, <b>crani</b> , skull, <b>-al</b> , pertaining to, pertaining to within the skull |   |   |

### Visual Identification Challenge (p. 116)

- |                        |                        |                         |
|------------------------|------------------------|-------------------------|
| 1. transverse fracture | 3. spiral fracture     | 5. greenstick fracture  |
| 2. oblique fracture    | 4. comminuted fracture | 6. compression fracture |

## CHAPTER 7

### Building Cardiology Terms (pp. 121–127)

- |   |   |
|---|---|
| 1. a. <b>angi/o/gram</b> , angiogram ( <i>AN-jee-oh-gram</i> ); b. <b>angi/o/graphy</b> , angiography ( <i>an-jee-OG-rah-fee</i> ); c. <b>angi/oma</b> , angioma ( <i>AN-jee-oh-mah</i> ); d. <b>angi/o/plasty</b> , angioplasty ( <i>AN-jee-oh-plas-tee</i> ); | e. <b>angi/o/spasm</b> , angiospasm ( <i>AN-jee-oh-spazm</i> ); f. <b>poly/angi/itis</b> , polyangiitis ( <i>pol-ee-AN-jee-eye-tis</i> ); g. <b>angi/o/stenosis</b> , angiostenosis ( <i>an-jee-oh-steh-NOH-sis</i> ) |
|---|---|

2. **a. aort/ic**, aortic (*ay-OR-tik*); **b. aort/o/plasty**, aortoplasty (*ay-OR-toh-plas-tee*)
3. **a. arteri/al**, arterial (*ar-TEE-ree-al*); **b. arteri/o/gram**, arteriogram (*ar-TEE-ree-oh-gram*); **c. arteri/o/graphy**, arteriography (*ar-tee-ree-OG-rah-fee*); **d. arteri/o/rrhaphy**, arteriorrhaphy (*ar-tee-ree-OR-ah-fee*); **e. arteri/ole**, arteriole (*ar-TEER-ee-ohl*)
4. **a. arteriol/ar**, arteriolar (*ar-teer-ee-oh-lar*); **b. arteriol/itis**, arteriolitis (*ar-TEER-ree-oh-lye-tis*)
5. **a. ather/o/sclerosis**, atherosclerosis (*ath-er-oh-skleh-ROH-sis*); **b. ather/ectomy**, atherectomy (*ath-er-EK-toh-mee*)
6. **a. atri/al**, atrial (*AY-tree-al*); **b. inter/atri/al**, interatrial (*in-ter-AY-tree-al*); **c. atri/o/ventricul/ar**, atrioventricular (*ay-tree-oh-ven-TRIK-yoo-lar*)
7. **a. cardi/ac**, cardiac (*KAR-dee-ak*); **b. cardi/o/dynia**, cardiodynia (*kar-dee-oh-DIN-ee-ah*); **c. electr/o/cardi/o/gram**, electrocardiogram (*ee-lek-troh-KAR-dee-oh-gram*); **d. electr/o/cardi/o/graphy**, electrocardiography (*ee-lek-troh-kar-dee-OG-rah-fee*); **e. cardi/o/logist**, cardiologist (*kar-dee-ALL-oh-jist*); **f. cardi/o/logy**, cardiology (*kar-dee-ALL-oh-jee*); **g. cardi/o/megaly**, cardiomegaly (*kar-dee-oh-MEG-ah-lee*); **h. cardi/o/my/o/pathy**, cardiomyopathy (*kar-dee-oh-my-OP-ah-thee*); **i. echo/cardi/o/gram**, echocardiogram (*ek-oh-KAR-dee-oh-gram*); **j. peri/cardi/al**, pericardial (*pair-ih-KAR-dee-al*); **k. endo/cardi/itis**, endocarditis (*en-doh-kar-DYE-tis*); **l. my/o/cardi/al**, myocardial (*my-oh-KAR-dee-al*)
8. **coron/ary**, coronary (*KOR-ah-nair-ee*)
9. **a. embol/ectomy**, embolectomy (*em-boh-LEK-toh-mee*); **b. embol/ism**, embolism (*em-boh-LIZM*)
10. **isch/emia**, ischemia (*iss-KEE-mee-ah*)
11. **a. phleb/itis**, phlebitis (*fleh-BYE-tis*); **b. phleb/o/tomy**, phlebotomy (*fleh-BOT-oh-mee*)
12. **a. arteri/o/sclerosis**, arteriosclerosis (*ar-tee-ree-oh-skleh-ROH-sis*); **b. phlebo/o/sclerosis**, phleboscclerosis (*fleh-boh-skleh-ROH-sis*) OR **ven/o/sclerosis**, venoscclerosis (*vee-noh-skleh-ROH-sis*)
13. **a. steth/o/scope**, stethoscope (*STETH-oh-skohp*); **b. steth/o/scopy**, stethoscopy (*steh-THOS-koh-pee*)
14. **a. thromb/o/tic**, thrombotic (*throm-BOT-ik*); **b. thromb/osis**, thrombosis (*throm-BOH-sis*); **c. thromb/o/phleb/itis**, thrombophlebitis (*throm-boh-fleh-BYE-tis*); **d. thromb/o/lysis**, thrombolysis (*throm-BOL-ih-sis*)
15. **a. valv/o/plasty**, valvoplasty (*VAL-voh-plas-tee*); **b. valv/o/tomy**, valvotomy (*val-VOT-oh-mee*)
16. **a. valvul/ar**, valvular (*VAL-vyoo-lar*); **b. valvul/itis**, valvulitis (*val-vyoo-LYE-tis*); **c. valvul/o/plasty**, valvuloplasty (*val-vyoo-loh-PLAS-tee*)
17. **a. varic/osis**, varicosis (*vair-ih-KOH-sis*); **b. varic/ose**, varicose (*VAIR-ih-kohs*)
18. **vas/o/spasm**, vasospasm (*VAY-zoh-spazm*)
19. **a. vascul/ar**, vascular (*VAS-kyoo-lar*); **b. cardi/o/vascul/ar**, cardiovascular (*kar-dee-oh-VAS-kyoo-lar*)
20. **a. ven/ous**, venous (*VEE-nus*); **b. ven/o/gram**, venogram (*VEE-noh-gram*); **c. ven/o/graphy**, venography (*vee-NOG-rah-fee*); **d. intra/ven/ous**, intravenous (*in-trah-VEE-nus*); **e. ven/ule**, venule (*VEN-yool*)
21. **a. ventricul/ar**, ventricular (*ven-TRIK-yoo-lar*); **b. inter/ventricul/ar**, interventricular (*in-ter-ven-TRIK-yoo-lar*)
22. **venul/ar**, venular (*VEN-yoo-lar*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 137–139)

1. SOB—shortness of breath, having difficulty breathing, especially with activity; angina pectoris—chest pain associated with cardiac ischemia
2. Swelling in feet; CHF—congestive heart failure, inability of heart to pump blood forcefully enough through body
3. Digoxin, or digitalis, is drug given to people with congestive heart failure to make their hearts beat stronger
4. Heart is beating too fast (153 beats per minute), but there is no abnormality in heartbeat and no evidence of heart attack
5. Edema is tissue swelling; she has edema in both feet and in her abdomen; she does not have edema in her hands or face
6. B
7. Final diagnosis is mitral valve prolapse; this means valve between left atrium and left ventricle is too loose to close tightly, allowing blood to flow backward into atrium; this diagnosis is best supported by echocardiogram, which showed regurgitation (backflow) of blood into atrium
8. Patient is scheduled to undergo valvoplasty, or surgical repair of mitral valve with an artificial valve.

## PRACTICE EXERCISES

### Sound It Out (p. 139)

- |                    |                        |                    |                      |                  |
|--------------------|------------------------|--------------------|----------------------|------------------|
| 1. vasospasm       | 6. bradycardia         | 11. endarterectomy | 16. phlebitis        | 21. aneurysm     |
| 2. angioplasty     | 7. cardiovascular      | 12. fibrillation   | 17. endocarditis     | 22. cardiomegaly |
| 3. intravenous     | 8. defibrillation      | 13. hypertension   | 18. sphygmomanometer | 23. polyangiitis |
| 4. cardiomyopathy  | 9. electrocardiography | 14. infarct        | 19. tachycardia      | 24. thrombosis   |
| 5. atherosclerosis | 10. embolism           | 15. myocardial     | 20. thrombolysis     | 25. stethoscope  |

### Transcription Practice (pp. 140–141)

1. Dr. Jones suspected his patient had had a myocardial infarction, so he ordered an electrocardiogram and cardiac biomarkers.
2. The paramedics applied defibrillation because fibrillation was detected.
3. The patient developed bradycardia and required surgery to implant a pacemaker.
4. Susan wore a Holter monitor for 24 hours to further evaluate her angina pectoris.
5. The patient had a Doppler ultrasonography to assess whether she had heart valve prolapse or heart valve stenosis.
6. During auscultation, the nurse detected a heart murmur caused by mitral valve prolapse.
7. The patient suffered an infarct when an embolus broke off a plaque.
8. A cardiac catheterization was ordered to determine whether the patient requires a percutaneous transluminal coronary angioplasty.

9. The patient experiences angina pectoris because of severe coronary artery disease.
10. This patient's hypertension eventually caused him to develop congestive heart failure.

### Spelling (p. 141)

- |                      |  |                      |                       |
|----------------------|--|----------------------|-----------------------|
| 1. tachycardia       | 4. auscultation                        | 7. correctly spelled | 10. correctly spelled |
| 2. correctly spelled | 5. atherosclerosis or arteriosclerosis | 8. aneurysm          |                       |
| 3. correctly spelled | 6. correctly spelled                   | 9. angioma           |                       |

### Labeling Exercise (p. 142)

- |  |   |  |
|--|---|--|
| 1. Aorta ( <b>aort/o</b> )                     | 5. Right ventricle ( <b>ventricul/o</b> )   | 9. Left ventricle ( <b>ventricul/o</b> ) |
| 2. Right atrium ( <b>atri/o</b> )              | 6. Left atrium ( <b>atri/o</b> )            | 10. Endocardium                          |
| 3. Pulmonary valve ( <b>valvul/o, valv/o</b> ) | 7. Aortic valve ( <b>valvul/o, valv/o</b> ) | 11. Myocardium                           |
| 4. Tricuspid valve ( <b>valvul/o, valv/o</b> ) | 8. Mitral valve ( <b>valvul/o, valv/o</b> ) |  |

### Build Medical Terms (pp. 142–143)

- |                 |                |                     |                    |                      |
|-----------------|----------------|---------------------|--------------------|----------------------|
| 1. cardiology   | 4. cardiac     | 7. arteriosclerosis | 10. angiospasm     | 13. arteriography    |
| 2. cardiomegaly | 5. valvoplasty | 8. atherosclerosis  | 11. arteriorrhaphy | 14. thrombophlebitis |
| 3. cardiodynia  | 6. valvotomy   | 9. angioma          | 12. arterial       | 15. thrombolysis     |

### Fill in the Blank (p. 143)

- |                   |                             |                 |                                   |
|-------------------|-----------------------------|-----------------|-----------------------------------|
| 1. aneurysm       | 4. Holter monitor           | 7. vegetation   | 10. cardiopulmonary resuscitation |
| 2. cardiac arrest | 5. congenital septal defect | 8. clot busters |                                   |
| 3. stethoscope    | 6. venipuncture             | 9. heart murmur |                                   |

### Abbreviation Matching (pp. 143–144)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. D | 3. F | 5. G | 7. A | 9. E  |
| 2. H | 4. B | 6. I | 8. J | 10. C |

### Medical Term Analysis (pp. 144–145)

- |  |  |  |
|--|--|--|
| 1. <b>aort/o</b> , aorta, <b>-plasty</b> , surgical repair, surgical repair of the aorta                         | 5. <b>thromb/o</b> , thrombus, <b>angi</b> , vessel, <b>-itis</b> , inflammation, inflammation of vessel with thrombi  | 9. <b>cardi/o</b> , heart, <b>vascul</b> , blood vessel, <b>-ar</b> , pertaining to, pertaining to the heart and blood vessels |
| 2. <b>embol</b> , embolus, <b>-ectomy</b> , surgical removal, surgical removal of an embolus                     | 6. <b>ather/o</b> , fatty substance, <b>-sclerosis</b> , hardening, hardening with fatty substance                     | 10. <b>steth/o</b> , chest, <b>-scope</b> , instrument for viewing, instrument for viewing chest                               |
| 3. <b>cardi/o</b> , heart, <b>my/o</b> , muscle, <b>-pathy</b> , disease, disease of heart muscle                | 7. <b>valvul/o</b> , valve, <b>-tomy</b> , cutting into, cutting into a valve  |  |
| 4. <b>endo-</b> , inner, <b>cardi</b> , heart, <b>-al</b> , pertaining to, pertaining to inner (lining) of heart | 8. <b>inter-</b> , between, <b>ventricul</b> , ventricle, <b>-ar</b> , pertaining to, pertaining to between ventricles |  |

### Multiple Choice (p. 146)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. b | 5. d | 7. d | 9. c  |
| 2. b | 4. a | 6. a | 8. a | 10. b |

### Visual Identification Challenge (p. 147)

- |                 |                                  |            |
|-----------------|----------------------------------|------------|
| 1. stress test  | 3. electrocardiography           | 5. slow, A |
| 2. venipuncture | 4. cardiopulmonary resuscitation | 6. fast, B |

## CHAPTER 8

### Building Hematology Terms (pp. 150–154)

- |   |  |
|---|--|
| 1. a. <b>erythr/o/cyte</b> , erythrocyte ( <i>eh-RITH-roh-sight</i> ); b. <b>leuk/o/cyte</b> , leukocyte ( <i>LOO-koh-sight</i> ); c. <b>thromb/o/cyte</b> , thrombocyte ( <i>THROM-boh-sight</i> ); d. <b>mono/cyte</b> , monocyte ( <i>MON-oh-sight</i> ); e. <b>lymph/o/cyte</b> , lymphocyte ( <i>LIM-foh-sight</i> ) | ( <i>hee-moh-STAY-sis</i> ); d. <b>hem/o/rrhage</b> , hemorrhage ( <i>HEM-eh-rij</i> ); e. <b>hem/o/lysis</b> , hemolysis ( <i>hee-MOL-ih-sis</i> ); f. <b>hem/o/cyt/o/lysis</b> , hemocytolysis ( <i>hee-moh-sigh-TOL-oh-sis</i> )  |
| 2. a. <b>erythr/o/cytosis</b> , erythrocytosis ( <i>eh-rith-roh-sigh-TOH-sis</i> ); b. <b>leuk/o/cytosis</b> , leukocytosis ( <i>loo-koh-sigh-TOH-sis</i> ); c. <b>thromb/o/cytosis</b> , thrombocytosis ( <i>throm-boh-sigh-TOH-sis</i> )  | 5. a. <b>hemat/o/logy</b> , hematology ( <i>hee-mah-TALL-oh-jee</i> ); b. <b>hemat/o/logist</b> , hematologist ( <i>hee-mah-TALL-oh-jist</i> ); c. <b>hemat/ic</b> , hematic ( <i>hee-MAT-ik</i> ); d. <b>hemat/oma</b> , hematoma ( <i>hee-mah-TOH-mah</i> ); e. <b>hemat/o/path/o/logy</b> , hematopathology ( <i>hee-mah-toh-path-OL-oh-jee</i> ); f. <b>hemat/o/cyt/o/penia</b> , hematocytopenia ( <i>hee-mat-oh-sigh-toh-PEE-nee-ah</i> ); g. <b>hemat/o/poiesis</b> , hematopoiesis ( <i>hee-mah-toh-poy-EE-sis</i> ) |
| 3. a. <b>an/emia</b> , anemia ( <i>ah-NEE-mee-ah</i> ); b. <b>hyper/glyc/emia</b> , hyperglycemia ( <i>high-per-gly-SEE-mee-ah</i> ); c. <b>hypo/glyc/emia</b> , hypoglycemia ( <i>high-poh-gly-SEE-mee-ah</i> ); d. <b>hyper/lip/emia</b> , hyperlipidemia ( <i>high-per-lip-ih-DEE-mee-ah</i> )                         | 6. a. <b>erythr/o/penia</b> , erythropenia ( <i>eh-rith-roh-PEE-nee-ah</i> ); b. <b>leuk/o/penia</b> , leukopenia ( <i>loo-koh-PEE-nee-ah</i> ); c. <b>thromb/o/cyt/o/penia</b> , thrombocytopenia ( <i>throm-boh-sigh-toh-PEE-nee-ah</i> ); d. <b>pan/cyt/o/penia</b> , pancytopenia ( <i>pan-sigh-toh-PEE-nee-ah</i> );  |
| 4. a. <b>hem/o/cyte</b> , hemocyte ( <i>HEE-moh-sight</i> ); b. <b>hem/o/globin</b> , hemoglobin ( <i>hee-moh-GLOH-bin</i> ); c. <b>hem/o/stasis</b> , hemostasis   |  |

- e. **eosin/o/penia**, **eosinopenia** (*ee-oh-sin-oh-PEE-nee-ah*);  
 f. **neutr/o/penia**, **neutropenia** (*noo-troh-PEE-nee-ah*)
7. a. **eosin/o/phil**, **eosinophil** (*ee-oh-SIN-oh-fill*); b. **bas/o/phil**, **basophil** (*BAY-soh-fill*); c. **neutr/o/phil**, **neutrophil** (*NOO-troh-fill*)
8. a. **erythr/o/poiesis**, **erythropoiesis** (*eh-RITH-roh-poy-ee-sis*); b. **leuk/o/poiesis**, **leukopoiesis** (*LOO-koh-poy-ee-sis*); c. **thromb/o/poiesis**, **thrombopoiesis** (*THROM-boh-poy-ee-sis*)
9. a. **thromb/o/lysis**, **thrombolysis** (*throm-BOL-ih-sis*);  
 b. **thromb/ectomy**, **thrombectomy** (*throm-BEK-toh-mee*);  
 c. **thromb/osis**, **thrombosis** (*throm-BOH-sis*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 159–161)

- Fatigue and dyspnea (shortness of breath) with even light activity; three episodes of sinusitis (sinus inflammation) and pharyngitis (throat inflammation) in past six months; easy bruising; two episodes of epistaxis (nosebleed) in last week
- Complete blood count (CBC); consists of red blood cell count (RBC), white blood cell count (WBC), hemoglobin (Hgb), hematocrit (Hct), white blood cell differential, and platelet count
- Pancytopenia; fatigue and dyspnea because of low red cell count; recurring infections because of low white cell count; bruising and epistaxis because of low platelet count
- Appendix removed at age 12; gallbladder removed at age 35; has been pregnant three times with two children born and one child died before it was a viable age
- She could be exposed to toxic chemicals in her job working with pesticides
- Respiratory rate is 22 breaths/minute; heart rate is 102 bpm; the patient's results are probably much higher than yours
- Biopsy removes small sample of tissue for examination under microscope for purpose of making a diagnosis; this patient had her bone marrow biopsied; biopsy revealed low number of blood cells in marrow that are normal in appearance
- Blood transfusion treats symptoms; long-term antibiotics treat symptoms; medication to stimulate bone marrow treats underlying cause; bone marrow transplant treats underlying cause; washing hands and avoiding exposure to sick people treats symptoms

## PRACTICE EXERCISES

### Sound It Out (pp. 161–162)

- |                 |                    |                    |                  |                    |
|-----------------|--------------------|--------------------|------------------|--------------------|
| 1. hematocrit   | 6. hematopathology | 11. erythropenia   | 16. pancytopenia | 21. hypoglycemia   |
| 2. leukopoiesis | 7. hemocytolysis   | 12. leukemia       | 17. hematoma     | 22. neutropenia    |
| 3. coagulate    | 8. thrombolysis    | 13. erythrocytosis | 18. phlebotomy   | 23. thrombocytosis |
| 4. embolus      | 9. autotransfusion | 14. leukocytosis   | 19. septicemia   | 24. hemophilia     |
| 5. anemia       | 10. hemolysis      | 15. thrombosis     | 20. thalassemia  | 25. leukopenia     |

### Transcription Practice (pp. 162–163)

- The formed elements of blood are erythrocytes, leukocytes, and platelets (thrombocytes).
- The patient had a bone marrow aspiration to determine whether she had leukemia.
- The blood vessel was blocked by an embolus.
- Elena received thrombolytic therapy during her heart attack.
- Because he had diabetes, Ted monitored his blood for hyperglycemia.
- The patient suffered hemorrhage and hematoma as a result of an auto accident.
- The hematologist determined that Genevieve had developed pernicious anemia.
- Following heart surgery, Tran received an autotransfusion.
- A complete blood count revealed that Marco had pancytopenia.
- Because septicemia was suspected, a blood culture and sensitivity was ordered.

### Abbreviation Matching (p. 163)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. G | 3. E | 5. I | 7. D | 9. F  |
| 2. J | 4. A | 6. H | 8. B | 10. C |

### Fill in the Blank (pp. 163–164)

- |             |                 |                            |               |                            |
|-------------|-----------------|----------------------------|---------------|----------------------------|
| 1. Aplastic | 3. thrombolytic | 5. venipuncture            | 7. hematocrit | 9. vitamin B <sub>12</sub> |
| 2. embolus  | 4. too many     | 6. culture and sensitivity | 8. leukemia   | 10. blood poisoning        |

### Labeling Exercise (p. 164)

- |                                     |                                  |                                  |                                  |
|-------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1. Plasma                           | 3. Platelets                     | 5. Lymphocyte ( <b>lymph/o</b> ) | 7. Basophil ( <b>bas/o</b> )     |
| 2. Erythrocytes ( <b>erythr/o</b> ) | 4. Neutrophil ( <b>neutr/o</b> ) | 6. Monocyte                      | 8. Eosinophil ( <b>eosin/o</b> ) |

### Build Medical Terms (pp. 164–165)

- |                |                  |                  |                |                |
|----------------|------------------|------------------|----------------|----------------|
| 1. erythrocyte | 4. hematology    | 7. hematoma      | 10. hemostasis | 13. eosinophil |
| 2. leukocyte   | 5. hematopoiesis | 8. hyperglycemia | 11. hemorrhage | 14. basophil   |
| 3. thrombocyte | 6. hematic       | 9. anemia        | 12. hemolysis  | 15. neutrophil |

### Multiple Choice (p. 165)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. b | 5. c | 7. b | 9. a  |
| 2. c | 4. a | 6. d | 8. b | 10. c |

## Medical Term Analysis (pp. 166–167)

- |  |   |  |
|--|---|--|
| 1. <b>erythr/o</b> , red, <b>-cytosis</b> , abnormal cell condition, abnormal red cell condition     | 4. <b>hyper-</b> , excessive, <b>lip</b> , fat, <b>-emia</b> , blood condition, condition of excessive fat in blood | 7. <b>lymph/o</b> , lymph, <b>-cyte</b> , cell, lymph cell   |
| 2. <b>hemat/o</b> , blood, <b>-logist</b> , one who studies, one who studies blood                   | 5. <b>hem/o</b> , blood, <b>-rrhage</b> , abnormal flow, abnormal flow of blood                                     | 8. <b>hem/o</b> , blood, <b>-globin</b> , protein, blood protein   |
| 3. <b>hemat/o</b> , blood, <b>path/o</b> , disease, <b>-logy</b> , study of, study of blood diseases | 6. <b>leuk/o</b> , white, <b>-poiesis</b> , formation, white [blood cell] formation                                 | 9. <b>pan-</b> , all, <b>cyt/o</b> , cell, <b>-penia</b> , condition of too few, condition of too few of all cells |
|  |   | 10. <b>thromb</b> , thrombus, <b>-ectomy</b> , surgical removal, surgical removal of thrombus (clot)               |

## Spelling (p. 167)

- |                      |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1. hypoglycemia      | 3. correctly spelled | 5. correctly spelled | 7. polycythemia vera | 9. correctly spelled |
| 2. correctly spelled | 4. septicemia        | 6. platelet          | 8. correctly spelled | 10. erythropoiesis   |

## Visual Identification Challenge (p. 168)

- |      |      |      |      |      |      |
|------|------|------|------|------|------|
| 1. C | 2. D | 3. E | 4. F | 5. B | 6. A |
|------|------|------|------|------|------|

# CHAPTER 9

## Building Immunology Terms (pp. 171–177)

- |  |  |
|--|--|
| 1. a. <b>adenoid/ectomy</b> , adenoidectomy ( <i>ad-eh-noyd-EK-toh-mee</i> );<br>b. <b>adenoid/itis</b> , adenoiditis ( <i>ad-eh-noyd-EYE-tis</i> )  | c. <b>lymphangi/o/gram</b> , lymphangiogram ( <i>lim-FAN-jee-oh-gram</i> );<br>d. <b>lymphangi/ectasis</b> , lymphangiectasis ( <i>lim-FAN-jee-ek-tah-sis</i> );<br>e. <b>lymphangi/o/plasty</b> , lymphangioplasty ( <i>lim-FAN-jee-oh-plas-tee</i> )   |
| 2. a. <b>immun/o/logist</b> , immunologist ( <i>im-yoo-NALL-oh-jist</i> );<br>b. <b>immun/o/logy</b> , immunology ( <i>im-yoo-NALL-oh-jee</i> );<br>c. <b>immun/o/globulin</b> , immunoglobulin ( <i>im-yoo-noh-GLOB-yoo-lin</i> ); d. <b>immun/o/genic</b> , immunogenic ( <i>IM-yoo-noh-jen-ik</i> );<br>e. <b>immun/o/therapy</b> , immunotherapy ( <i>IM-yoo-noh-thair-ah-pee</i> )  | 6. a. <b>path/o/genic</b> , pathogenic ( <i>path-oh-JEN-ik</i> ); b. <b>path/o/gen</b> ,<br>pathogen ( <i>PATH-oh-jen</i> ); c. <b>path/o/logy</b> , pathology ( <i>pah-THOL-oh-jee</i> ); d. <b>path/o/logist</b> , pathologist ( <i>pah-THOL-oh-jist</i> )   |
| 3. a. <b>lymph/atic</b> , lymphatic ( <i>lim-FAT-ik</i> ); b. <b>lymph/oma</b> , lymphoma ( <i>lim-FOH-mah</i> ); c. <b>lymph/edema</b> , lymphedema ( <i>limf-eh-DEE-mah</i> );<br>d. <b>lymph/o/cyte</b> , lymphocyte ( <i>LIM-foh-sight</i> ); e. <b>lymph/o/cytic</b> , lymphocytic ( <i>lim-foh-SIT-ik</i> ); f. <b>lymph/o/genic</b> , lymphogenic ( <i>lim-foh-JEN-ik</i> ); g. <b>lymph/oid</b> , lymphoid ( <i>LIM-foyd</i> ); h. <b>lymph/o/stasis</b> , lymphostasis ( <i>lim-FOS-tah-sis</i> ) | 7. a. <b>phag/o/cyte</b> , phagocyte ( <i>FAY-goh-sight</i> ); b. <b>phag/o/cyt/ic</b> , phagocytic ( <i>FAY-goh-sit-ik</i> )  |
| 4. a. <b>lymphaden/ectomy</b> , lymphadenectomy ( <i>lim-fad-eh-NEK-toh-mee</i> ); b. <b>lymphaden/o/pathy</b> , lymphadenopathy ( <i>lim-fad-eh-NOP-ah-thee</i> ); c. <b>lymphaden/itis</b> , lymphadenitis ( <i>lim-fad-en-EYE-tis</i> );<br>d. <b>lymphaden/osis</b> , lymphadenosis ( <i>lim-FAD-eh-noh-sis</i> )  | 8. a. <b>splen/ic</b> , splenic ( <i>SPLEN-ik</i> ); b. <b>splen/itis</b> , splenitis ( <i>splen-NIGH-tis</i> ); c. <b>splen/oma</b> , splenoma ( <i>spleh-NOH-mah</i> ); d. <b>splen/ectomy</b> , splenectomy ( <i>spleh-NEK-toh-mee</i> ); e. <b>splen/o/megaly</b> , splenomegaly ( <i>spleh-noh-MEG-ah-lee</i> ); f. <b>splen/o/malacia</b> , splenomalacia ( <i>SPLEH-noh-mah-lay-shee-ah</i> ); g. <b>splen/o/pexy</b> , splenopexy ( <i>spleh-noh-PEK-see</i> ); h. <b>splen/o/rrhaphy</b> , splenorrhaphy ( <i>sple-NOR-ah-fee</i> ) |
| 5. a. <b>lymphangi/oma</b> , lymphangioma ( <i>lim-fan-jee-OH-mah</i> );<br>b. <b>lymphangi/o/graphy</b> , lymphangiography ( <i>lim-fan-jee-OG-rah-fee</i> );   | 9. a. <b>thym/ic</b> , thymic ( <i>THIGH-mik</i> ); b. <b>thym/ectomy</b> , thymectomy ( <i>thigh-MEK-toh-mee</i> ); c. <b>thym/oma</b> , thymoma ( <i>thigh-MOH-mah</i> )   |
|  | 10. a. <b>tonsill/ar</b> , tonsillar ( <i>TAHN-sih-lar</i> ); b. <b>tonsill/ectomy</b> , tonsillectomy ( <i>tahn-sih-LEK-toh-mee</i> ); c. <b>tonsill/itis</b> , tonsillitis ( <i>tahn-sill-EYE-tis</i> )  |

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 182–183)

- |   |  |
|---|--|
| 1. As a heroin addict, he probably shared needles; unsafe sex practices and blood transfusion   | 6. Infections that occur when immune system is compromised; PCP and Kaposi sarcoma   |
| 2. Yeast  | 7. Retrovir keeps virus from reproducing; Epivir prevents virus from multiplying; Viracept slows growth of virus   |
| 3. Thrush, weight loss, recurring infections (sinusitis and bronchitis), diarrhea, night sweats, extreme fatigue, unexplained fevers, muscular wasting, fever, enlarged cervical and inguinal lymph nodes | 8. If CD4 count is low, immune system is not able to work very well and patient is at higher risk of opportunistic infection; if it remains OK, then HIV medications are working |
| 4. HIV antigen and/or antibody immunoassay  |  |
| 5. ARC is early in infection and symptoms are milder; AIDS is later stages of infection in which immune system is no longer able to resist infections and person is prone to opportunistic infections     |  |

## PRACTICE EXERCISES

### Sound It Out (pp. 183–184)

- |                  |                    |                    |                   |                 |
|------------------|--------------------|--------------------|-------------------|-----------------|
| 1. lymphoma      | 6. splenomegaly    | 11. nosocomial     | 16. mononucleosis | 21. splenopexy  |
| 2. allergy       | 7. lymphadenectomy | 12. lymphangiogram | 17. pathogenic    | 22. thymectomy  |
| 3. pathology     | 8. antihistamine   | 13. lymphangioma   | 18. immunogenic   | 23. vaccination |
| 4. immunotherapy | 9. lymphadenitis   | 14. sarcoidosis    | 19. splenectomy   | 24. thymoma     |
| 5. inflammation  | 10. lymphedema     | 15. lymphostasis   | 20. tonsillectomy | 25. adenoiditis |



### Multiple Choice (p. 184)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. b | 3. d | 5. c | 7. b | 9. c  |
| 2. a | 4. d | 6. d | 8. a | 10. b |

### Transcription Practice (pp. 185–186)

- |   |   |
|---|---|
| 1. Marcie's repeated bouts of tonsillitis required her to have a tonsillectomy and adenoidectomy. | 6. Joyce's allergy to pollen was treated with antihistamines.                 |
| 2. The lymphangiogram revealed a lymphangioma.  | 7. The patient with AIDS developed pneumocystis pneumonia.                    |
| 3. The immunologist is a physician who treats autoimmune diseases.                                | 8. Jennifer's allergic reactions consisted of hives and urticaria.            |
| 4. Jamar had a history of anaphylactic shock in response to bee stings.                           | 9. Shona's hand pain turned out to be caused by systemic lupus erythematosus. |
| 5. Mykos had to take immunosuppressants after his kidney transplant.                              | 10. Carlos's lymphadenopathy turned out to be Hodgkin disease.                |

### Build Medical Terms (p. 186)

- |                    |                   |                |                      |                      |
|--------------------|-------------------|----------------|----------------------|----------------------|
| 1. lymphadenectomy | 4. immunoglobulin | 7. splenopexy  | 10. tonsillectomy    | 13. lymphangioplasty |
| 2. lymphadenitis   | 5. immunologist   | 8. splenic     | 11. tonsillar        | 14. lymphangiography |
| 3. lymphadenopathy | 6. splenomegaly   | 9. tonsillitis | 12. lymphangiectasis | 15. lymphangioma     |

### Labeling Exercise (p. 187)

- |  |  |                              |
|--|--|------------------------------|
| 1. Lymphatic vessel ( <b>lymphangi/o</b> ) | 3. Tonsils ( <b>tonsill/o, adenoid/o</b> ) | 5. Spleen ( <b>splen/o</b> ) |
| 2. Lymph nodes ( <b>lymphaden/o</b> )      | 4. Thymus gland ( <b>thym/o</b> )          |                              |

### Spelling (p. 188)

- |                      |                      |                       |                  |                       |
|----------------------|----------------------|-----------------------|------------------|-----------------------|
| 1. urticaria         | 3. spelled correctly | 5. lymphadenosis      | 7. splenomalacia | 9. spelled correctly  |
| 2. spelled correctly | 4. spelled correctly | 6. immunosuppressants | 8. tonsillitis   | 10. spelled correctly |

### Abbreviation Matching (p. 188)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. G | 3. J | 5. D | 7. E | 9. B  |
| 2. C | 4. H | 6. A | 8. I | 10. F |

### Fill in the Blank (pp. 188–189)

- |                         |                         |                                      |                  |
|-------------------------|-------------------------|--------------------------------------|------------------|
| 1. allergist            | 4. wheals               | 7. immunizations                     | 10. scratch test |
| 2. autoimmune           | 5. Corticosteroids      | 8. skin                              |                  |
| 3. lymph vessels, edema | 6. AIDS-related complex | 9. Anaphylactic shock or anaphylaxis |                  |

### Medical Term Analysis (pp. 189–190)

- |  |   |  |
|--|---|--|
| 1. <b>adenoid</b> , adenoid, <b>-itis</b> , inflammation, adenoid inflammation                               | 5. <b>phag/o</b> , eating, <b>cyt</b> , cell, <b>-ic</b> , pertaining to, pertaining to eating cell | 9. <b>thym</b> , thymus gland, <b>-ectomy</b> , surgical removal, surgical removal of thymus gland |
| 2. <b>lymph/o</b> , lymph, <b>-genic</b> , pertaining to producing, pertaining to producing lymph            | 6. <b>lymphaden/o</b> , lymph node, <b>-pathy</b> , disease, lymph node disease                     | 10. <b>lymph</b> , lymph, <b>-edema</b> , swelling, lymph swelling                                 |
| 3. <b>immun/o</b> , protection, <b>-therapy</b> , treatment, protection treatment                            | 7. <b>path/o</b> , disease, <b>-logy</b> , study of, study of disease                               |  |
| 4. <b>splen/o</b> , spleen, <b>-malacia</b> , abnormally soft condition, abnormally soft condition of spleen | 8. <b>lymphangi</b> , lymph vessel, <b>-ectasis</b> , dilated, dilated lymph vessel                 |  |

### Visual Identification Challenge (p. 191)

- |      |      |      |      |      |      |
|------|------|------|------|------|------|
| 1. B | 2. E | 3. A | 4. F | 5. D | 6. C |
|------|------|------|------|------|------|

## CHAPTER 10

### Building Pulmonology Terms (pp. 195–203)

- |  |  |
|--|--|
| 1. a. <b>alveol/ar</b> , alveolar ( <i>al-VEE-oh-lar</i> ); b. <b>alveol/itis</b> , alveolitis ( <i>al-vee-oh-lye-tis</i> )  | 4. a. <b>bronchiol/ar</b> , bronchiolar ( <i>brong-KEE-oh-lar</i> ); <b>bronchiol/ectasis</b> , bronchiolectasis ( <i>brong-kee-oh-LEK-tah-sis</i> )                         |
| 2. a. <b>bronch/o/gram</b> , bronchogram ( <i>BRONG-koh-gram</i> ); b. <b>bronch/o/graphy</b> , bronchography ( <i>brong-KOG-rah-fee</i> ); c. <b>bronch/itis</b> , bronchitis ( <i>brong-KIGH-tis</i> ); d. <b>bronch/o/scope</b> , bronchoscope ( <i>BRONG-koh-skohp</i> ); e. <b>bronch/o/scopy</b> , bronchoscopy ( <i>brong-KOSS-koh-pee</i> ); f. <b>bronch/o/spasm</b> , bronchospasm ( <i>BRONG-koh-spazm</i> ); g. <b>bronch/o/genic</b> , bronchogenic ( <i>brong-koh-JEN-ik</i> ) | 5. a. <b>hyper/capnia</b> , hypercapnia ( <i>high-per-KAP-nee-ah</i> ); <b>hypo/capnia</b> , hypocapnia ( <i>high-poh-KAP-nee-ah</i> )                                       |
| 3. a. <b>bronchi/al</b> , bronchial ( <i>BRONG-kee-al</i> ); b. <b>bronchi/ole</b> , bronchiole ( <i>BRONG-kee-ohl</i> ); c. <b>bronchi/ectasis</b> , bronchiectasis ( <i>brong-kee-EK-tah-sis</i> )   | 6. <b>cyan/osis</b> , cyanosis ( <i>sigh-ah-NOH-sis</i> )  |
|  | 7. <b>diaphragm/atic</b> , diaphragmatic ( <i>dye-ah-frag-MAT-ik</i> )   |
|  | 8. a. <b>lob/ar</b> , lobar ( <i>LOH-bar</i> ); b. <b>lob/ectomy</b> , lobectomy ( <i>loh-BEK-toh-mee</i> )  |
|  | 9. a. <b>mediastin/al</b> , mediastinal ( <i>mee-dee-as-TYE-nal</i> ); b. <b>mediastin/o/tomy</b> , mediastinotomy ( <i>mee-dee-as-tih-NOT-oh-my</i> )                       |
|  | 10. <b>orth/o/pnea</b> , orthopnea ( <i>or-THOP-nee-ah</i> )   |
|  | 11. a. <b>an/ox/ia</b> , anoxia ( <i>an-OK-see-ah</i> ); b. <b>ox/i/meter</b> , oximeter ( <i>ok-SIM-eh-ter</i> ); c. <b>ox/i/metry</b> , oximetry ( <i>ok-SIM-eh-tree</i> ) |

12. **a. pleur/al**, pleural (*PLoo-rah*); **b. pleur/o/centesis**, pleurocentesis (*ploor-oh-sen-TEE-sis*); **c. pleur/o/dynia**, pleurodynia (*ploor-oh-DIN-ee-ah*); **d. pleur/algia**, pleuralgia (*ploor-AL-jee-ah*); **e. pleur/itis**, pleuritis (*ploo-RIGH-tis*)
13. **a. a/pnea**, apnea (*AP-nee-ah*); **b. dys/pnea**, dyspnea (*DISP-nee-ah*); **c. eu/pnea**, eupnea (*yoop-NEE-ah*); **d. hyper/pnea**, hyperpnea (*high-PERP-nee-ah*); **e. hypo/pnea**, hypopnea (*high-POP-nee-ah*); **f. brady/pnea**, bradypnea (*brad-ip-NEE-ah*); **g. tachy/pnea**, tachypnea (*tak-ip-NEE-ah*)
14. **a. pneum/atic**, pneumatic (*noo-MAT-ik*); **b. pneum/o/gram**, pneumogram (*noo-moh-GRAM*); **c. pneum/o/graph**, pneumograph (*NOO-moh-graf*); **d. pneum/o/graphy**, pneumography (*noo-MOG-rah-fee*); **e. pneum/o/thorax**, pneumothorax (*noo-moh-THOH-raks*)
15. **a. pneumon/ic**, pneumonic (*noo-MON-ik*); **b. pneumon/o/centesis**, pneumonocentesis (*noo-moh-noh-sen-TEE-sis*); **c. pneumon/ectomy**, pneumonectomy (*noo-moh-NEK-toh-mee*); **d. pneumon/o/tomy**, pneumonotomy (*noo-moh-NOT-oh-mee*)
16. **a. pulmon/ary**, pulmonary (*PULL-mon-air-ee*) OR **pulmon/ic**, pulmonic (*pull-MON-ik*); **b. pulmon/o/logy**, pulmonology (*pull-moh-NALL-oh-jee*); **c. pulmon/o/logist**, pulmonologist (*pull-moh-NALL-oh-jist*)
17. **hem/o/ptysis**, hemoptysis (*hee-MOP-tih-sis*)
18. **a. spir/o/gram**, spirogram (*SPY-roh-gram*); **b. spir/o/meter**, spirometer (*spy-ROM-eh-ter*); **c. spir/o/metry**, spirometry (*spy-ROM-eh-tree*)
19. **a. thorac/algia**, thoracalgia (*thor-ah-KAL-jee-ah*); **b. thorac/o/dynia**, thoracodynia (*thor-ah-koh-DIN-ee-ah*); **c. thorac/ic**, thoracic (*tho-RASS-ik*); **d. thorac/o/tomy**, thoracotomy (*thor-ah-KOT-oh-mee*); **e. thorac/o/centesis**, thoracocentesis (*thor-ah-koh-sen-TEE-sis*); **f. thorac/o/stomy**, thoracostomy (*thor-ah-KOS-toh-mee*)
20. **a. hem/o/thorax**, hemothorax (*hee-moh-THOH-raks*); **b. py/o/thorax**, pyothorax (*pye-oh-THOH-raks*)
21. **a. trache/al**, tracheal (*TRAY-kee-al*); **b. trache/o/plasty**, tracheoplasty (*tray-kee-oh-PLAS-tee*); **c. trache/o/stomy**, tracheostomy (*tray-kee-OSS-toh-mee*); **d. trache/o/tomy**, tracheotomy (*tray-kee-OT-oh-mee*); **e. trache/itis**, tracheitis (*tray-kee-EYE-tis*); **f. endo/trache/al**, endotracheal (*en-doh-TRAY-kee-al*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 213–214)

- D
- Endometriosis—presence of endometrial tissue outside uterus, she had uterus removed; cholelithiasis—gallbladder stones, she had gallbladder removed; lumbar compression fracture due to osteoporosis—collapse of vertebra because her bones were brittle
- No, it is not important; it does not include lung problems; her brother has high blood pressure, her mother had a stroke (blood vessel disease), and her father had diabetes mellitus (problem with blood sugar levels because pancreas fails to produce enough insulin)
- Crackles (crackling sound during inhalation), but no wheezes (whistling sound during inhalation or exhalation)
- In sputum culture and sensitivity, a sputum specimen is placed in culture medium in an attempt to grow and then identify type of bacteria present and what antibiotic is effective in killing it; this test did not reveal any bacteria in her sputum; sputum cytology examines cells in sputum for presence of cancer; this test did identify cancerous cells in patient's sputum
- Chest radiograph, AP view, is a plain chest X-ray taken from front to back; it showed a suspicious-looking cloudy area in her lung; chest CT scan is an X-ray image formed with assistance of a computer to have a cross-sectional view of chest; it shows more detail and revealed that cloudy area was a tumor
- Thoracic surgeon to open up her chest and remove one lobe of her lung; oncologist (cancer specialist) to determine whether cancer has spread and whether she needs to have chemotherapy treatments

## PRACTICE EXERCISES

### Sound It Out (p. 215)

- |                |                  |                      |                      |                   |
|----------------|------------------|----------------------|----------------------|-------------------|
| 1. tracheotomy | 6. bronchogenic  | 11. atelectasis      | 16. bronchography    | 21. pyothorax     |
| 2. apnea       | 7. pneumonectomy | 12. hyperventilation | 17. pleurisy         | 22. spirometry    |
| 3. asthma      | 8. bronchospasm  | 13. influenza        | 18. pneumonocentesis | 23. anoxia        |
| 4. bronchitis  | 9. cyanosis      | 14. lobectomy        | 19. pneumoconiosis   | 24. thoracotomy   |
| 5. hemothorax  | 10. emphysema    | 15. oximeter         | 20. tuberculosis     | 25. tracheoplasty |

### Transcription Practice (pp. 215–216)

- During auscultation, the physician heard crackles when the patient inhaled.
- It was unclear from the chest X-ray whether the patient had hemothorax or pyothorax.
- The results of the arterial blood gases revealed hypoxia.
- The patient underwent a lobectomy after the discovery of bronchogenic carcinoma.
- Mr. Scott's hypopnea was so severe because he had cyanosis.
- Carlyn went to the pulmonologist when she noticed hemoptysis several mornings in a row.
- The physician ordered a sputum culture and sensitivity because Lars was coughing up purulent sputum.
- The patient underwent pulmonary function tests using a spirometer and an oximeter.
- The patient had chronic obstructive pulmonary disease, causing him to have dyspnea and a cough.
- Pulmonary angiography was ordered to determine whether there was a pulmonary embolism.

### Spelling (p. 217)

- |                      |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1. pneumoconiosis    | 3. correctly spelled | 5. purulent          | 7. correctly spelled | 9. correctly spelled |
| 2. correctly spelled | 4. ventilator        | 6. correctly spelled | 8. hyperpnea         | 10. alveolar         |

### Labeling Exercise (p. 217)

- |  |   |   |
|--|---|---|
| 1. Trachea ( <b>trache/o</b> )                           | 4. Right lung ( <b>pneum/o, pulmon/o, pulmon/o</b> )    | 7. Left lung ( <b>pneum/o, pulmon/o, pulmon/o</b> ) |
| 2. Lobe ( <b>lob/o</b> )                                 | 5. Mediastinum ( <b>mediastin/o</b> )                   | 8. Chest ( <b>thorac/o, steth/o</b> )               |
| 3. Right primary bronchus ( <b>bronch/o, bronchi/o</b> ) | 6. Left primary bronchus ( <b>bronch/o, bronchi/o</b> ) | 9. Diaphragm ( <b>diaphragmat/o</b> )               |

### Build Medical Terms (p. 218)

- |                 |                     |                   |                   |               |
|-----------------|---------------------|-------------------|-------------------|---------------|
| 1. bronchogram  | 4. pneumonocentesis | 7. pneumonotomy   | 10. tracheostomy  | 13. apnea     |
| 2. bronchoscopy | 5. pneumonectomy    | 8. atelectasis    | 11. tracheoplasty | 14. tachypnea |
| 3. bronchospasm | 6. pneumonic        | 9. bronchiectasis | 12. tracheitis    | 15. dyspnea   |

### Fill in the Blank (pp. 218–219)

- |                    |   |                        |
|--------------------|---|------------------------|
| 1. asthma          | 5. Continuous positive airway pressure (CPAP) | 9. pneumothorax        |
| 2. bronchoscopy    | 6. spirometer                                 | 10. pulmonary embolism |
| 3. emphysema       | 7. tuberculin skin or Mantoux                 |                        |
| 4. cystic fibrosis | 8. infant respiratory distress syndrome       |                        |

### Abbreviation Matching (p. 219)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. D | 3. F | 5. J | 7. I | 9. G  |
| 2. H | 4. A | 6. B | 8. E | 10. C |

### Medical Term Analysis (pp. 219–221)

- |   |  |  |
|---|--|--|
| 1. <b>thorac/o</b> , chest, <b>-centesis</b> , puncture to withdraw fluid, puncture chest to withdraw fluid     | 5. <b>pneum/o</b> , lung, <b>coni</b> , dust, <b>-osis</b> , abnormal condition, abnormal condition of lung dust | 9. <b>bronchi</b> , bronchus, <b>-ectasis</b> , dilated, dilated bronchus          |
| 2. <b>cyan</b> , blue, <b>-osis</b> , abnormal condition, abnormal condition of being blue                      | 6. <b>ox/i</b> , oxygen, <b>-meter</b> , instrument for measuring, instrument for measuring oxygen               | 10. <b>lob</b> , lobe, <b>-ectomy</b> , surgical removal, surgical removal of lobe |
| 3. <b>pneum/o</b> , air, <b>-thorax</b> , chest, air in the chest   | 7. <b>orth/o</b> , straight, <b>-pnea</b> , breathing, straight breathing  |  |
| 4. <b>endo-</b> , within, <b>trache</b> , trachea, <b>-al</b> , pertaining to, pertaining to within the trachea | 8. <b>pleur/o</b> , pleura, <b>-dynia</b> , pain condition, condition of pleura pain                             |  |

### Multiple Choice (p. 221)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. d | 3. b | 5. d | 7. a | 9. c  |
| 2. a | 4. c | 6. a | 8. c | 10. b |

### Visual Identification Challenge (p. 222)

- |                     |                 |           |                |              |              |
|---------------------|-----------------|-----------|----------------|--------------|--------------|
| 1. pleural effusion | 2. pneumothorax | 3. asthma | 4. atelectasis | 5. pneumonia | 6. emphysema |
|---------------------|-----------------|-----------|----------------|--------------|--------------|

## CHAPTER 11

### Building Gastroenterology Terms (pp. 226–234)

- |   |  |
|---|--|
| 1. a. <b>an/al</b> , anal (AY-nal); b. <b>an/o/plasty</b> , anoplasty (AY-noh-plas-tee)   | 10. a. <b>diverticul/itis</b> , diverticulitis (dye-ver-tik-yoo-LYE-tis);  |
| 2. <b>append/ectomy</b> , appendectomy (ap-en-DEK-toh-mee)  | b. <b>diverticul/osis</b> , diverticulosis (dye-ver-tik-yoo-LOH-sis);  |
| 3. <b>appendic/itis</b> , appendicitis (ah-pen-dih-SIGH-tis)  | c. <b>diverticul/ectomy</b> , diverticulectomy (dye-ver-tik-yoo-LEK-toh-mee)   |
| 4. a. <b>chol/e/lith/iasis</b> , cholelithiasis (koh-lee-lih-THIGH-ah-sis);   | 11. a. <b>duoden/al</b> , duodenal (doo-oh-DEE-nal OR doo-OD-eh-nal);  |
| b. <b>chol/e/lith/o/tripsy</b> , cholelithotripsy (koh-led-oh-koh-LITH-oh-trip-see)   | b. <b>duoden/o/stomy</b> , duodenostomy (doo-oh-deh-NOS-toh-mee)   |
| 5. a. <b>cholangi/o/gram</b> , cholangiogram (koh-LAN-jee-oh-gram);   | 12. a. <b>hemat/emesis</b> , hematemesis (hee-mah-TEM-eh-sis);   |
| b. <b>cholangi/o/graphy</b> , cholangiography (koh-lan-jee-OG-rah-fee)  | b. <b>hyper/emesis</b> , hyperemesis (high-per-EM-eh-sis)  |
| 6. a. <b>cholecyst/itis</b> , cholecystitis (koh-lee-sis-TYE-tis);  | 13. a. <b>enter/itis</b> , enteritis (en-ter-EYE-tis); b. <b>enter/ic</b> , enteric (en-TAIR-ik)                       |
| b. <b>cholecyst/ectomy</b> , cholecystectomy (koh-lee-sis-TEK-toh-mee);   | 14. a. <b>esophag/eal</b> , esophageal (eh-soff-ah-JEE-al); b. <b>esophag/o/plasty</b> ,                               |
| c. <b>cholecyst/o/gram</b> , cholecystogram (koh-lee-SIS-toh-gram);   | esophagoplasty (eh-soff-ah-goh-PLAS-tee); c. <b>esophag/itis</b> ,   |
| d. <b>cholecyst/o/graphy</b> , cholecystography (koh-lee-sis-TOG-rah-fee)   | esophagitis (eh-SOFF-ah-jigh-tis); d. <b>esophag/o/scope</b> ,   |
| 7. a. <b>choledoch/o/lith/iasis</b> , choledocholithiasis (koh-LED-doh-koh-lith-ee-ah-sis); b. <b>choledoch/o/lith/o/tripsy</b> , choledocholithotripsy (koh-led-oh-koh-LITH-oh-trip-see) | esophagoscope (eh-SOFF-ah-goh-skohp); e. <b>esophag/o/scopy</b> ,  |
| 8. a. <b>col/o/stomy</b> , colostomy (koh-LOSS-toh-mee); b. <b>col/itis</b> , colitis (koh-LIGH-tis); c. <b>col/o/rect/al</b> , colorectal (kohl-oh-REK-tal)                              | esophagoscopy (eh-soff-ah-GOS-koh-pee)   |
| 9. a. <b>colon/o/scope</b> , colonoscope (koh-LON-oh-skohp);  | 15. a. <b>gastr/ic</b> , gastric (GAS-trik); b. <b>gastr/itis</b> , gastritis (gas-TRYE-tis);                          |
| b. <b>colon/o/scopy</b> , colonoscopy (koh-lon-OSS-koh-pee);  | c. <b>gastr/o/enter/itis</b> , gastroenteritis (gas-troh-en-ter-EYE-tis);  |
| c. <b>colon/ic</b> , colonic (koh-LON-ik)   | d. <b>gastr/ectomy</b> , gastrectomy (gas-TREK-toh-mee); e. <b>gastr/o/stomy</b> ,                                     |
|   | gastrostomy (gas-TROSS-toh-mee); f. <b>gastr/o/scope</b> , gastroscope (GAS-troh-skohp);                               |
|   | g. <b>gastr/o/scopy</b> , gastroscopy (gas-TROSS-koh-pee); h. <b>gastr/o/dynia</b> , gastrodynia (gas-troh-DIN-ee-ah); |



- i. gastr/algia, gastralgia** (*gas-TRAL-jee-ah*); **j. gastr/o/enter/o/logist, gastroenterologist** (*gas-troh-en-ter-ALL-oh-jist*); **k. gastr/o/enter/o/logy, gastroenterology** (*gas-troh-en-ter-ALL-oh-jee*)
- 16. a. hepat/itis, hepatitis** (*hep-ah-TYE-tis*); **b. hepat/ic, hepatic** (*heh-PAT-ik*); **c. hepat/oma, hepatoma** (*hep-ah-TOH-mah*); **d. hepat/o/megaly, hepatomegaly** (*hep-pah-toh-MEG-ah-lee*)
- 17. a. ile/al, ileal** (*il-ee-al*); **b. ile/o/stomy, ileostomy** (*il-ee-OSS-toh-mee*)
- 18. a. jejun/al, jejunal** (*jeh-JOO-nal*); **b. jejun/o/stomy, jejunostomy** (*jeh-joo-NOS-toh-mee*)
- 19. a. lapar/o/tomy, laparotomy** (*lap-ah-ROT-oh-mee*); **b. lapar/o/scope, laparoscopy** (*LAP-ah-roh-skohp*); **c. lapar/o/scopy, laparoscopy** (*lap-ar-OSS-koh-pee*)
- 20. a. pancreat/ic, pancreatic** (*pan-kree-AT-ik*); **b. pancreat/itis, pancreatitis** (*pan-kree-ah-TYE-tis*)
- 21. a. a/pepsia, aepsia** (*ay-PEP-see-ah*); **b. dys/pepsia, dyspepsia** (*dis-PEP-see-ah*); **c. brady/pepsia, bradypepsia** (*brad-ee-PEP-see-ah*)
- 22. a. a/phagia, aphagia** (*ah-FAY-jee-ah*); **b. dys/phagia, dysphagia** (*dis-FAY-jee-ah*); **c. poly/phagia, polyphagia** (*pol-ee-FAY-jee-ah*) OR **hyper/phagia, hyperphagia** (*high-per-FAY-jee-ah*)
- 23. a. polyp/osis, polyposis** (*pol-ee-POH-sis*); **b. polyp/ectomy, polypectomy** (*pol-ip-EK-toh-mee*)
- 24. a. proct/o/ptosis, proctoptosis** (*prok-top-TOH-sis*); **b. proct/o/scope, proctoscope** (*PROC-toh-skohp*); **c. proct/o/scopy, proctoscopy** (*proc-TOSS-koh-pee*); **d. proct/o/logist, proctologist** (*proc-TALL-oh-jist*); **e. proct/o/logy, proctology** (*prok-TALL-oh-jee*)
- 25. a. rect/o/cele, rectocele** (*REK-toh-seel*); **b. rect/al, rectal** (*REK-tal*)
- 26. a. sigmoid/o/scope, sigmoidoscopy** (*sig-MOYD-oh-skohp*); **b. sigmoid/o/scopy, sigmoidoscopy** (*sig-moy-DOSS-koh-pee*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 243–244)

- Increasing upper abdominal pain for past eight months, sharp upper abdominal pain about 30 minutes after eating
- Milk and ice cream; spicy foods; over-the-counter antacids (Tums, Rolaids, Zantac)
- Blood test for *Helicobacter pylori*, a bacteria that can cause stomach ulcers; this test was positive, meaning the bacteria are present; esophagogastroduodenoscopy, a visual examination of esophagus, stomach, and first section of intestine showed stomach was inflamed, but there was no evidence of bleeding or an ulcer
- In the middle of upper abdomen overlying much of stomach; radiate means pain travels from one area of body to another
- Difficulty swallowing/eating, burning sensation under breast bone, feeling like he is going to throw up, actually throwing up, pain in lower abdomen, vomiting blood, dark tarry stool, loose watery stool
- Because his family has had serious GI problems, his mother had cancer of the colon, and his brother had liver disease
- C
- Patient was put on two medications, one to reduce inflamed stomach and one to kill bacterial infection; if he is not better in three months, physician will repeat visual exam of esophagus, stomach, and first section of intestine to see what is happening

## PRACTICE EXERCISES

### Sound It Out (p. 245)

- |                  |                    |                     |                 |                   |
|------------------|--------------------|---------------------|-----------------|-------------------|
| 1. sigmoidoscopy | 6. colitis         | 11. gastroenteritis | 16. hyperemesis | 21. dysphagia     |
| 2. rectocele     | 7. colonoscopy     | 12. gastroscope     | 17. bradypepsia | 22. gastrectomy   |
| 3. gastritis     | 8. cholecystectomy | 13. appendicitis    | 18. ileostomy   | 23. volvulus      |
| 4. cholangiogram | 9. dyspepsia       | 14. hemorrhoids     | 19. laparoscopy | 24. sigmoidoscopy |
| 5. cirrhosis     | 10. esophagoplasty | 15. dysentery       | 20. laparotomy  | 25. appendix      |

### Transcription Practice (pp. 245–246)

- Mr. Mercado was noted to have jaundice, leading to a diagnosis of hepatitis.
- Mrs. Mendez underwent an esophagogastroduodenoscopy (EGD) that revealed peptic ulcer disease.
- Mr. Brown's severe diverticulitis resulted in his having a diverticulectomy.
- The patient presented in the ER with severe nausea and hematemesis.
- The physician ordered a barium enema (BE, or lower GI series) because of concern that the patient could have polyposis.
- Because of her cholelithiasis, Ms. Katopolis had a laparotomy and cholecystectomy.
- Common symptoms of gastroesophageal reflux disease (GERD) include dysphagia and gastrodynia/gastralgia.
- The patient was found to have an ileus and required a jejunostomy.
- The BM (or feces) was tested for occult blood and ova and parasites (O&P).
- To evaluate Mr. Habib's melena, his gastroenterologist performed a proctoscopy, a sigmoidoscopy, and a colonoscopy.

### Labeling Exercise (p. 247)

- |   |                                   |  |
|---|-----------------------------------|--|
| 1. Liver ( <b>hepat/o</b> )                 | 6. Stomach ( <b>gastr/o</b> )     | 11. Sigmoid colon ( <b>sigmoid/o</b> ) |
| 2. Gallbladder ( <b>cholecyst/o</b> )       | 7. Pancreas ( <b>pancreat/o</b> ) | 12. Rectum ( <b>rect/o, proct/o</b> )  |
| 3. Colon ( <b>col/o, colon/o</b> )          | 8. Duodenum ( <b>duoden/o</b> )   | 13. Anus ( <b>an/o</b> )               |
| 4. Appendix ( <b>appendic/o, append/o</b> ) | 9. Jejunum ( <b>jejun/o</b> )     | 14. Small intestine ( <b>enter/o</b> ) |
| 5. Esophagus ( <b>esophag/o</b> )           | 10. Ileum ( <b>ile/o</b> )        |  |

### Build Medical Terms (pp. 247–248)

- |                              |                              |                    |                 |
|------------------------------|------------------------------|--------------------|-----------------|
| 1. gastritis                 | 5. gastrodynia or gastralgia | 9. cholecystectomy | 13. aepsia      |
| 2. gastrectomy               | 6. proctoptosis              | 10. duodenostomy   | 14. dyspepsia   |
| 3. gastroscope               | 7. rectocele                 | 11. colostomy      | 15. bradypepsia |
| 4. gastralgia or gastrodynia | 8. cholecystitis             | 12. gastrostomy    |                 |

### Abbreviation Matching (p. 248)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. H | 3. G | 5. C | 7. B | 9. J  |
| 2. D | 4. I | 6. A | 8. F | 10. E |

### Fill in the Blank (pp. 248–249)

- |                                       |                       |                       |                       |
|---------------------------------------|-----------------------|-----------------------|-----------------------|
| 1. total parenteral nutrition         | 3. vomit              | 6. ascites            | 9. spastic colon      |
| 2. stomach, lower esophagus, duodenum | 4. barium swallow     | 7. ileus              | 10. Bariatric surgery |
|                                       | 5. liver, gallbladder | 8. ulcerative colitis |                       |

### Spelling (p. 249)

- |                      |                      |                      |                      |                       |
|----------------------|----------------------|----------------------|----------------------|-----------------------|
| 1. correctly spelled | 3. pancreatitis      | 5. gastritis         | 7. correctly spelled | 9. volvulus           |
| 2. esophageal        | 4. correctly spelled | 6. correctly spelled | 8. cirrhosis         | 10. correctly spelled |

### Medical Term Analysis (pp. 249–250)

- |   |   |  |
|---|---|--|
| 1. <b>esophag/o</b> , esophagus, <b>-plasty</b> , surgical repair, surgical repair of esophagus   | 4. <b>hyper-</b> , excessive, <b>-emesis</b> , vomiting, excessive vomiting   | 8. <b>ile/o</b> , ileum, <b>-stomy</b> , surgically create an opening, surgically create opening in ileum      |
| 2. <b>append</b> , appendix, <b>-ectomy</b> , surgical removal, surgical removal of appendix  | 5. <b>gastr/o</b> , stomach, <b>enter</b> , intestine, <b>-itis</b> , inflammation, inflammation of stomach and intestine | 9. <b>lapar/o</b> , abdomen, <b>-scope</b> , instrument for viewing, instrument for viewing abdomen            |
| 3. <b>choledoch/o</b> , common bile duct, <b>lith/o</b> , stone, <b>-tripsy</b> , surgical crushing, surgical crushing of stone in common bile duct | 6. <b>hepat</b> , liver, <b>-oma</b> , tumor, liver tumor   | 10. <b>poly-</b> , many, <b>-phagia</b> , eating or swallowing condition, condition of many (excessive) eating |
|   | 7. <b>proct/o</b> , rectum and anus, <b>-logy</b> , study of, study of rectum and anus                                    |  |

### Multiple Choice (p. 251)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. a | 5. d | 7. a | 9. b  |
| 2. b | 4. a | 6. d | 8. a | 10. c |

### Visual Identification Challenge (p. 252)

- |                                     |                |                   |
|-------------------------------------|----------------|-------------------|
| 1. diverticulosis or diverticulitis | 3. laparoscopy | 5. cholelithiasis |
| 2. colostomy                        | 4. polyposis   | 6. appendicitis   |

## CHAPTER 12

### Building Urology and Nephrology Terms (pp. 256–266)

- |  |   |
|--|---|
| 1. a. <b>balan/itis</b> , balanitis ( <i>bal-ah-NYE-tis</i> ); b. <b>balan/o/rrhea</b> , balanorrhea ( <i>bah-lah-noh-REE-ah</i> )   | 6. a. <b>an/orch/ism</b> , anorchism ( <i>an-OR-kizm</i> ); b. <b>orch/itis</b> , orchitis ( <i>or-KIGH-tis</i> )   |
| 2. a. <b>cyst/algia</b> , cystalgia ( <i>sis-TAL-jee-ah</i> ); b. <b>cyst/o/cele</b> , cystocele ( <i>SIS-toh-seel</i> ); c. <b>cyst/ectomy</b> , cystectomy ( <i>sis-TEK-toh-mee</i> ); d. <b>cyst/itis</b> , cystitis ( <i>sis-TYE-tis</i> ); e. <b>cyst/o/scopy</b> , cystoscopy ( <i>sis-TOSS-koh-pee</i> ); f. <b>cyst/o/gram</b> , cystogram ( <i>SIS-toh-gram</i> ); g. <b>cyst/o/graphy</b> , cystography ( <i>sis-TOG-rah-fee</i> ); h. <b>cyst/o/scope</b> , cystoscope ( <i>SIS-toh-skohp</i> ); i. <b>cyst/ic</b> , cystic ( <i>SIS-tik</i> ); j. <b>cyst/o/lith</b> , cystolith ( <i>SIS-toh-lith</i> )   | 7. a. <b>orchi/o/pexy</b> , orchiopexy ( <i>or-KEE-oh-pek-see</i> ); b. <b>orchi/algia</b> , orchialgia ( <i>or-kee-AL-jee-ah</i> )   |
| 3. a. <b>epidym/itis</b> , epididymitis ( <i>ep-ih-did-ih-MY-tis</i> ); b. <b>epidym/al</b> , epididymal ( <i>ep-ih-DID-ih-mal</i> )   | 8. a. <b>orchid/ectomy</b> , orchidectomy ( <i>or-kih-DEK-toh-mee</i> ); b. <b>crypt/orchid/ism</b> , cryptorchidism ( <i>kript-OR-kid-izm</i> )  |
| 4. a. <b>lith/o/tripsy</b> , lithotripsy ( <i>LITH-oh-trip-see</i> ); b. <b>ureter/o/lith/iasis</b> , ureterolithiasis ( <i>you-REE-ter-oh-lih-thigh-ah-sis</i> ); c. <b>nephro/lith/iasis</b> , nephrolithiasis ( <i>nef-roh-lith-EYE-ah-sis</i> ); d. <b>cyst/o/lith/iasis</b> , cystolithiasis ( <i>SIS-toh-lih-thigh-ah-sis</i> )  | 9. a. <b>prostat/ectomy</b> , prostatectomy ( <i>pross-tah-TEK-toh-mee</i> ); b. <b>prostat/itis</b> , prostatitis ( <i>pross-tah-TYE-tis</i> ); c. <b>prostat/ic</b> , prostatic ( <i>pross-TAT-ik</i> )   |
| 5. a. <b>nephro/ectomy</b> , nephrectomy ( <i>neh-FREK-toh-mee</i> ); b. <b>nephro/itis</b> , nephritis ( <i>neh-FRYE-tis</i> ); c. <b>nephro/o/megaly</b> , nephromegaly ( <i>nef-roh-MEG-ah-lee</i> ); d. <b>nephro/oma</b> , nephroma ( <i>neh-FROH-mah</i> ); e. <b>nephro/o/ptosis</b> , nephroptosis ( <i>nef-rop-TOH-sis</i> ); f. <b>nephro/o/tomy</b> , nephrotomy ( <i>neh-FROT-oh-mee</i> ); g. <b>nephro/o/pathy</b> , nephropathy ( <i>neh-FROP-ah-thee</i> ); h. <b>nephro/o/pexy</b> , nephropexy ( <i>NEF-roh-pek-see</i> ); i. <b>nephro/o/sclerosis</b> , nephrosclerosis ( <i>nef-roh-skleh-ROH-sis</i> ); j. <b>glomerul/o/nephro/itis</b> , glomerulonephritis ( <i>gloh-mair-yoo-loh-neh-FRYE-tis</i> ); k. <b>nephro/o/lith</b> , nephrolith ( <i>NEF-roh-lith</i> ); l. <b>nephro/osis</b> , nephrosis ( <i>neh-FROH-sis</i> ) | 10. a. <b>pyel/o/nephro/itis</b> , pyelonephritis ( <i>pye-eh-loh-neh-FRYE-tis</i> ); b. <b>pyel/o/gram</b> , pyelogram ( <i>PYE-eh-loh-gram</i> ); c. <b>pyel/o/graphy</b> , pyelography ( <i>pye-eh-LOG-rah-fee</i> )   |
|  | 11. a. <b>ren/al</b> , renal ( <i>REE-nal</i> ); b. <b>ren/o/gram</b> , renogram ( <i>REE-noh-gram</i> ); c. <b>ren/o/graphy</b> , renography ( <i>ree-NOG-rah-fee</i> )  |
|  | 12. a. <b>semin/al</b> , seminal ( <i>SEM-ih-nal</i> ); b. <b>semin/uria</b> , seminuria ( <i>see-mih-NOO-ree-ah</i> )  |
|  | 13. a. <b>a/sperm/ia</b> , aspermia ( <i>ah-SPER-mee-ah</i> ); b. <b>oligo/o/sperm/ia</b> , oligospermia ( <i>ol-ih-goh-SPER-mee-ah</i> )   |
|  | 14. a. <b>spermat/o/genesis</b> , spermatogenesis ( <i>sper-mat-oh-JEN-eh-sis</i> ); b. <b>spermat/o/lysis</b> , spermatolysis ( <i>sper-mah-TALL-ih-sis</i> ); c. <b>spermat/ic</b> , spermatric ( <i>sper-MAT-ik</i> ); d. <b>spermat/o/cyte</b> , spermatocyte ( <i>SPER-mat-toh-sight</i> ) |
|  | 15. a. <b>cyst/o/stomy</b> , cystostomy ( <i>sis-TOSS-toh-mee</i> ); b. <b>nephro/stomy</b> , nephrostomy ( <i>neh-FROS-toh-mee</i> ); c. <b>ureter/o/stomy</b> , ureterostomy ( <i>yoo-ree-ter-OSS-toh-mee</i> ); d. <b>pyel/o/stomy</b> , pyelostomy  |

(pye-eh-LOS-toh-mee); **e. urethr/o/stomy**, urethrostomy (yoo-ree-THROS-toh-mee); **f. vas/o/vas/o/stomy**, vasovasostomy (vay-soh-vah-SOS-tah-mee)

**16. testicul/ar**, testicular (tess-TIK-yoo-lar)

**17. a. ur/o/logy**, urology (yoo-RALL-oh-jee); **b. ur/o/logist**, urologist (yoo-RALL-oh-jist); **c. ur/emia**, uremia (yoo-REE-mee-ah)

**18. a. ureter/itis**, ureteritis (yoo-ree-ter-EYE-tis); **b. ureter/o/stenosis**, ureterostenosis (yoo-ree-ter-oh-steh-NOH-sis); **c. ureter/al**, ureteral (yoo-REE-ter-al)

**19. a. urethr/o/plasty**, urethroplasty (yoo-REE-throh-plas-tee); **b. urethr/algia**, urethralgia (yoo-ree-THRAL-jee-ah); **c. urethr/itis**, urethritis (yoo-ree-THRIGH-tis); **d. urethr/o/scope**, urethroscope (yoo-REE-throh-skohp); **e. urethr/o/scopy**, urethroscopy (yoo-ree-THROS-koh-pee); **f. urethr/o/stenosis**, urethrostenosis (yoo-ree-throh-steh-NOH-sis); **g. urethr/o/tomy**, urethrotomy (yoo-ree-THROT-oh-mee); **h. urethr/al**, urethral (yoo-REE-thral)

**20. a. glycos/uria**, glycosuria (gly-kohs-YOO-ree-ah); **b. noct/uria**, nocturia (nok-TOO-ree-ah); **c. olig/uria**, oliguria (ol-ig-YOO-ree-ah); **d. py/uria**, pyuria (pye-YOO-ree-ah); **e. an/uria**, anuria (an-YOO-ree-ah); **f. dys/uria**, dysuria (dis-YOOR-ee-ah); **g. hemat/uria**, hematuria (hee-mah-TOO-ree-ah); **h. poly/uria**, polyuria (pol-ee-YOO-ree-ah); **i. albumin/uria**, albuminuria (al-byoo-mih-NOO-ree-ah); **j. azot/uria**, azoturia (az-oh-TYOOR-ee-ah); **k. bacteri/uria**, bacteriuria (bak-teer-ee-YOO-ree-ah)

**21. a. urin/ary**, urinary (YOO-rih-nair-ee); **b. urin/o/meter**, urinometer (yoor-ih-NOM-eh-ter)

**22. a. vas/ectomy**, vasectomy (vah-SEK-toh-mee); **b. vas/o/tomy**, vasotomy (vay-SOT-oh-mee)

**23. a. vesicul/itis**, vesiculitis (veh-sik-yoo-LIGH-tis); **b. vesicul/ectomy**, vesiculectomy (veh-sik-yoo-LEK-toh-mee); **c. vesicul/ar**, vesicular (veh-SIK-yoo-lar)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 274–276)

1. He has nocturnal hesitancy (difficulty initiating urination during the night) and frequency (urinating more often but without any increase in overall volume of urine); he does not have urinary incontinence (inability to hold back urination) or erectile dysfunction (inability to achieve an erection)
2. D
3. Vital signs are routine measures of general health; they include temperature, pulse, respiration rate, and blood pressure
4. Urinalysis (UA), digital rectal exam (DRE), prostate-specific antigen (PSA), computed tomography scan (CT scan), culture and sensitivity (C&S), erectile dysfunction (ED), myocardial infarction (MI), percutaneous transluminal coronary angioplasty (PTCA), hypertension (HTN), biopsy (Bx), red blood cells (RBC)
5. Urinalysis is a physical and chemical examination of urine; it is checked for pH, specific gravity, and presence of substances such as blood and

sugar; this patient did have blood present in his urine, but no bacteria were found

6. An oncologist is a physician specializing in diagnosing and treating cancer; oncologist did not recommend that patient have any radiation or chemotherapy treatments because cancer showed no signs of having left prostate gland; however, patient is to continue having a PSA done every three months
7. Two tests were diagnostic images: a bone scan and a CT scan; metastasis is spread of initial cancerous tumor to another site in body
8. Myocardial infarction is a heart attack; part of heart muscle dies because of lack of blood supply; percutaneous transluminal coronary angioplasty is a treatment procedure that uses a balloon to expand a blocked coronary artery and improve blood flow to heart muscle

## PRACTICE EXERCISES

### Sound It Out (pp. 276–277)

- |                    |                 |                    |                     |                  |
|--------------------|-----------------|--------------------|---------------------|------------------|
| 1. ureterostenosis | 6. nephroma     | 11. hemodialysis   | 16. nephrosclerosis | 21. renography   |
| 2. balanorrhea     | 7. dysuria      | 12. gonorrhea      | 17. oligospermia    | 22. vasectomy    |
| 3. cryptorchidism  | 8. epididymitis | 13. pyelonephritis | 18. orchidectomy    | 23. urinalysis   |
| 4. urinometer      | 9. vesiculitis  | 14. nephrosis      | 19. polyuria        | 24. varicocele   |
| 5. aspermia        | 10. hematuria   | 15. lithotripsy    | 20. prostatitis     | 25. nephromegaly |

### Transcription Practice (pp. 277–278)

1. A cystoscopy revealed the presence of a cystolith and the patient underwent a lithotripsy.
2. When noting the balanorrhea and balanitis, the physician knew she needed to determine if the patient had acquired a sexually transmitted disease.
3. A retrograde pyelogram confirmed the diagnosis of pyelonephritis.
4. A semen analysis performed six weeks after the vasectomy confirmed aspermia.
5. The patient's polycystic kidney disease had resulted in renal failure, necessitating the use of hemodialysis.
6. The results of the urinalysis showed that there was pyuria, bacteriuria, and glycosuria.
7. After the patient developed anuria, a renogram revealed that the patient had developed nephrosclerosis.
8. The elderly gentleman required a circumcision for phimosis.
9. The patient required a ureterostomy following a cystectomy for bladder cancer.
10. The patient developed nephrolithiasis and underwent extracorporeal shockwave lithotripsy.

### Abbreviation Matching (p. 278)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. J | 3. F | 5. A | 7. I | 9. D  |
| 2. G | 4. B | 6. E | 8. H | 10. C |

### Multiple Choice (pp. 278–279)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. c | 5. b | 7. d | 9. a  |
| 2. b | 4. b | 6. d | 8. c | 10. a |

### Labeling Exercise (p. 279)

- |                                      |                 |                                      |
|--------------------------------------|-----------------|--------------------------------------|
| 1. Kidney ( <b>ren/o, nephro/o</b> ) | 3. Renal artery | 5. Urinary bladder ( <b>cyst/o</b> ) |
| 2. Ureter ( <b>ureter/o</b> )        | 4. Renal vein   | 6. Urethra ( <b>urethr/o</b> )       |

### Build Medical Terms (p. 280)

- |                 |                  |               |                   |                |
|-----------------|------------------|---------------|-------------------|----------------|
| 1. nephrology   | 4. nephroptosis  | 7. spermatoc  | 10. prostatitis   | 13. nocturia   |
| 2. nephromegaly | 5. nephropexy    | 8. cystogram  | 11. prostatectomy | 14. dysuria    |
| 3. nephropathy  | 6. spermatolysis | 9. cystoscopy | 12. hematuria     | 15. glycosuria |

### Fill in the Blank (pp. 280–281)

- |                                     |                               |                        |
|-------------------------------------|-------------------------------|------------------------|
| 1. varicocele                       | 5. voiding cystourethrography | 9. blood urea nitrogen |
| 2. Benign prostatic hyperplasia     | 6. circumcision               | 10. calculus           |
| 3. testosterone                     | 7. Hesitancy                  |                        |
| 4. number, swimming strength, shape | 8. Prostate specific antigen  |                        |

### Spelling (p. 281)

- |                    |                      |                      |                   |                       |
|--------------------|----------------------|----------------------|-------------------|-----------------------|
| 1. epididymitis    | 3. correctly spelled | 5. correctly spelled | 7. hydrocele      | 9. correctly spelled  |
| 2. nephrolithiasis | 4. pyelography       | 6. correctly spelled | 8. trichomoniasis | 10. correctly spelled |

### Medical Term Analysis (pp. 281–283)

- |   |   |   |
|---|---|---|
| 1. <b>balan</b> , glans penis, <b>-itis</b> , inflammation, inflammation of glans penis           | 4. <b>ureter/o</b> , ureter, <b>-stomy</b> , surgically create an opening, surgically create an opening in ureter         | 8. <b>crypt</b> , hidden, <b>orchid</b> , testis, <b>-ism</b> , state of, state of hidden testis          |
| 2. <b>vas</b> , vas deferens, <b>-ectomy</b> , surgical removal, surgical removal of vas deferens | 5. <b>nephro/o</b> , kidney, <b>lith</b> , stone, <b>-iasis</b> , abnormal condition, abnormal condition of kidney stones | 9. <b>prostat</b> , prostate gland, <b>-ectomy</b> , surgical removal, surgical removal of prostate gland |
| 3. <b>py</b> , pus, <b>-uria</b> , urine condition, condition of pus in urine                     | 6. <b>ur/o</b> , urine, <b>-logy</b> , study of, study of urine   | 10. <b>cyst/o</b> , bladder, <b>-scope</b> , instrument for viewing, instrument for viewing bladder       |
|   | 7. <b>testicul</b> , testis, <b>-ar</b> , pertaining to, pertaining to a testis   |   |

### Visual Identification Challenge (p. 284)

- |                 |                         |                      |
|-----------------|-------------------------|----------------------|
| 1. epididymitis | 3. undescended testicle | 5. testicular cancer |
| 2. varicocele   | 4. orchitis             | 6. hydrocele         |

## CHAPTER 13

### Building Obstetrics and Gynecology Terms (pp. 288–297)

- |  |  |
|--|--|
| 1. a. <b>amni/o/tic</b> , amniotic ( <i>am-nee-OT-ik</i> ); b. <b>amni/o/tomy</b> , amniotomy ( <i>am-nee-OT-oh-mee</i> ); c. <b>amni/o/rrhea</b> , amniorrhea ( <i>am-nee-oh-REE-ah</i> ); d. <b>amni/o/centesis</b> , amniocentesis ( <i>am-nee-oh-sen-TEE-sis</i> ); e. <b>amni/o/rrhexis</b> , amniorrhexis ( <i>am-nee-oh-REK-sis</i> )               | 8. a. <b>fet/al</b> , fetal ( <i>FEE-tal</i> ) b. <b>fet/o/metry</b> , fetometry ( <i>fee-TOM-eh-tree</i> ); c. <b>fet/o/scope</b> , fetoscope ( <i>FEE-toh-skohp</i> ); d. <b>fet/o/scopy</b> , fetoscopy ( <i>fee-TOSS-koh-pee</i> )   |
| 2. a. <b>cervic/al</b> , cervical ( <i>SER-vih-kal</i> ); b. <b>cervic/ectomy</b> , cervicectomy ( <i>ser-vih-SEK-toh-mee</i> ); c. <b>cervic/itis</b> , cervicitis ( <i>ser-vih-SIGH-tis</i> ); d. <b>endo/cervic/itis</b> , endocervicitis ( <i>en-doh-ser-vih-SIGH-tis</i> ); e. <b>cervic/o/plasty</b> , cervicoplasty ( <i>SER-vih-koh-PLAS-tee</i> ) | 9. a. <b>nulli/gravida</b> , nulligravida ( <i>null-ih-GRAV-ih-dah</i> ); b. <b>primi/gravida</b> , primigravida ( <i>prye-mih-GRAV-ih-dah</i> ); c. <b>multi/gravida</b> , multigravida ( <i>mull-tih-GRAV-ih-dah</i> )   |
| 3. a. <b>chori/o/nic</b> , chorionic ( <i>kor-ee-ON-ik</i> ); b. <b>chori/o/carcin/oma</b> , choriocarcinoma ( <i>KOH-ree-oh-kar-sih-NOH-mah</i> )   | 10. a. <b>genec/o/logy</b> , gynecology ( <i>gigh-neh-KALL-oh-jee</i> ); b. <b>gynec/o/logist</b> , gynecologist ( <i>gigh-neh-KALL-oh-jist</i> )  |
| 4. a. <b>colp/o/scope</b> , colposcope ( <i>KOL-poh-skohp</i> ); b. <b>colp/o/scopy</b> , colposcopy ( <i>kol-POS-koh-pee</i> ); c. <b>colp/ectomy</b> , colectomy ( <i>kol-PEK-toh-mee</i> ); d. <b>colp/o/rrhaphy</b> , colporrhaphy ( <i>kol-POR-ah-fee</i> )   | 11. a. <b>hyster/o/pexy</b> , hysteropexy ( <i>HISS-ter-oh-pek-see</i> ); b. <b>hyster/o/rrhexis</b> , hysterorrhexis ( <i>hiss-ter-oh-REK-sis</i> ); c. <b>hyster/ectomy</b> , hysterectomy ( <i>hiss-ter-EK-toh-mee</i> ); d. <b>hyster/o/graphy</b> , hystero-graphy ( <i>hiss-teh-ROG-ah-fee</i> ); e. <b>hyster/o/gram</b> , hystero-gram ( <i>HISS-ter-oh-gram</i> ) |
| 5. a. <b>pseudo/cyesis</b> , pseudocyesis ( <i>soo-doh-sigh-EE-sis</i> ); b. <b>salping/o/cyesis</b> , salpingocyesis ( <i>sal-ping-goh-sigh-EE-sis</i> )  | 12. a. <b>lapar/o/tomy</b> , laparotomy ( <i>lap-ah-ROT-oh-mee</i> ); b. <b>lapar/o/scope</b> , laparoscopy ( <i>LAP-ah-roh-skohp</i> ); c. <b>lapar/o/scopy</b> , laparoscopy ( <i>lap-ar-OSS-koh-pee</i> )   |
| 6. a. <b>embryo/o/nic</b> , embryonic ( <i>em-bree-ON-ik</i> ); b. <b>embryo/o/genic</b> , embryogenic ( <i>em-bree-oh-JEN-ik</i> ); c. <b>embryo/o/logy</b> , embryology ( <i>em-bree-ALL-oh-gee</i> )  | 13. a. <b>mamm/ary</b> , mammary ( <i>MAM-ah-ree</i> ); b. <b>mamm/o/gram</b> , mammogram ( <i>MAM-oh-gram</i> ); c. <b>mamm/o/graphy</b> , mammography ( <i>mam-OG-rah-fee</i> ); d. <b>mamm/o/plasty</b> , mam-moplasty ( <i>MAM-oh-plas-tee</i> )   |
| 7. a. <b>episi/o/rrhaphy</b> , episiorrhaphy ( <i>eh-pee-z-eh-OR-ah-fee</i> ); b. <b>episi/o/plasty</b> , episiotomy ( <i>eh-pee-z-eh-oh-PLAS-tee</i> ); c. <b>episi/o/tomy</b> , episiotomy ( <i>eh-pee-z-eh-OT-oh-mee</i> )  | 14. a. <b>mast/algia</b> , mastalgia ( <i>mas-TAL-jee-ah</i> ); b. <b>mast/itis</b> , mastitis ( <i>mas-TYE-tis</i> ); c. <b>mast/ectomy</b> , mastectomy ( <i>mas-TEK-toh-mee</i> )   |

15. **a. a/men/o/rrhea**, amenorrhea (*ah-men-oh-REE-ah*); **b. dys/men/o/rrhea**, dysmenorrhea (*dis-men-oh-REE-ah*); **c. olig/o/men/o/rrhea**, oligomenorrhea (*ol-ih-goh-men-oh-REE-ah*); **d. men/o/rrhagia**, menorrhagia (*men-oh-RAY-jee-ah*)
16. **a. endo/metr/itis**, endometritis (*en-doh-meh-TRYE-tis*); **b. metr/o/rrhea**, metrorrhea (*mee-troh-REE-ah*); **c. metr/o/rrhagia**, metrorrhagia (*mee-troh-RAY-jee-ah*)
17. **a. nat/al**, natal (*NAY-tal*); **b. neo/nat/al**, neonatal (*nee-oh-NAY-tal*); **c. neo/nat/o/logy**, neonatology (*nee-oh-nay-TALL-oh-jee*); **d. neo/nat/o/logist**, neonatologist (*nee-oh-nay-TALL-oh-jist*); **e. pre/nat/al**, prenatal (*pree-NAY-tal*) OR **ante/nat/al**, antenatal (*an-tee-NAY-tal*)
18. **a. o/o/cyte**, oocyte (*OH-oh-sight*); **b. o/o/genesis**, oogenesis (*oh-oh-JEN-eh-sis*)
19. **a. oophor/itis**, oophoritis (*oh-of-or-EYE-tis*); **b. oophor/ectomy**, oophorectomy (*oh-of-or-EK-toh-mee*); **c. oophor/o/pexy**, oophoropexy (*oh-of-or-oh-PEK-see*)
20. **a. ovari/an**, ovarian (*oh-VAIR-ee-an*); **b. ovari/o/salping/itis**, ovariosalpingitis (*oh-vair-ee-oh-sal-pin-JIGH-tis*)
21. **a. nulli/para**, nullipara (*null-IP-ah-rah*); **b. primi/para**, primipara (*prye-MIP-ah-rah*); **c. multi/para**, multipara (*mull-TIP-ah-rah*)
22. **a. ante/partum**, antepartum (*an-tee-PAR-tum*); **b. post/partum**, postpartum (*post-PAR-tum*)
23. **a. salping/ectomy**, salpingectomy (*sal-pin-JEK-toh-mee*); **b. salping/itis**, salpingitis (*sal-pin-JIGH-tis*); **c. salping/o/graphy**, salpingography (*sal-ping-GOG-rah-fee*); **d. salping/o/gram**, salpingogram (*sal-PIN-goh-gram*)
24. **a. hemat/o/salpinx**, hematosalpinx (*hee-mah-toh-SAL-pinks*); **b. py/o/salpinx**, pyosalpinx (*pye-oh-SAL-pinks*)
25. **a. uter/ine**, uterine (*YOO-ter-in*); **b. uter/o/plasty**, uteroplasty (*YOO-ter-oh-plas-tee*); **c. intra/uter/ine**, intrauterine (*in-trah-YOO-ter-in*)
26. **a. vagin/al**, vaginal (*VAJ-in-al*); **b. vagin/itis**, vaginitis (*vaj-ih-NIGH-tis*); **c. trans/vagin/al**, transvaginal (*tranz-VAJ-ih-nal*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 305–306)

1. Patient is postmenopausal; she had not had any menstrual periods for three years; mild to moderate uterine cramps, lower abdominal pain, and painful intercourse
2. prn = as needed; grav II = two pregnancies; para II = two live births; D&C = dilation of cervix and curettage of endometrial lining; EMB = endometrial biopsy, removing a piece of tissue to examine under a microscope
3. Migraine—takes pain medicine as needed; asthma—takes a bronchodilator; hyperlipemia—using no treatment
4. Cervical cancer; she has endometrial cancer, not cervical cancer
5. Blood tests, Hgb = hemoglobin, measures amount of hemoglobin present in blood; HCT = hematocrit, measures volume of red blood cells in blood; anemic because of loss of blood from continuous vaginal bleeding
6. Stage 1: tumor confined to body of uterus; Stage 2: tumor extends to the cervix; Stage 3: tumor has spread to pelvic region; Stage 4: extensive pelvic tumors or tumors have spread to distant organs; if cancer is in pelvic lymph nodes, it would be Stage 3
7. Hysteroscopy is a visual examination of inside of uterus with fiberoptic camera; tumor area was very small, so the D&C missed it
8. Lymphadenectomy means surgical removal of lymph nodes; they will be examined for cancer cells to see whether the cancer has spread

## PRACTICE EXERCISES

### Sound It Out (p. 307)

- |                    |                  |                 |                       |                    |
|--------------------|------------------|-----------------|-----------------------|--------------------|
| 1. amniocentesis   | 6. dysmenorrhea  | 11. laparoscopy | 16. nulligravida      | 21. rectocele      |
| 2. cervicoplasty   | 7. endometriosis | 12. mammogram   | 17. oophorectomy      | 22. salpingocyesis |
| 3. choriocarcinoma | 8. fetometry     | 13. mastectomy  | 18. ovariosalpingitis | 23. transvaginal   |
| 4. colposcopy      | 9. hysteroscopy  | 14. multipara   | 19. postpartum        | 24. uteroplasty    |
| 5. cystocele       | 10. intrauterine | 15. neonatal    | 20. primigravida      | 25. vaginitis      |

### Transcription Practice (pp. 307–308)

1. Mrs. Scott's dysmenorrhea was treated with a dilation and curettage.
2. Over time Mrs. Martinez had developed a vesicovaginal fistula.
3. The neonatologist assisted with the cesarean section.
4. Jean's infertility was the result of scarring caused by pelvic inflammatory disease.
5. A hysterectomy became necessary because of extensive endometriosis.
6. The new patient at the gynecologist's office was primigravida and nullipara.
7. Maria was happy to find out she had fibrocystic breast disease and not breast cancer.
8. A salpingectomy was necessary following the discovery of an ectopic pregnancy (or salpingocyesis).
9. Following an abnormal Pap smear, Tawanda's cervical cancer was diagnosed by conization.
10. A laparoscopy was conducted to examine the patient for ovarian cancer.

### Build Medical Terms (pp. 308–309)

- |                  |               |               |                    |                |
|------------------|---------------|---------------|--------------------|----------------|
| 1. hysteropexy   | 4. hystrogram | 7. antepartum | 10. dysmenorrhea   | 13. mastalgia  |
| 2. hysterectomy  | 5. fetal      | 8. postpartum | 11. oligomenorrhea | 14. mastitis   |
| 3. hysterothexis | 6. fetometry  | 9. amenorrhea | 12. menorrhagia    | 15. mastectomy |

### Spelling (p. 309)

- |                      |                      |                 |                      |                       |
|----------------------|----------------------|-----------------|----------------------|-----------------------|
| 1. hysterectomy      | 3. spelled correctly | 5. premenstrual | 7. menorrhagia       | 9. amniotomy          |
| 2. spelled correctly | 4. spelled correctly | 6. antepartum   | 8. spelled correctly | 10. spelled correctly |



### Fill in the Blank (p. 310)

- |                            |                                       |                   |                |
|----------------------------|---------------------------------------|-------------------|----------------|
| 1. uterine, fallopian      | 4. Chorionic villus sampling          | 7. fistula        | 10. stillbirth |
| 2. Gynecology, obstetrics  | 5. fetal heart rate, fetal heart tone | 8. tubal ligation |                |
| 3. endometrium, myometrium | 6. hemolytic disease of the newborn   | 9. cervix         |                |

### Multiple Choice (pp. 310–311)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. b | 3. a | 5. c | 7. d | 9. c  |
| 2. d | 4. d | 6. b | 8. a | 10. a |

### Medical Term Analysis (pp. 311–312)

- |  |   |   |
|--|---|---|
| 1. <b>oophor/o</b> , ovary, <b>-pexy</b> , surgical fixation, surgical fixation of the ovary         | 4. <b>intra-</b> , within, <b>uter</b> , uterus, <b>-ine</b> , pertaining to, pertaining to within the uterus | 8. <b>cervic/o</b> , cervix, <b>-plasty</b> , surgical repair, surgical repair of cervix                                      |
| 2. <b>colp/o</b> , vagina, <b>-scope</b> , instrument for viewing, instrument for viewing the vagina | 5. <b>trans-</b> , across, <b>vagin</b> , vagina, <b>-al</b> , pertaining to, pertaining to across the vagina | 9. <b>ovari/o</b> , ovary, <b>salping</b> , uterine tube, <b>-itis</b> , inflammation, inflammation of ovary and uterine tube |
| 3. <b>chori/o</b> , chorion, <b>carcin</b> , cancer, <b>-oma</b> , tumor, chorion cancerous tumor    | 6. <b>embry/o</b> , embryo, <b>-nic</b> , pertaining to, pertaining to the embryo                             | 10. <b>episi/o</b> , vulva, <b>-tomy</b> , cutting into, cutting into the vulva   |
|  | 7. <b>o/o</b> , ovum, <b>-cyte</b> , cell, ovum cell  |   |

### Abbreviation Matching (pp. 312–313)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. F | 3. I | 5. H | 7. J | 9. G  |
| 2. C | 4. A | 6. B | 8. D | 10. E |

### Labeling Exercise (p. 313)

- |               |   |                                |
|---------------|---|--------------------------------|
| 1. Milk gland | 6. Uterus ( <b>metr/o</b> , <b>hyster/o</b> , <b>uter/o</b> ) | 11. Myometrium                 |
| 2. Nipple     | 7. Vagina ( <b>colp/o</b> , <b>vagin/o</b> )                  | 12. Endometrium                |
| 3. Areola     | 8. Uterine (fallopian) tube ( <b>salping/o</b> )              | 13. Cervix ( <b>cervic/o</b> ) |
| 4. Milk duct  | 9. Ovum ( <b>o/o</b> )  |                                |
| 5. Fat        | 10. Ovary ( <b>oophor/o</b> , <b>ovari/o</b> )                |                                |

### Visual Identification Challenge (p. 314)

- |                  |   |                                    |
|------------------|---|------------------------------------|
| 1. hysterectomy  | 3. right salpingo-oophorectomy            | 5. laparoscopy                     |
| 2. amniocentesis | 4. bilateral hysterosalpingo-oophorectomy | 6. bilateral salpingo-oophorectomy |

## CHAPTER 14

### Building Neurology Terms (pp. 318–324)

- |  |   |
|--|---|
| 1. a. <b>cerebell/ar</b> , cerebellar ( <i>sair-eh-BELL-ar</i> ); b. <b>cerebell/itis</b> , cerebellitis ( <i>sair-eh-bell-EYE-tis</i> )   | 7. <b>medull/ary</b> , medullary ( <i>MED-yoo-lair-ee</i> )   |
| 2. a. <b>mening/o/cele</b> , meningocele ( <i>men-IN-goh-seel</i> ); b. <b>mening/o/myel/o/cele</b> , meningomyelocele ( <i>men-IN-goh-my-eh-loh-seel</i> )  | 8. a. <b>mening/eal</b> , meningeal ( <i>meh-NIN-jee-al</i> ); b. <b>mening/itis</b> , meningitis ( <i>men-in-JYE-tis</i> ); c. <b>mening/o/myel/itis</b> , meningomyelitis ( <i>men-in-goh-my-eh-LYE-tis</i> )   |
| 3. a. <b>cerebr/al</b> , cerebral ( <i>seh-REE-bral</i> ); b. <b>cerebr/o/spin/al</b> , cerebrospinal ( <i>seh-ree-broh-SPY-nal</i> ); c. <b>cerebr/itis</b> , cerebritis ( <i>seh-ree-BRIGH-tis</i> ); d. <b>intra/cerebr/al</b> , intracerebral ( <i>in-trah-seh-REE-bral</i> ); e. <b>cerebr/o/sclerosis</b> , cerebro sclerosis ( <i>seh-ree-broh-skleh-ROH-sis</i> ); f. <b>cerebr/o/vascul/ar</b> , cerebrovascular ( <i>seh-ree-broh-VAS-kyoo-lar</i> ); g. <b>cerebr/o/tomy</b> , cerebrotomy ( <i>seh-ree-BROT-oh-me</i> )  | 9. <b>meningi/oma</b> , meningioma ( <i>meh-nin-jee-OH-mah</i> )  |
| 4. a. <b>encephal/ic</b> , encephalic ( <i>en-seh-FAL-ik</i> ); b. <b>electr/o/encephal/o/gram</b> , electroencephalogram ( <i>ee-lek-troh-en-SEFF-ah-loh-gram</i> ); c. <b>electr/o/encephal/o/graphy</b> , electroencephalography ( <i>ee-lek-troh-en-seff-ah-LOG-rah-fee</i> ); d. <b>encephal/algia</b> , encephalalgia ( <i>en-seff-ah-LAL-jee-ah</i> ); e. <b>encephal/itis</b> , encephalitis ( <i>en-seff-ah-LYE-tis</i> ); f. <b>encephal/o/pathy</b> , encephalopathy ( <i>en-seff-ah-LOP-ah-thee</i> ); g. <b>encephal/oma</b> , encephaloma ( <i>en-seff-ah-LOH-mah</i> ); h. <b>encephal/o/malacia</b> , encephalomalacia ( <i>en-seff-ah-loh-mah-LAY-shee-ah</i> ) | 10. a. <b>myel/o/gram</b> , myelogram ( <i>MY-eh-loh-gram</i> ); b. <b>myel/o/graphy</b> , myelography ( <i>my-eh-LOG-rah-fee</i> ); c. <b>myel/itis</b> , myelitis ( <i>my-eh-LYE-tis</i> ); d. <b>myel/o/malacia</b> , myelomalacia ( <i>my-eh-loh-mah-LAY-shee-ah</i> ); e. <b>myel/o/neur/itis</b> , myeloneuritis ( <i>my-eh-loh-noo-RYE-tis</i> ); f. <b>myel/o/pathy</b> , myelopathy ( <i>my-eh-LOP-ah-thee</i> ); g. <b>myel/o/tomy</b> , myelotomy ( <i>my-eh-LOT-oh-mee</i> )  |
| 5. a. <b>an/esthesia</b> , anesthesia ( <i>an-es-THEE-zha</i> ); b. <b>hyper/esthesia</b> , hyperesthesia ( <i>high-per-ess-THEE-zee-ah</i> )  | 11. a. <b>neur/al</b> , neural ( <i>NOO-ral</i> ); b. <b>neur/algia</b> , neuralgia ( <i>noo-RAL-jee-ah</i> ); c. <b>neur/ectomy</b> , neurectomy ( <i>noo-REK-toh-mee</i> ); d. <b>neur/o/logy</b> , neurology ( <i>noo-RALL-oh-jee</i> ); e. <b>neur/o/logist</b> , neurologist ( <i>noo-RALL-oh-jist</i> ); f. <b>neur/oma</b> , neuroma ( <i>noo-ROH-mah</i> ); g. <b>neur/o/pathy</b> , neuropathy ( <i>noo-ROP-ah-thee</i> ); h. <b>neur/o/plasty</b> , neuroplasty ( <i>NOOR-oh-plas-tee</i> ); i. <b>poly/neur/itis</b> , polyneuritis ( <i>pol-ee-noo-RYE-tis</i> ); j. <b>neur/o/rrhaphy</b> , neurorrhaphy ( <i>noo-ROR-ah-fee</i> ) |
| 6. a. <b>an/esthesi/o/logy</b> , anesthesiology ( <i>an-es-thee-zee-ALL-oh-jee</i> ); b. <b>an/esthesi/o/logist</b> , anesthesiologist ( <i>an-es-thee-zee-ALL-oh-jist</i> )   | 12. a. <b>hemi/paresis</b> , hemiparesis ( <i>hem-ee-pah-REE-sis</i> ); b. <b>mono/paresis</b> , monoparesis ( <i>mon-oh-pah-REE-sis</i> )  |
|  | 13. a. <b>a/phasia</b> , aphasia ( <i>ah-FAY-zee-ah</i> ); b. <b>dys/phasia</b> , dysphasia ( <i>dis-FAY-zee-ah</i> )   |
|  | 14. a. <b>mono/plegia</b> , monoplegia ( <i>mon-oh-PLÉE-jee-ah</i> ); b. <b>di/plegia</b> , diplegia ( <i>dye-PLÉE-jee-ah</i> ); c. <b>quadri/plegia</b> ,  |

**quadriplegia** (*kwod-rih-PLĒE-jee-ah*); **d. hemi/plegia**, hemiplegia (*hem-ee-PLĒE-jee-ah*); **e. para/plegia**, paraplegia (*pair-ah-PLĒE-jee-ah*)

15. **a. pont/ine**, pontine (*PON-teen*); **b. pont/o/cerebell/ar**, pontocerebellar (*pon-toh-sair-eh-BELL-ar*); **c. pont/o/medull/ary**, pontomedullary (*pon-toh-MED-yoo-lair-ee*)

16. **a. radicul/itis**, radiculitis (*rah-dik-yoo-LYE-tis*); **b. radicul/o/pathy**, radiculopathy (*rah-dik-yoo-LOP-ah-thee*)

17. **a. thalam/ic**, thalamic (*thah-LAM-ik*); **b. thalam/o/tomy**, thalamotomy (*thal-ah-MOT-oh-mee*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 332–333)

1. Aphasia, hemiplegia
2. Transient ischemic attack
3. C
4. Nonsteroidal anti-inflammatory drugs taken for her arthritis
5. ED = emergency department, MRI = magnetic resonance imaging, ICU = intensive care unit, PT = physical therapy, OT = occupational therapy
6. It was necessary because she was found on the floor and had probably fallen
7. Each side of the brain controls the opposite side of the body

## PRACTICE EXERCISES

### Sound It Out (p. 334)

- |                         |                 |                   |                  |                     |
|-------------------------|-----------------|-------------------|------------------|---------------------|
| 1. meningitis           | 6. concussion   | 11. myelopathy    | 16. meningocoele | 21. encephaloma     |
| 2. neuroma              | 7. encephalitis | 12. neurectomy    | 17. migraine     | 22. polyneuritis    |
| 3. aphasia              | 8. dementia     | 13. epilepsy      | 18. myelography  | 23. myelitis        |
| 4. cerebrotomy          | 9. anesthesia   | 14. hemiplegia    | 19. neuroplasty  | 24. cerebrovascular |
| 5. electroencephalogram | 10. dysphasia   | 15. hydrocephalus | 20. paralysis    | 25. syncope         |

### Transcription Practice (pp. 334–335)

1. Jon took anticonvulsants to control his epileptic seizures.
2. As a result of the cerebrovascular accident, Mr. van Pelt was in a coma.
3. The auto accident victim developed quadriplegia following a spinal cord injury.
4. During the transient ischemic attack, Mr. Edelstein had aphasia.
5. Ilina's monoplegia was caused by multiple sclerosis.
6. Antonio went to the neurologist because he was having migraines.
7. A positron emission tomography was completed to see whether the tumor was in the cerebrum or the cerebellum.
8. A lumbar puncture was performed to analyze cerebrospinal fluid for signs of encephalitis.
9. Mr. Larsen's severe leg pain was caused by polyneuritis.
10. The elderly gentleman with Alzheimer disease eventually developed dementia.

### Labeling Exercise (p. 336)

1. Brain (**encephal/o**)
2. Cranial nerve (**neur/o**)
3. Spinal cord (**myel/o**)
4. Spinal nerve (**neur/o**)

### Build Medical Terms (pp. 336–337)

- |              |                |                |                |                  |
|--------------|----------------|----------------|----------------|------------------|
| 1. neuralgia | 4. neuroplasty | 7. thalamotomy | 10. meningeal  | 13. myelotomy    |
| 2. neuroma   | 5. neuropathy  | 8. diplegia    | 11. meningitis | 14. myeloscrosis |
| 3. neurology | 6. thalamic    | 9. hemiplegia  | 12. myelogram  | 15. myelitis     |

### Multiple Choice (p. 337)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. d | 5. a | 7. b | 9. b  |
| 2. c | 4. a | 6. d | 8. c | 10. a |

### Fill in the Blank (p. 338)

- |  |                      |              |
|--|----------------------|--------------|
| 1. motor neurons                             | 5. meninges          | 9. Parkinson |
| 2. concussion, contusion                     | 6. Cerebral palsy    | 10. Shingles |
| 3. syncope                                   | 7. grand mal         |              |
| 4. cerebrum, cerebellum, thalamus, brainstem | 8. Myasthenia gravis |              |

### Abbreviation Matching (p. 338)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. H | 3. J | 5. F | 7. I | 9. G  |
| 2. C | 4. A | 6. B | 8. D | 10. E |

### Medical Term Analysis (pp. 339–340)

1. **cerebell**, cerebellum, **-ar**, pertaining to, pertaining to the cerebellum
2. **mening/o**, meninges, **-cele**, protrusion, protrusion of the meninges
3. **cerebr/o**, cerebrum, **spin**, spine, **-al**, pertaining to, pertaining to the cerebrum and spine
4. **an-**, without, **-esthesia**, sensation condition, condition (of being) without sensation
5. **mening/o**, meninges, **myel**, spinal cord, **-itis**, inflammation, inflammation of meninges and spinal cord
6. **encephal**, brain, **-oma**, tumor, brain tumor
7. **dys-**, difficult, **-phasia**, speech condition, condition of difficult, abnormal speech
8. **neur/o**, nerve, **-logy**, study of, study of nerves
9. **pont/o**, pons, **medull**, medulla oblongata, **-ary**, pertaining to, pertaining to the pons and medulla oblongata
10. **cerebr/o**, cerebrum, **-tomy**, cutting into, cutting into the cerebrum

## Spelling (p. 340)

- |                      |                      |                      |                           |                       |
|----------------------|----------------------|----------------------|---------------------------|-----------------------|
| 1. neurorrhaphy      | 3. correctly spelled | 5. quadriplegia      | 7. electroencephalography | 9. myasthenia gravis  |
| 2. correctly spelled | 4. meningitis        | 6. correctly spelled | 8. correctly spelled      | 10. correctly spelled |

## Visual Identification Challenge (p. 341)

- |   |   |   |
|---|---|---|
| 1. cerebrum, <b>cerebr/o</b> , cerebrosclerosis | 3. cerebellum, <b>cerebell/o</b> , cerebellitis | 5. pons, <b>pont/o</b> , pontine                  |
| 2. thalamus, <b>thalam/o</b> , thalamotomy      | 4. spinal cord, <b>myel/o</b> , myelogram       | 6. medulla oblongata, <b>medull/o</b> , medullary |

# CHAPTER 15

## Building Endocrinology Terms (pp. 345–352)

- |   |  |
|---|--|
| 1. a. <b>aden/o/carcin/oma</b> , adenocarcinoma ( <i>ad-eh-noh-kar-sih-NOH-mah</i> ); b. <b>aden/o/cyte</b> , adenocyte ( <i>AD-eh-noh-sight</i> ); c. <b>aden/oid</b> , adenoid ( <i>AD-eh-noyd</i> ); d. <b>aden/o/malacia</b> , adenomalacia ( <i>ad-eh-noh-mah-LAY-shee-ah</i> )                                    | 11. a. <b>pancreat/ic</b> , pancreatic ( <i>pan-kree-AT-ik</i> ); b. <b>pancreat/ectomy</b> , pancreatectomy ( <i>PAN-kree-ah-tek-toh-mee</i> ); c. <b>pancreat/itis</b> , pancreatitis ( <i>pan-kree-ah-TYE-tis</i> ); d. <b>pancreat/o/tomy</b> , pancreatotomy ( <i>PAN-kree-ah-tot-ah-mee</i> )  |
| 2. a. <b>adren/al</b> , adrenal ( <i>ah-DREE-nal</i> ); b. <b>adren/o/megaly</b> , adrenomegaly ( <i>ah-dree-noh-MEG-ah-lee</i> )   | 12. a. <b>parathyroid/al</b> , parathyroidal ( <i>pair-ah-thigh-ROYD-al</i> ); b. <b>parathyroid/ectomy</b> , parathyroidectomy ( <i>pair-ah-thigh-royd-EK-toh-mee</i> ); c. <b>hyper/parathyroid/ism</b> , hyperparathyroidism ( <i>high-per-pair-ah-THIGH-royd-izm</i> ); d. <b>hypo/parathyroid/ism</b> , hypoparathyroidism ( <i>high-poh-pair-ah-THIGH-royd-izm</i> )     |
| 3. a. <b>adrenal/ectomy</b> , adrenalectomy ( <i>ah-dree-nal-EK-toh-mee</i> ); b. <b>adrenal/itis</b> , adenitis ( <i>ah-dree-nal-EYE-tis</i> ); c. <b>adrenal/o/pathy</b> , adrenalopathy ( <i>ag-dree-nah-LOP-ah-thee</i> )   | 13. a. <b>pineal/ectomy</b> , pinealectomy ( <i>pin-ee-ah-LEK-toh-mee</i> ); b. <b>pineal/oma</b> , pinealoma ( <i>pin-ee-ah-LOH-mah</i> )   |
| 4. a. <b>hypo/calc/emia</b> , hypocalcemia ( <i>high-poh-kal-SEE-mee-ah</i> ); b. <b>hyper/calc/emia</b> , hypercalcemia ( <i>high-per-kal-SEE-mee-ah</i> )   | 14. a. <b>hypo/pituitar/ism</b> , hypopituitarism ( <i>high-poh-pih-TOO-ih-tuh-rizm</i> ); b. <b>hyper/pituitar/ism</b> , hyperpituitarism ( <i>high-per-pih-TOO-ih-tuh-rizm</i> )   |
| 5. a. <b>endo/crin/o/logy</b> , endocrinology ( <i>en-doh-krin-ALL-oh-jee</i> ); b. <b>endo/crin/o/logist</b> , endocrinologist ( <i>en-doh-krin-ALL-oh-jist</i> ); c. <b>endo/crin/oma</b> , endocrinoma ( <i>en-doh-kri-NOH-mah</i> ); d. <b>endo/crin/o/pathy</b> , endocrinopathy ( <i>en-doh-krin-OP-ah-thee</i> ) | 15. a. <b>poly/dipsia</b> , polydipsia ( <i>pol-ee-DIP-see-ah</i> ); b. <b>poly/uria</b> , polyuria ( <i>pol-ee-YOO-ree-ah</i> )   |
| 6. a. <b>hyper/glyc/emia</b> , hyperglycemia ( <i>high-per-gly-SEE-mee-ah</i> ); b. <b>hypo/glyc/emia</b> , hypoglycemia ( <i>high-poh-gly-SEE-mee-ah</i> )   | 16. <b>testicul/ar</b> , testicular ( <i>tess-TIK-yoo-lar</i> )  |
| 7. <b>glycos/uria</b> , glycosuria ( <i>gly-kohs-YOO-ree-ah</i> )   | 17. a. <b>thym/ic</b> , thymic ( <i>THIGH-mik</i> ); b. <b>thym/ectomy</b> , thymectomy ( <i>thigh-MEK-toh-mee</i> ); c. <b>thym/itis</b> , thymitis ( <i>thigh-MY-tis</i> ); d. <b>thym/oma</b> , thymoma ( <i>thigh-MOH-mah</i> )  |
| 8. a. <b>oophor/itis</b> , oophoritis ( <i>oh-of-or-EYE-tis</i> ); b. <b>oophor/o/pexy</b> , oophoropexy ( <i>oh-of-or-oh-PEK-see</i> ); c. <b>oophor/o/tomy</b> , oophorotomy ( <i>oh-OF-ah-rot-ah-mee</i> ); d. <b>oophor/ectomy</b> , oophorectomy ( <i>oh-of-or-EK-toh-mee</i> )                                    | 18. a. <b>thyr/o/megaly</b> , thyromegaly ( <i>thigh-roh-MEG-ah-lee</i> ); b. <b>thyr/o/tomy</b> , thyrotomy ( <i>thigh-ROT-ah-mee</i> )   |
| 9. a. <b>orchi/ectomy</b> , orchiectomy ( <i>or-kee-EK-toh-mee</i> ); b. <b>orchi/o/pexy</b> , orchiopexy ( <i>or-KEE-oh-pek-see</i> ); c. <b>orchi/o/tomy</b> , orchiotomy ( <i>or-kee-OT-oh-mee</i> )   | 19. a. <b>thyroid/al</b> , thyroidal ( <i>thigh-ROYD-al</i> ); b. <b>thyroid/itis</b> , thyroiditis ( <i>thigh-roy-DIGH-tis</i> ); c. <b>thyroid/ectomy</b> , thyroidectomy ( <i>thigh-royd-EK-toh-mee</i> ); d. <b>hyper/thyroid/ism</b> , hyperthyroidism ( <i>high-per-THIGH-royd-izm</i> ); e. <b>hypo/thyroid/ism</b> , hypothyroidism ( <i>high-poh-THIGH-royd-izm</i> ) |
| 10. a. <b>ovari/an</b> , ovarian ( <i>oh-VAIR-ee-an</i> ); b. <b>ovari/o/centesis</b> , ovariocentesis ( <i>oh-VAIR-ee-oh-sen-tee-sis</i> ); c. <b>ovari/o/rrhexis</b> , ovariorrhexis ( <i>oh-VAIR-ee-oh-rek-sis</i> )   |  |

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 357–359)

- |  |   |
|--|---|
| 1. Hypertension, high blood pressure; elevated heart rate, heart beating too fast; heart palpitations, pounding heartbeat; diaphoresis, profuse sweating; hand tremors, uncontrollable shaking of the hands; extreme anxiety, feeling of dread | 5. Difficulty breathing   |
| 2. A   | 6. Malignant is cancerous, life-threatening tumor that tends to spread throughout body; benign is not cancerous |
| 3. Blood pressure: 90/60 mmHg to 120/80 mmHg; respiratory rate: 12–18 breaths per minute; heart rate: 60–100 beats per minute  | 7. To verify that tumor is a pheochromocytoma and to determine whether tumor is cancerous                       |
| 4. Emergency department, electrocardiogram, chest X-ray, blood pressure, beats per minute  | 8. Adrenalectomy  |

## PRACTICE EXERCISES

### Sound It Out (p. 359)

- |                      |                  |                      |                    |                    |
|----------------------|------------------|----------------------|--------------------|--------------------|
| 1. thyromegaly       | 6. acromegaly    | 11. orchiectomy      | 16. orchiopexy     | 21. tetany         |
| 2. adenomalacia      | 7. exophthalmos  | 12. hyperpituitarism | 17. pancreatectomy | 22. thymitis       |
| 3. adrenomegaly      | 8. adrenalectomy | 13. gigantism        | 18. hyperglycemia  | 23. thyroidectomy  |
| 4. pancreatitis      | 9. glycosuria    | 14. hypothyroidism   | 19. pinealectomy   | 24. thyrotoxicosis |
| 5. parathyroidectomy | 10. goiter       | 15. polyuria         | 20. polydipsia     | 25. oophorectomy   |



### Transcription Practice (pp. 360–361)

1. Gladys's glucose tolerance test confirmed the diagnosis of diabetes mellitus.
2. When Dr. Nguyen noted exophthalmos, she suspected Graves disease (or hyperthyroidism).
3. An adrenalectomy was necessary to treat the pheochromocytoma.
4. Hypoparathyroidism is one cause of tetany.
5. Two diagnostic tests were ordered, a thyroid scan and a thyroid function test.
6. Hypersecretion of growth hormone produces gigantism and lack of growth hormone can produce dwarfism.
7. A person with diabetes insipidus often has polydipsia and polyuria.
8. When Mrs. Ruiz developed facial hair and a deeper voice, adrenal virilism was suspected.
9. Corticosteroids were prescribed for the patient with rheumatoid arthritis.
10. Mr. McDonald's adenomegaly was caused by an adenocarcinoma.

### Build Medical Terms (pp. 361–362)

- |                  |                    |                 |                    |                   |
|------------------|--------------------|-----------------|--------------------|-------------------|
| 1. thyroidal     | 4. hyperthyroidism | 7. hypoglycemia | 10. adenocarcinoma | 13. pancreatic    |
| 2. thyroiditis   | 5. hypothyroidism  | 8. polydipsia   | 11. adenoid        | 14. pancreatitis  |
| 3. thyroidectomy | 6. hyperglycemia   | 9. polyuria     | 12. adenomalacia   | 15. pancreatotomy |

### Multiple Choice (p. 362)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. d | 3. c | 5. c | 7. d | 9. a  |
| 2. b | 4. a | 6. b | 8. c | 10. b |

### Spelling (pp. 362–363)

- |                      |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1. correctly spelled | 3. myxedema          | 5. correctly spelled | 7. exophthalmos      | 9. correctly spelled |
| 2. ovariocentesis    | 4. correctly spelled | 6. tetany            | 8. correctly spelled | 10. virilism         |

### Abbreviation Matching (p. 363)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. E | 3. H | 5. B | 7. D | 9. G  |
| 2. C | 4. J | 6. I | 8. A | 10. F |

### Labeling Exercise (p. 364)

- |  |   |   |
|--|---|---|
| 1. Pineal gland ( <b>pineal/o</b> )            | 5. Pituitary gland ( <b>pituitar/o</b> )      | 9. Testis ( <b>orch/o, orchio/o, orchid/o, testicul/o</b> ) |
| 2. Parathyroid glands ( <b>parathyroid/o</b> ) | 6. Thyroid gland ( <b>thyr/o, thyroid/o</b> ) |   |
| 3. Adrenal gland ( <b>adren/o, adrenal/o</b> ) | 7. Thymus gland ( <b>thym/o</b> )             |   |
| 4. Pancreas ( <b>pancreat/o</b> )              | 8. Ovary ( <b>oophor/o, ovari/o</b> )         |   |

### Fill in the Blank (p. 365)

- |                                  |                            |                         |            |
|----------------------------------|----------------------------|-------------------------|------------|
| 1. homeostasis                   | 4. kidney, cortex, medulla | 7. calcium              | 10. thymus |
| 2. hormones, target organs       | 5. Estrogen, menstrual     | 8. melatonin, circadian |            |
| 3. hypersecretion, hyposecretion | 6. insulin, glucagon       | 9. pituitary            |            |

### Medical Term Analysis (pp. 365–367)

- |   |   |   |
|---|---|---|
| 1. <b>orchio/o</b> , testis, <b>-pexy</b> , surgical fixation, surgical fixation of testis  | 5. <b>thyr/o</b> , thyroid gland, <b>toxic</b> , poison, <b>-osis</b> , abnormal condition, abnormal condition of thyroid poisoning | 9. <b>hyper-</b> , excessive, <b>glyc</b> , sugar, <b>-emia</b> , blood condition, blood condition of excessive sugar |
| 2. <b>thyr/o</b> , thyroid gland, <b>-megaly</b> , enlarged, enlarged thyroid gland   | 6. <b>pineal</b> , pineal gland, <b>-ectomy</b> , surgical removal, surgical removal of pineal gland                                | 10. <b>endo-</b> , within, <b>crin/o</b> , secrete, <b>-logy</b> , study of, study of to secrete within               |
| 3. <b>aden/o</b> , gland, <b>carcin</b> , cancer, <b>-oma</b> , tumor, cancerous gland tumor  | 7. <b>ovari/o</b> , ovary, <b>-rrhexis</b> , rupture, ruptured ovary  |   |
| 4. <b>hypo-</b> , insufficient, <b>parathyroid</b> , parathyroid gland, <b>-ism</b> , state of, state of insufficient parathyroid gland | 8. <b>thym</b> , thymus gland, <b>-itis</b> , inflammation, inflammation of thymus gland  |   |

### Visual Identification Challenge (p. 368)

- |  |   |  |
|--|---|--|
| 1. <b>oste/o</b> , osteoporosis                    | 3. <b>testicul/o</b> , testicular                   | 5. <b>ovari/o</b> , ovariorrhexis              |
| 2. <b>thyr/o</b> or <b>thyroid/o</b> , thyromegaly | 4. <b>adren/o</b> or <b>adrenal/o</b> , adrenalitis | 6. <b>mamm/o</b> or <b>mast/o</b> , mastectomy |

## CHAPTER 16

### Building Ophthalmology Terms (pp. 372–378)

- |  |  |
|--|--|
| 1. <b>aque/ous</b> , aqueous ( <i>AY-kwee-us</i> )   | 4. a. <b>conjunctiv/itis</b> , conjunctivitis ( <i>kon-junk-tih-VYE-tis</i> );<br>b. <b>conjunctiv/al</b> , conjunctival ( <i>kon-junk-TYE-val</i> ) |
| 2. a. <b>blephar/o/ptosis</b> , blepharoptosis ( <i>blef-ah-rop-TOH-sis</i> );<br>b. <b>blephar/o/plasty</b> , blepharoplasty ( <i>BLEF-ah-roh-plas-tee</i> );<br>c. <b>blephar/o/plegia</b> , blepharoplegia ( <i>BLEF-ah-roh-plee-jee-ah</i> ) | 5. a. <b>core/o/meter</b> , coreometer ( <i>koh-ree-OM-eh-ter</i> ); b. <b>core/o/metry</b> ,<br>coreometry ( <i>koh-ree-OM-eh-tree</i> )            |
| 3. a. <b>choroid/al</b> , choroidal ( <i>koh-ROY-dal</i> ); b. <b>choroid/itis</b> , choroiditis<br>( <i>KOH-roy-DIGH-tis</i> )  | 6. a. <b>corne/al</b> , corneal ( <i>KOR-nee-al</i> ); b. <b>corne/o/scler/al</b> , corneosccleral<br>( <i>KOR-nee-oh-skclair-al</i> )               |

7. **a. cycl/o/plegia**, cycloplegia (*sigh-kloh-PLÉE-jee-ah*); **b. cycl/o/tomy**, cyclotomy (*sigh-KLOT-ah-mee*)
8. **a. dacry/o/lith**, dacryolith (*DAK-ree-oh-lith*); **b. dacry/o/rrhea**, dacryorrhea (*DAK-ree-oh-ree-ah*); **c. dacry/o/aden/itis**, dacryoadenitis (*dak-ree-oh-ad-eh-NYE-tis*); **d. dacry/o/cyst/itis**, dacryocystitis (*dak-ree-oh-sis-TYE-tis*)
9. **ir/itis**, iritis (*eye-RYE-tis*)
10. **a. irid/o/plegia**, iridoplegia (*ir-id-oh-PLÉE-jee-ah*); **b. irid/o/tomy**, iridotomy (*ir-ih-DOT-ah-mee*)
11. **a. kerat/o/meter**, keratometer (*kair-ah-TOM-eh-ter*); **b. kerat/o/metry**, keratometry (*kair-ah-TOM-eh-tree*); **c. kerat/ectomy**, keratectomy (*kair-ah-TEK-toh-mee*); **d. kerat/itis**, keratitis (*kair-ah-TYE-tis*); **e. kerat/o/tomy**, keratotomy (*kair-ah-TOT-ah-mee*); **f. kerat/o/plasty**, keratoplasty (*KAIR-ah-toh-plas-tee*)
12. **a. lacrim/al**, lacrimal (*LAK-rim-al*); **b. nas/o/lacrim/al**, nasolacrimal (*nay-zoh-LAK-rim-al*)
13. **a. intra/ocul/ar**, intraocular (*in-trah-OK-yoo-lar*); **b. ocul/o/myc/osis**, oculomycosis (*ok-yoo-loh-my-KOH-sis*); **c. ocul/ar**, ocular (*OK-yoo-lar*)
14. **a. ophthalm/ic**, ophthalmic (*off-THAL-mik*); **b. ophthalm/o/logy**, ophthalmology (*off-thal-MALL-oh-jee*); **c. phthalm/o/logist**, ophthalmologist (*off-thal-MALL-oh-jist*); **d. ophthalm/o/scope**, ophthalmoscope (*off-THAL-moh-skohp*); **e. ophthalm/o/scopy**, ophthalmoscopy (*off-thal-MOSS-koh-pee*); **f. ophthalm/o/plegia**, ophthalmoplegia (*off-thal-moh-PLÉE-jee-ah*); **g. xer/ophthalm/ia**, xerophthalmia (*zeer-off-THAL-mee-ah*); **h. ophthalm/algia**, ophthalmalgia (*off-thal-MAL-jee-ah*)
15. **a. hemi/an/opia**, hemianopia (*hem-ee-ah-NOH-pee-ah*); **b. dipl/opia**, diplopia (*dip-LOH-pee-ah*)
16. **a. opt/ic**, optic (*OP-tik*); **b. opt/o/meter**, optometer (*op-TOM-eh-ter*); **c. opt/o/metry**, optometry (*op-TOM-eh-tree*); **d. opt/ician**, optician (*op-TISH-an*)
17. **a. phac/o/malacia**, phacomalacia (*fay-koh-mah-LAY-shee-ah*); **b. phac/o/lysis**, phacolysis (*fay-KOL-ih-sis*); **c. phac/o/sclerosis**, phacosclerosis (*fay-koh-skleh-ROH-sis*)
18. **a. pupill/ary**, pupillary (*PYOO-pih-lair-ee*); **b. pupill/o/meter**, pupillometer (*PYOO-pih-lom-eh-ter*)
19. **a. retin/al**, retinal (*RET-ih-nal*); **b. retin/o/pathy**, retinopathy (*ret-in-OP-ah-thee*); **c. retin/itis**, retinitis (*ret-ih-NYE-tis*); **d. retin/o/pexy**, retinopexy (*ret-ih-noh-PEK-see*); **e. cry/o/retin/o/pexy**, cryoretinopexy (*kry-oh-ret-ih-noh-PEK-see*)
20. **a. scler/al**, scleral (*SKLAIR-al*); **b. scler/o/tomy**, sclerotomy (*skleh-ROT-oh-mee*); **c. scler/o/malacia**, scleromalacia (*sklair-oh-mah-LAY-shee-ah*); **d. scler/itis**, scleritis (*skler-EYE-tis*)
21. **a. ton/o/meter**, tonometer (*tohn-OM-eh-ter*); **b. ton/o/metry**, tonometry (*tohn-OM-eh-tree*)
22. **a. uve/itis**, uveitis (*yoo-vee-EYE-tis*); **b. uve/o/scler/itis**, uveoscleritis (*yoo-vee-oh-skleh-RIGH-tis*)
23. **vitre/ous**, vitreous (*VIT-ree-us*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 386–387)

- Pain; excessive tearing; decreased visual acuity—fuzzy or cloudy vision; photophobia—increased sensitivity to light
- Thigh bone
- Patient had normal 20/20 vision in right eye, meaning he could see clearly at 20 feet what a normal person would expect to see at 20 feet however, left eye had 20/200 vision, meaning he could see at 20 feet what a normal person would expect to see at 200 feet
- Corneal abrasions appear bright green under a fluorescent light
- Abrasion—scraping injury of a layer; ulcer—an erosion or crater, deeper than an abrasion
- Antibiotic eyedrops—to fight infection; anesthetic eyedrops—to reduce eye pain
- To wear an eye patch; to put a lubricating ointment in his eyes if they are too dry when he wakes up in the morning; to see an ophthalmologist in 24 hours to make sure his eye is healing

## PRACTICE EXERCISES

### Sound It Out (pp. 387–388)

- |                   |                   |                 |                 |                    |
|-------------------|-------------------|-----------------|-----------------|--------------------|
| 1. keratoplasty   | 6. glaucoma       | 11. intraocular | 16. phacolysis  | 21. nystagmus      |
| 2. oculomycosis   | 7. hemianopia     | 12. coreometry  | 17. myopia      | 22. phacosclerosis |
| 3. conjunctivitis | 8. astigmatism    | 13. retinopexy  | 18. cataract    | 23. photophobia    |
| 4. iridotomy      | 9. blepharoptosis | 14. keratitis   | 19. nyctalopia  | 24. strabismus     |
| 5. diplopia       | 10. hyperopia     | 15. amblyopia   | 20. cycloplegia | 25. hordeolum      |

### Transcription Practice (pp. 388–389)

- Dr. Cohen used phacoemulsification to remove the cataract.
- Mr. Blair's myopia was corrected by radial keratotomy.
- The head injury caused a retinal detachment that required repair by laser retinal photocoagulation.
- Because the cornea was abnormally curved, light rays were not evenly refracted, resulting in astigmatism.
- Examination of the eye with an ophthalmoscope did not reveal any reason for Mr. Mendez's photophobia.
- Mrs. Capers made an appointment with the optometrist because of scleritis and diplopia.
- The baby's mother was concerned about her infant when she noticed conjunctivitis and excessive dacryorrhea.
- Mr. Carpenter decided that it was no longer safe for him to drive after he developed nyctalopia and macular degeneration.
- A patient's visual acuity can be evaluated using a Snellen chart.
- A corneal abrasion occurred when sand became trapped under Karen's contact lens that was identified by using fluorescein.

### Fill in the Blank (p. 389)

- |                         |                  |              |               |                 |
|-------------------------|------------------|--------------|---------------|-----------------|
| 1. Diabetic retinopathy | 3. Achromatopsia | 5. nystagmus | 7. strabismus | 9. Nyctalopia   |
| 2. Glaucoma             | 4. hordeolum     | 6. Myopia    | 8. Snellen    | 10. astigmatism |

### Abbreviation Matching (p. 390)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. E | 3. A | 5. C | 7. B | 9. H  |
| 2. I | 4. G | 6. J | 8. F | 10. D |

### Multiple Choice (p. 390)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. c | 3. a | 5. a | 7. b | 9. b  |
| 2. c | 4. d | 6. a | 8. b | 10. c |

### Labeling Exercise (p. 391)

- |  |                                     |                                   |                                  |
|--|-------------------------------------|-----------------------------------|----------------------------------|
| 1. Conjunctiva ( <b>conjunctiv/o</b> ) | 5. Iris ( <b>ir/o, irid/o</b> )     | 9. Ciliary body ( <b>cycl/o</b> ) | 13. Choroid ( <b>choroid/o</b> ) |
| 2. Pupil ( <b>core/o, pupil/o</b> )    | 6. Lens ( <b>phac/o</b> )           | 10. Macula lutea                  | 14. Sclera ( <b>scler/o</b> )    |
| 3. Cornea ( <b>corne/o, kerat/o</b> )  | 7. Vitreous body ( <b>vitre/o</b> ) | 11. Optic nerve                   |                                  |
| 4. Aqueous humor ( <b>aque/o</b> )     | 8. Suspensory ligaments             | 12. Retina ( <b>retin/o</b> )     |                                  |

### Build Medical Terms (pp. 391–392)

- |                    |                |                 |                    |                    |
|--------------------|----------------|-----------------|--------------------|--------------------|
| 1. ophthalmology   | 4. ophthalmic  | 7. keratometer  | 10. retinitis      | 13. blepharoptosis |
| 2. ophthalmoscope  | 5. keratectomy | 8. keratoplasty | 11. blepharoplasty | 14. diplopia       |
| 3. ophthalmoplegia | 6. keratotomy  | 9. retinopathy  | 12. blepharoplegia | 15. amblyopia      |

### Medical Term Analysis (pp. 392–393)

- |  |   |  |
|--|---|--|
| 1. <b>blephar/o</b> , eyelid, <b>-ptosis</b> , drooping, drooping eyelid   | 5. <b>xer</b> , dry, <b>ophthalm</b> , eye, <b>-ia</b> , condition, condition of dry eye      | 9. <b>ophthalm/o</b> , eye, <b>-scope</b> , instrument for viewing, instrument for viewing the eye |
| 2. <b>dacry/o</b> , tear(drop), <b>aden</b> , gland, <b>-itis</b> , inflammation, inflammation of a tear gland       | 6. <b>choroid</b> , choroid layer, <b>-itis</b> , inflammation, inflammation of choroid layer | 10. <b>phac/o</b> , lens, <b>-sclerosis</b> , hardening, hardening of the lens                     |
| 3. <b>nas/o</b> , nose, <b>lacrim</b> , tear(drop), <b>-al</b> , pertaining to, pertaining to the nose and teardrops | 7. <b>kerat/o</b> , cornea, <b>-plasty</b> , surgical repair, surgical repair of cornea       |  |
| 4. <b>intra-</b> , within, <b>ocul</b> , eye, <b>-ar</b> , pertaining to, pertaining to within the eye               | 8. <b>opt/o</b> , vision, <b>-metry</b> , process of measuring, process of measuring vision   |  |

### Spelling (pp. 393–394)

- |                      |              |                      |                      |                      |
|----------------------|--------------|----------------------|----------------------|----------------------|
| 1. styte             | 3. hordeolum | 5. correctly spelled | 7. dacryolith        | 9. correctly spelled |
| 2. correctly spelled | 4. myopia    | 6. correctly spelled | 8. correctly spelled | 10. strabismus       |

### Visual Identification Challenge (p. 394)

- |   |  |
|---|--|
| 1. dark spots in visual field, diabetic retinopathy | 3. whole image is blurry, cataract                 |
| 2. losing vision around edges, glaucoma             | 4. center of image is blurry, macular degeneration |

## CHAPTER 17

### Building Otorhinolaryngology Terms (pp. 398–406)

- |  |  |
|--|--|
| 1. a. <b>adenoid/ectomy</b> , adenoidectomy ( <i>ad-eh-noyd-EK-toh-mee</i> );<br>b. <b>adenoid/itis</b> , adenoiditis ( <i>ad-eh-noyd-EYE-tis</i> )  | g. <b>laryng/o/plegia</b> , laryngoplegia ( <i>lah-ring-goh-PLÉE-jee-ah</i> );<br>h. <b>laryng/o/spasm</b> , laryngospasm ( <i>lair-RING-goh-spazm</i> )   |
| 2. a. <b>audi/o/logy</b> , audiology ( <i>aw-dee-ALL-oh-jee</i> ); b. <b>audi/o/logist</b> ,<br>audiologist ( <i>aw-dee-ALL-oh-jist</i> ); c. <b>audi/o/metry</b> , audiometry ( <i>aw-<br/>dee-OM-eh-tree</i> ); d. <b>audi/o/meter</b> , audiometer ( <i>aw-dee-OM-eh-ter</i> ); e.<br><b>audi/o/gram</b> , audiogram ( <i>AW-dee-oh-gram</i> )  | 9. a. <b>myring/itis</b> , myringitis ( <i>mi-rin-JYE-tis</i> ); b. <b>myring/ectomy</b> ,<br>myringectomy ( <i>mi-rin-JEK-toh-mee</i> ); c. <b>myring/o/plasty</b> ,<br>myringoplasty ( <i>mi-RIN-goh-plas-tee</i> ); d. <b>myring/o/sclerosis</b> ,<br>myringosclerosis ( <i>my-rin-goh-skleh-ROH-sis</i> ); e. <b>myring/o/tomy</b> ,<br>myringotomy ( <i>mi-rin-GOT-oh-mee</i> )   |
| 3. <b>audit/ory</b> , auditory ( <i>AW-dih-tor-ee</i> )  | 10. a. <b>nas/al</b> , nasal ( <i>NAY-zal</i> ); b. <b>nas/o/gastr/ic</b> , nasogastric ( <i>nay-zoh-<br/>GAS-trik</i> ); c. <b>nas/o/pharyng/eal</b> , nasopharyngeal ( <i>nay-zoh-fah-RIN-<br/>jee-al</i> )  |
| 4. <b>aur/al</b> , aural ( <i>AW-ral</i> )   | 11. a. <b>an/osmia</b> , anosmia ( <i>an-OZ-mee-ah</i> ); b. <b>hyper/osmia</b> , hyperosmia<br>( <i>high-per-OZ-mee-ah</i> )  |
| 5. a. <b>cochle/ar</b> , cochlear ( <i>KOH-klee-ar</i> ); b. <b>cochle/itis</b> , cochleitis<br>( <i>koh-klee-EYE-tis</i> )  | 12. a. <b>ot/ic</b> , otic ( <i>OH-tik</i> ); b. <b>ot/itis</b> , otitis ( <i>oh-TYE-tis</i> ); c. <b>ot/algia</b> , otalgia<br>( <i>oh-TAL-jee-ah</i> ); d. <b>ot/o/logy</b> , otology ( <i>oh-TALL-oh-jee</i> ); e. <b>ot/o/logist</b> ,<br>otologist ( <i>oh-TALL-oh-jist</i> ); f. <b>ot/o/scopy</b> , otoscopy ( <i>oh-TOSS-<br/>koh-pee</i> ); g. <b>ot/o/scope</b> , otoscope ( <i>OH-toh-skohp</i> ); h. <b>ot/o/plasty</b> ,<br>otoplasty ( <i>OH-toh-plas-tee</i> ); i. <b>ot/o/myc/osis</b> , otomycosis ( <i>oh-toh-<br/>my-KOH-sis</i> ); j. <b>ot/o/py/o/rrhea</b> , otopyorrhea ( <i>oh-toh-pye-oh-REE-ah</i> ) |
| 6. a. <b>epiglott/ic</b> , epiglottic ( <i>ep-ih-GLOT-ik</i> ); b. <b>epiglott/itis</b> , epiglottitis<br>( <i>ep-ih-glot-EYE-tis</i> )  | 13. a. <b>pharyng/eal</b> , pharyngeal ( <i>fair-IN-jee-al</i> ); b. <b>pharyng/itis</b> , pharyngitis<br>( <i>fair-in-JYE-tis</i> ); c. <b>pharyng/o/plasty</b> , pharyngoplasty ( <i>fah-RING-oh-plas-tee</i> );   |
| 7. a. <b>labyrinth/itis</b> , labyrinthitis ( <i>lab-ih-rin-THIGH-tis</i> ); b. <b>labyrinth/<br/>ectomy</b> , labyrinthectomy ( <i>lab-ih-rin-THEK-toh-mee</i> ); c. <b>labyrinth/<br/>otomy</b> , labyrinthotomy ( <i>lab-ih-rin-THOT-oh-mee</i> )   |  |
| 8. a. <b>laryng/eal</b> , laryngeal ( <i>lair-IN-jee-al</i> ); b. <b>laryng/itis</b> , laryngitis<br>( <i>lair-in-JYE-tis</i> ); c. <b>laryng/o/scopy</b> , laryngoscopy ( <i>lair-in-GOSS-<br/>koh-pee</i> ); d. <b>laryng/o/scope</b> , laryngoscope ( <i>lah-RING-goh-skohp</i> );<br>e. <b>laryng/o/ectomy</b> , laryngectomy ( <i>lair-in-JEK-toh-mee</i> ); f.<br><b>laryng/o/plasty</b> , laryngoplasty ( <i>lah-RING-goh-plas-tee</i> ); |  |

- d. **pharyng/o/spasm**, pharyngospasm (*fah-RING-oh-spazm*);  
e. **pharyng/o/tomy**, pharyngotomy (*fair-in-GOT-oh-mee*)
14. a. **a/phonia**, aphonia (*ah-FOH-nee-ah*); b. **dys/phonia**, dysphonia (*dis-FOH-nee-ah*)
15. a. **rhin/itis**, rhinitis (*rye-NYE-tis*); b. **rhin/o/plasty**, rhinoplasty (*RYE-noh-plas-tee*); c. **rhin/o/rrhea**, rhinorrhea (*rye-noh-REE-ah*);  
d. **rhin/o/myc/osis**, rhinomycosis (*rye-noh-my-KOH-sis*)
16. a. **sinus/itis**, sinusitis (*sigh-nus-EYE-tis*); b. **pan/sinus/itis**, pansinusitis (*pan-sigh-nus-EYE-tis*); c. **nas/o/sinus/itis**, nasosinusitis (*nay-zoh-sigh-nus-EYE-tis*) OR **rhin/o/sinus/itis**, rhinosinusitis (*rye-noh-sigh-nus-EYE-tis*)
17. a. **tonsill/ar**, tonsillar (*TAHN-sih-lar*); b. **tonsill/itis**, tonsillitis (*tahn-sill-EYE-tis*); c. **tonsill/ectomy**, tonsillectomy (*tahn-sih-LEK-toh-mee*)

18. a. **trache/al**, tracheal (*TRAY-kee-al*); b. **trache/o/megaly**, tracheomegaly (*tray-kee-oh-MEG-ah-lee*); c. **trache/o/plasty**, tracheoplasty (*tray-kee-oh-PLAS-tee*); d. **trache/o/tomy**, tracheotomy (*tray-kee-OT-oh-mee*); e. **trache/o/stenosis**, tracheostenosis (*tray-kee-oh-steh-NOH-sis*); f. **endo/trache/al**, endotracheal (*en-doh-TRAY-kee-al*)
19. a. **tympan/ic**, tympanic (*tim-PAN-ik*); b. **tympan/o/metry**, tympanometry (*tim-pah-NOM-eh-tree*); c. **tympan/o/meter**, tympanometer (*tim-pah-NOM-eh-ter*); d. **tympan/o/gram**, tympanogram (*TIM-pah-noh-gram*); e. **tympan/o/plasty**, tympanoplasty (*TIM-pah-noh-plas-tee*); f. **tympan/o/rrhesis**, tympanorrhesis (*tim-pan-oh-REK-sis*); g. **tympan/o/tomy**, tympanotomy (*tim-pah-NOT-oh-mee*)

## CASE STUDY CRITICAL THINKING QUESTIONS (PP. 410–412)

- She has been feeling run-down and having headaches for about 10 years; pain is over her eyes, but sometimes it moves down and makes her upper teeth hurt; recently she became unable to detect the strong odor of cooking fish
- Anosmia
- B
- Enlargement or disease of lymph nodes in neck region
- Pan-** is a prefix meaning *all*; infection has spread to all of paranasal sinuses
- Temperature, blood pressure, and breathing rate are normal; pulse is high
- Culture grows sample of infected tissue to determine whether bacteria are present; if bacteria are present, then culture can be used to identify specific type; this culture found bacteria but did not find fungus
- Antibiotic to fight infection, corticosteroid nose spray to reduce inflammation, repeat culture to check whether treatment is working and infection is gone, stop smoking because smoke irritates sinuses, go to allergist to see whether she has allergies that could make her prone to infections

## PRACTICE EXERCISES

### Sound It Out (p. 412)

- |                     |                   |                   |                  |                     |
|---------------------|-------------------|-------------------|------------------|---------------------|
| 1. otalgia          | 6. dysphonia      | 11. laryngoscope  | 16. otoscopy     | 21. tinnitus        |
| 2. audiometer       | 7. adenoidectomy  | 12. myringoplasty | 17. pansinusitis | 22. tonsillectomy   |
| 3. diphtheria       | 8. otoplasty      | 13. vertigo       | 18. pertussis    | 23. audiogram       |
| 4. pharyngospasm    | 9. laryngitis     | 14. tympanogram   | 19. rhinitis     | 24. tracheostenosis |
| 5. myringosclerosis | 10. laryngoplegia | 15. tympanometry  | 20. rhinorrhea   | 25. tympanorrhesis  |

### Transcription Practice (pp. 412–414)

- The new parents were quite concerned when their baby developed croup.
- Meilin's deafness was due to an acoustic neuroma.
- The DPT vaccination protects children against diphtheria and pertussis.
- The physician ordered supplemental oxygen to be delivered by a nasal cannula.
- His physician became concerned when Mr. Janssen developed vertigo and tinnitus.
- Carmen's physician recommended to her parents that she have pressure-equalizing tubes because of her repeated otitis media.
- The paramedics had to quickly determine whether the patient's condition required a tracheotomy or endotracheal intubation.
- Ursula went to see an otorhinolaryngologist because of her repeated epistaxis.
- For his deafness, Tariq needed a cochlear implant rather than a hearing aid.
- After examining the external auditory canal with an otoscope, it was obvious Jackson had otitis externa.

### Fill in the Blank (p. 414)

- |                                   |                                |                         |                            |
|-----------------------------------|--------------------------------|-------------------------|----------------------------|
| 1. hearing, equilibrium (balance) | 4. adenoids                    | 7. nares                | 10. malleus, incus, stapes |
| 2. epiglottis                     | 5. tympanic membrane (eardrum) | 8. nosebleed            |                            |
| 3. larynx                         | 6. cochlear                    | 9. amplification device |                            |

### Abbreviation Matching (p. 414)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. E | 3. A | 5. B | 7. F | 9. H  |
| 2. I | 4. G | 6. J | 8. C | 10. D |

### Labeling Exercise (p. 415)

- |                            |  |   |
|----------------------------|--|---|
| 1. Pinna                   | 6. Semicircular canals (equilibrium)     | 11. Auditory (Eustachian) tube                      |
| 2. External auditory canal | 7. Cochlear nerve                        | 12. Tympanic membrane (eardrum) ( <b>myring/o</b> , |
| 3. Mastoid process         | 8. Cochlea (hearing) ( <b>cochle/o</b> ) | <b>tympan/o</b> )                                   |
| 4. Malleus (hammer)        | 9. Oval window                           |   |
| 5. Incus (anvil)           | 10. Stapes (stirrup)                     |   |

### Build Medical Terms (pp. 415–416)

- |               |                  |               |                     |                    |
|---------------|------------------|---------------|---------------------|--------------------|
| 1. otology    | 4. otitis        | 7. pharyngeal | 10. tracheostenosis | 13. tympanoplasty  |
| 2. otomycosis | 5. otoscopy      | 8. aphonia    | 11. tracheotomy     | 14. tympanometer   |
| 3. otoplasty  | 6. pharyngospasm | 9. dysphonia  | 12. tracheomegaly   | 15. tympanorrhexis |

### Multiple Choice (p. 416)

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. a | 3. b | 5. a | 7. c | 9. a  |
| 2. d | 4. d | 6. c | 8. b | 10. c |

### Medical Term Analysis (pp. 417–418)

- |   |  |  |
|---|--|--|
| 1. <b>tympan/o</b> , tympanic membrane, <b>-tomy</b> , cutting into, cutting into tympanic membrane             | 5. <b>rhin/o</b> , nose, <b>myc</b> , fungus, <b>-osis</b> , abnormal condition, abnormal condition of nose fungus | 8. <b>laryng/o</b> , larynx, <b>-plegia</b> , paralysis condition, condition of larynx paralysis           |
| 2. <b>cochle</b> , cochlea, <b>-ar</b> , pertaining to, pertaining to the cochlea                               | 6. <b>tonsill</b> , tonsil, <b>-ectomy</b> , surgical removal, surgical removal of tonsils                         | 9. <b>pan-</b> , all, <b>sinus</b> , sinuses, <b>-itis</b> , inflammation, inflammation of all the sinuses |
| 3. <b>nas/o</b> , nose, <b>gastr</b> , stomach, <b>-ic</b> , pertaining to, pertaining to the nose and stomach  | 7. <b>an-</b> , without, <b>-osmia</b> , condition of sense of smell, condition of (being) without sense of smell  | 10. <b>myring/o</b> , tympanic membrane, <b>-sclerosis</b> , hardening, hardening of the tympanic membrane |
| 4. <b>endo-</b> , within, <b>trache</b> , trachea, <b>-al</b> , pertaining to, pertaining to within the trachea |  |  |

### Spelling (p. 418)

- |                      |                |                      |                      |                      |
|----------------------|----------------|----------------------|----------------------|----------------------|
| 1. spelled correctly | 3. diphtheria  | 5. spelled correctly | 7. spelled correctly | 9. spelled correctly |
| 2. epistaxis         | 4. otopyorrhea | 6. spelled correctly | 8. cannula           | 10. pertussis        |

### Visual Identification Challenge (p. 419)

- |             |                |                |              |              |               |
|-------------|----------------|----------------|--------------|--------------|---------------|
| 1. rhinitis | 2. pharyngitis | 3. tonsillitis | 4. sinusitis | 5. epistaxis | 6. laryngitis |
|-------------|----------------|----------------|--------------|--------------|---------------|



# GLOSSARY/INDEX

## A

### Abbreviations

- in cardiology, 136–137
- in dermatology, 71
- in endocrinology, 357
- in gastroenterology, 242
- in hematology, 159
- in immunology, 181
- in neurology, 331
- in obstetrics and gynecology, 304
- in ophthalmology, 384
- in orthopedics, 106
- in otorhinolaryngology, 409
- in pulmonology, 212
- in urology and nephrology, 274

**Abdomen** (*AB-doh-men*), region of body lying between thorax and pelvis; houses organs of digestion, reproduction, and excretion, 43, 232, 293

**Abdominal** (*ab-DOM-ih-nal*), pertaining to abdomen

**Abdominal cavity** (*ab-DOM-ih-nal*), superior portion of abdominopelvic cavity, 47. *See also* Abdominopelvic cavity

Abdominal lymph nodes, 174

Abdominal region, 42

Abdomin/o +-al, 43

**Abdominocentesis** (*ab-dom-ih-noh-sen-TEEsis*), another term for *paracentesis*, 240

**Abdominopelvic cavity** (*ab-dom-ih-noh-PELVik*), ventral cavity consisting of abdominal and pelvic cavities; contains digestive, urinary, and reproductive organs, 46–48

divisions of, 47–48

**Abduction** (*ab-DUK-tion*), action of moving away from (midline of body), 8

Ablation, 303

Abnormal cell condition, 151

Abnormal conditions

- prefixes indicating, 26
- suffixes indicating, 14–15

**ABO typing system**, method of categorizing blood; consists of *type A*, *type B*, *type O*, and *type AB* blood, 152

**Abortifacient** (*ah-bor-tih-FAY-shent*), medication that terminates a pregnancy, 303

**Abortion** (AB) (*ah-BOR-shun*), removal of embryo or fetus from uterus before it can survive outside uterus, 303, 304

- elective, 303
- spontaneous, 303
- therapeutic, 303

Above elbow (AE), 106

Above knee (AK), 106

**Abrasion** (*ah-BRAY-zhun*), scraping away a portion of surface of skin, 128

Abruptio, 297

**Abruptio placentae** (*ah-BRUP-shee-oh/plah-SEN-tee*), emergency condition in which placenta tears away from uterine wall prior to delivery of infant; requires immediate delivery of baby, 303

**Abscess** (*AB-sess*), collection of pus in skin, 63

**Absence seizure**, characterized by loss of awareness and absence of activity; formerly called petit mal seizure, 327

-ac, 87

**Accommodation** (Acc) (*ah-kom-ah-DAY-shun*), ability of eye to adjust to variations in distance, 378, 384

**Achromatopsia** (*ah-kroh-mah-TOP-see-ah*), color blindness; more common in males, 378

**Acne** (*AK-nee*), inflammation of sebaceous glands and hair follicles; results in pustules and papules; most commonly seen in teenagers, 63

**Acne rosacea** (*AK-nee/roh-ZAY-shee-ah*), chronic form of acne seen in adults; red rash, tiny pimples, and broken blood vessels primarily on cheeks and nose, 63

**Acoustic neuroma** (*ah-KOOS-tik/noo-ROHmah*), benign tumor of eighth cranial nerve sheath, which can cause symptoms from pressure being exerted on tissues, 405

**Acquired immunity** (*im-YOO-nih-tee*), immune response to specific pathogens; may be active or passive, 172

**Acquired immunodeficiency syndrome** (AIDS) (*im-yoo-noh-dih-FIH-shen-see*), later stage of human immunodeficiency virus (HIV) infection when cells of immune system lose ability to fight off infection; patients become unable to resist opportunistic infections such as pneumocystis pneumonia and Kaposi sarcoma, 177, 181

**Acromegaly** (*ak-roh-MEG-ah-lee*), chronic disease of adults that results in elongation and enlargement of bones of head and extremities, 353

**Active acquired immunity** (*im-YOO-nih-tee*), develops after exposure to pathogen; for example, having chickenpox or receiving a vaccination, 172

Activities of daily living (ADLs), 331

Acute renal failure (ARF), 269, 274

Acute respiratory disease (ARD), 212

**Acute respiratory distress syndrome** (ARDS) (*RES-pih-rah-tor-ee*), acute respiratory failure in adults characterized by tachypnea, dyspnea, cyanosis, tachycardia, and hypoxemia; also known as *adult respiratory distress syndrome*, 203, 212

Acute respiratory failure (ARF), 212

**Addison disease** (*AD-ih-son*), results from hyposecretion of adrenocortical hormones; symptoms

may include increased skin pigmentation, generalized weakness, and weight loss, 353

**Adduction** (*ah-DUK-shun*), action of leading toward (midline of body), 8

**Adenectomy** (*ad-eh-NEK-toh-mee*), surgical removal of a gland

**Adenitis** (*ad-eh-NYE-tis*), gland inflammation

aden/o, 57, 345

**Adenocarcinoma** (*ad-eh-noh-kar-sih-NOH-mah*), malignant tumor in a glandular organ

**Adenocyte** (*AD-eh-noh-sight*), gland cell

**Adenoid** (*AD-eh-noyd*), another term for *pharyngeal tonsil*; plural is *adenoids*

**Adenoidectomy** (*ad-eh-noy-DEK-toh-mee*), surgical removal of adenoids

**Adenoiditis** (*ad-eh-noyd-EYE-tis*), inflammation of adenoids

adenoid/o, 172, 397

**Adenoids** (*AD-eh-noydz*), plural of *adenoid*, 172, 397

**Adenoma** (*ad-eh-NOH-mah*), gland tumor

**Adenomegaly** (*ad-eh-noh-MEG-ah-lee*), enlarged gland

**Adenopathy** (*ad-eh-NOP-ah-thee*), gland disease

**Adipic** (*ah-DIP-ik*), pertaining to fat

adip/o, 58

**Adipocyte** (*AD-ih-poh-sight*), fat cell

**Adipoma** (*ad-ih-POH-mah*), fat tumor

**Adipose** (*AD-ih-pohs*), type of connective tissue; also called *fat*; stores energy and provides protective padding for underlying structures

**Adrenal cortex** (*ah-DREE-nal/KOR-teks*), outer portion of adrenal glands; secretes several families of hormones: mineralocorticoids, glucocorticoids, and steroid sex hormones, 345

**Adrenal feminization** (*ah-DREE-nal/fem-ih-nih-ZAY-shun*), development of female secondary sexual characteristics (such as breasts) in a male; often a result of increased estrogen secretion by adrenal cortex, 353

**Adrenal gland** (*ah-DREE-nal*), one of a pair of glands in endocrine system located just above each kidney; divided into outer adrenal cortex and inner adrenal medulla; adrenal cortex secretes aldosterone to regulate sodium levels in body, cortisol to regulate carbohydrate metabolism, and sex hormones such as estrogen and testosterone; adrenal medulla secretes epinephrine (also called *adrenaline*) to help body respond to emergency situations; plural is *adrenal glands*, 343, 345

**Adrenal glands** (*ah-DREE-nal*), plural of *adrenal gland*

**Adrenal medulla** (*ah-DREE-nal/meh-DULL-ah*), inner portion of adrenal gland; secretes epinephrine and norepinephrine, 345

**Adrenalectomy** (*ah-dree-nal-EK-toh-mee*), surgical removal of one or both adrenal glands

**Adrenaline** (*ah-DREN-ah-lin*), another term for epinephrine, 345

**Adenitis** (*ah-dree-nal-EYE-tis*), inflammation of adrenal gland

adrenal/o, 346

**Adrenal** (*ah-DREE-nal*), pertaining to adrenal glands

**Adrenal virilism** (*ah-DREE-nal-VIR-ill-izm*), development of male secondary sexual characteristics (such as deeper voice and facial hair) in a female; often a result of increased androgen secretion by adrenal cortex, 353

**Adrenopathy** (*ah-dree-nal-OP-ah-thee*), adrenal gland disease

adren/o, 345

**Adrenocorticotrophic hormone** (ACTH) (*ah-dreenoh-kor-tih-koh-TROH-pik*), secreted by anterior pituitary; regulates function of adrenal gland cortex, 350, 357

**Adrenomegaly** (*ah-dree-noh-MEG-ah-lee*), enlarged adrenal gland

aerosol therapy (AIR-oh-sol), medication suspended in a mist so that it may be inhaled; often delivered by nebulizer or metered-dose inhaler

Adult respiratory distress syndrome, 203

**Aerosol therapy** (AIR-oh-sol), medication suspended in a mist so that it may be inhaled; often delivered by nebulizer or metered-dose inhaler, 210, 212

**Afferent nerves** (*AF-eh-rent*), another term for sensory nerves

**AIDS-related complex** (ARC), early stage of AIDS; there is a positive test for virus but only mild symptoms of weight loss, fatigue, skin rash, and anorexia, 177, 181

Air, 200

-al, 40

-al, 87

**Albuminuria** (*al-byoo-mih-NYOO-ree-ah*), albumin (protein) in urine

**Aldosterone** (*al-DOSS-ter-ohn*), hormone produced by adrenal cortex; regulates levels of sodium and potassium in body and as a side effect, volume of water lost in urine, 345

-algia, 12

**Alimentary canal** (*al-ih-MEN-tah-ree*), also known as *gastrointestinal system* or *digestive system*; covers area between mouth and anus and includes 30 feet of intestinal tubing; serves to store and digest food, absorb nutrients, and eliminate waste; major organs are mouth, pharynx, esophagus, stomach, small intestine, colon, rectum, and anus, 224

**Allergen** (*AL-er-jen*), any common substance in environment that causes hypersensitivity reaction (*allergy*), 177

**Allergist** (*AL-er-jist*), physician who specializes in testing for and treating allergies, 170, 180

**Allergy** (*AL-er-jee*), hypersensitivity to common substance called *allergen* in environment (such as pollen), to food, or to medication; most commonly affects areas of body directly exposed to allergen, such as eyes, nose, bronchi, skin, intestines, 177

**Allergy shots** (*AL-er-jee*), type of immunotherapy; person receives regular injections of tiny

amounts of their allergen; injection is too small to cause allergic reaction; over time, person's sensitivity to allergen decreases, 180

**Alopecia** (*al-oh-PEE-shee-ah*), absence or loss of hair, especially of head; commonly called *baldness*, 63

**Alveolar** (*al-VEE-oh-lar*), pertaining to alveoli

**Alveoli** (*al-VEE-oh-lye*), plural of *alveolus*, 195

**Alveolitis** (*AL-vee-oh-lye-tis*), alveolus inflammation

alveol/o, 195

**Alveolus** (*al-VEE-oh-lus*), one of thousands of tiny air sacs at end of each bronchiole; surrounded by capillary network; gas exchange takes place as oxygen and carbon dioxide diffuse across alveolar and capillary walls; plural is *alveoli*

**Alzheimer disease** (AD) (*ALTS-high-mer*), chronic brain condition involving progressive disorientation, speech and gait disturbances, and loss of memory, 2, 324, 331

**Amblyopia** (*am-blee-OH-pee-ah*), loss of vision not due to any disease; not correctable with glasses; persons with amblyopia wear a patch over one eye to force affected eye to work; commonly called *lazy eye*, 378

**Amenorrhea** (*ah-men-oh-REE-ah*), absence of menstrual flow

**American Sign Language** (ASL), nonverbal method of communicating in which hands and fingers are used to indicate words and concepts; used by people with hearing impairment and/or speech impairment, 407, 409

**Amino acids** (*ah-MEE-noh*), substances found in plasma, used by cells to build proteins, 149

amni/o, 288

**Amniocentesis** (*am-nee-oh-sen-TEE-sis*), puncturing of amniotic sac using needle and syringe for purpose of withdrawing amniotic fluid for testing; can assist in determining fetal maturity, development, and genetic disorders, 302

**Amnion** (*AM-nee-on*), inner of two membranous sacs surrounding fetus; contains amniotic fluid in which baby floats; also called *amniotic sac*, 288

**Amniorrhea** (*am-nee-oh-REE-ah*), discharge of amniotic fluid

**Amniorrhesis** (*am-nee-oh-REK-sis*), ruptured amnion

**Amniotic** (*am-nee-OT-ik*), pertaining to amnion

**Amniotic fluid** (*am-nee-OT-ik*), fluid inside amniotic sac, 288

**Amniotic sac** (*am-nee-OT-ik*), another term for *amnion*, 288

**Amniotomy** (*am-nee-OT-oh-mee*), cutting into amniotic sac

Amplification device, 408

**Amyotrophic lateral sclerosis** (ALS) (*ay-my-oh-TROH-fik/LAT-er-al/skleh-ROH-sis*), disease with muscular weakness and atrophy due to degeneration of motor neurons of spinal cord; commonly called *Lou Gehrig's disease*, 324, 331

**Anal** (*AY-nal*), pertaining to anus

**Analgesic** (*an-al-JEE-zik*), drug to treat minor to moderate pain without loss of consciousness, 331

**Anaphylactic shock** (*an-ah-fih-LAK-tik*), life-threatening condition resulting from severe allergic reaction causing cardiovascular and respiratory problems; may be triggered by bee stings, medications, or certain foods; also called *anaphylaxis*, 177

**Anaphylaxis** (*an-ah-fih-LAK-sis*), another term for *anaphylactic shock*, 177

**Anatomical divisions of abdominopelvic cavity** (*an-ah-TOM-ih-kal*), method that divides abdominopelvic cavity into nine regions like a tic-tac-toe board, 48

**Anatomical position** (*an-ah-TOM-ih-kal*), used to describe arrangement and relationships of structures in human body; for descriptive purposes, assumption is always that person is in anatomical position; body is standing erect with arms down at sides of body, palms of hands facing forward, and eyes looking straight ahead; legs together and parallel with feet and toes pointing forward, 36

Anatomical terminology, 33–53

anatomical position, 36

body cavities, 46–49

body surface, 42–46

combining forms, 34

directional, 39–42

planes, 37

prefixes, 34

sections, 37–38

suffixes, 34

**Anemia** (*ah-NEE-mee-ah*), reduction in number of red blood cells (RBCs) or amount of hemoglobin in blood; results in less oxygen reaching the tissues, 155

**Anesthesia** (*an-es-THEE-zha*), partial or complete loss of sensation with or without loss of consciousness as result of drug, disease, or injury

**Anesthesiologist** (*an-es-thee-zee-ALL-oh-jist*), physician specializing in anesthesia

**Anesthesiology** (*an-es-thee-zee-ALL-oh-jee*), branch of medicine specializing in anesthesia

**Anesthetic** (*an-es-THEE-ik*), drug that produces loss of sensation or loss of consciousness, 331

**Anesthetic eyedrops** (*an-es-THEE-ik*), medicated eyedrops to relieve pain associated with corneal abrasions, eye infections, or surgery, 382

**Aneurysm** (*AN-yoo-rizm*), weakness in wall of artery resulting in localized widening of artery, 128

Angina, 128

**Angina pectoris** (*an-JYE-nah/PEK-tor-is*), severe chest pain with sensation of constriction around heart; caused by a deficiency of oxygen to heart muscle, 128

angi/o, 121

Angiocardiology (ACG), 136

**Angiography** (*an-jee-OG-rah-fee*), process of taking X-ray of blood or lymphatic vessels after injection of radiopaque substance

**Angioma** (*an-jee-OH-mah*), tumor composed of blood vessels

**Angioplasty** (*AN-jee-oh-plas-tee*), surgical repair of blood vessels

**Angiospasm** (*AN-jee-oh-spazm*), involuntary muscle contraction of a vessel

**Angiostenosis** (*an-jee-oh-steh-NOH-sis*), narrowing of a vessel

**Anhidrosis** (*an-high-DROH-sis*), abnormal condition of no sweat

**Ankylosis** (*ang-kih-LOH-sis*), abnormal condition of (being stiff)

an/o, 226

**Anoplasty** (*AY-noh-plas-tee*), surgical repair of anus

**Anorchism** (*an-OR-kizm*), absence of one or both testes

**Anosmia** (*an-OZ-mee-ah*), loss of sense of smell

**Anoxia** (*an-OK-see-ah*), lack of oxygen

**Antacid**, medication used to neutralize stomach acids, 240

ante-+ cubit/o +-al, 43

**Antecubital** (*an-tih-KYOO-bih-tal*), term to describe area in front of elbow

Antecubital region, 42

**Antenatal** (*an-tee-NAY-tal*), pertaining to before birth

**Antepartum** (*an-tee-PAR-tum*), before birth

**Anterior** (*an-TEER-ee-or*), directional term meaning near or on front or belly side of body

anter/o +-ior, 40

**Anterior chamber** (*an-TEER-ee-or*), open area of eye anterior to lens; filled with watery fluid called aqueous humor, 371

Anterior direction, 39

**Anterior lobe** (*an-TEER-ee-or*), forward portion of pituitary gland; secretes adrenocorticotrophic hormone, follicle-stimulating hormone, growth hormone, luteinizing hormone, melanocyte-stimulating hormone, prolactin, and thyroid-stimulating hormone, 350

Anteroposterior (AP), 39

Anteroposterior (AP) direction in radiology, 39

**Anthracosis** (*an-thrah-KOH-sis*), type of *pneumoconiosis*; lung damage from inhaling coal dust, 206

**Antibiotic** (*an-tih-bye-AW-tik*), medication used to treat bacterial infections, 272

**Antibiotic eyedrops** (*an-tih-bye-AW-tik*), medicated eyedrops to fight bacterial eye infections, 383

**Antibody** (*AN-tih-bod-ee*), produced by some lymphocytes in response to presence of antigen; molecule (not cell) that combines with antigens to form antigen-antibody complexes, 180

**Anticoagulant** (*an-tye-koh-AG-yoo-lant*), substance that prevents or delays clotting or coagulation of blood, 158

**Anticonvulsant** (*an-tye-kon-VUL-sant*), medication to prevent or relieve convulsions, 331

**Antidiarrheal** (*an-tee-dye-ah-REE-al*), medication used to control diarrhea, 240

**Antidiuretic hormone** (ADH) (*an-tye-dye-yoo-RET-ik*), secreted by posterior pituitary; promotes water reabsorption by kidney tubules, 350, 357

Antiemetic, 240, 407

**Antiemetic drugs** (*an-tye-ee-MEH-tik*), medication to treat nausea, vomiting, and motion sickness

**Antigen** (*AN-tih-jen*), proteins foreign to body that produce immune response, 180

**Antigen-antibody complex** (*AN-tih-jen/AN-tihbod-ee*), molecular complex preventing pathogens from damaging healthy cells and targets pathogens for phagocytosis, 180

**Antiglaucoma eyedrops** (*an-tye-glau-KOHmah*), medication in drop form that slows progression of glaucoma by reducing intraocular pressure, 383

**Antihistamine** (*an-tih-HIST-ah-meen*), substance that acts to control allergic symptoms by counteracting histamine, which exists naturally in body, and released in allergic reactions, 181

**Antilipidemic** (*an-tye-lip-ih-DEEM-ik*), medication that reduces amount of cholesterol and lipids in bloodstream, 134

Antinuclear antibody (ANA), 180, 181

**Antinuclear antibody titer** (ANA) (*an-tee-NOOklee-ar/AN-tee-bod-ee/TYE-ter*), blood test to determine number of antibodies against cell nuclei present in bloodstream; elevated in autoimmune conditions

**Antiplatelet agent** (*an-tee-PLAYT-let*), medication that inhibits ability of platelets to clump together as part of blood clot, 134, 158

**Antitussive** (*an-tih-TUSS-iv*), medication to relieve urge to cough, 210

**Anuria** (*an-YOO-ree-ah*), lack of urine formed by kidneys

**Anus** (*AY-nus*), terminal opening of digestive tube

anvil, common name for *incus*, 224, 226, 234

**Anvil**, common name for *incus*

**Aorta** (*ay-OR-tah*), largest artery in body; located in mediastinum and carries oxygenated blood away from left side of heart, 121, 123, 127

**Aortic** (*ay-OR-tik*), pertaining to aorta

**Aortic valve** (*ay-OR-tik*), semilunar valve between left ventricle of heart and aorta in heart; prevents blood from flowing backward into ventricle, 123, 126

aort/o, 121

**Aortoplasty** (*ay-OR-toh-plas-tee*), surgical repair of aorta

**Apepsia** (*ay-PEP-see-ah*), not digesting food

**Apgar score** (*AP-gar*), numerical tally indicating newborn's adjustment to outside world; includes, **Appearance** (*skin tone*), **Pulse** (*heart rate*), **Grimace response** (*reflexes*), **Activity** (*muscle tone*), and **Respiration** (*breathing rate and effort*); performed at one minute and five minutes after birth, 302

**Aphagia** (*ah-FAY-jee-ah*), not eating

**Aphasia** (*ah-FAY-zee-ah*), inability to communicate through speech

**Aphonia** (*ah-FOH-nee-ah*), no voice

**Aplastic anemia** (*ay-PLAS-tik/ah-NEEmee-ah*), severe form of anemia that develops as consequence of loss of functioning red bone marrow; results in decrease in number of all formed elements; treatment may eventually require bone marrow transplant, 155

**Apnea** (*AP-nee-ah*), not breathing

**Appearance** (*skin tone*), **Pulse** (*heart rate*), **Grimace response** (*reflexes*), **Activity** (*muscle tone*), and **Respiration** (*breathing rate and effort*); performed at one minute and five minutes after birth

**Appendectomy** (*ap-en-DEK-toh-mee*), surgical removal of appendix

**Appendicitis** (*ah-pen-dih-SIGH-tis*), inflammation of appendix

appendices, plural of *appendix*

appendic/o, 226

**Appendix** (*ah-PEN-diks*), small outgrowth at end of cecum; contains lymphatic tissue; reservoir for beneficial intestinal bacteria; plural is *appendices*, 224, 226

append/o, 226

aque/o, 371

**Aqueous** (*AY-kwee-us*), pertaining to water

**Aqueous humor** (*AY-kwee-us*), watery fluid filling spaces between cornea and lens, 371

-ar, 12

-ar, 88

**Arachnoid layer** (*ah-RAK-noyd*), delicate middle layer of meninges, 321

**Areola** (*ah-REE-oh-lah*), pigmented area around nipple of breast, 293

**Arrector pili** (*ah-REK-tor/PYE-lye*), slip of smooth muscle attached to hair follicle; contracts to cause hair shaft to stand up, 62

**Arrhythmia** (*ah-RITH-mee-ah*), irregularity in heartbeat, 128

**Arterial** (*ar-TEE-ree-al*), pertaining to an artery

**Arterial blood gases** (ABGs) (*ar-TEE-ree-al*), blood test that measures amount of oxygen and carbon dioxide in blood and the pH, 208, 212

**Arteries** (*AR-ter-eez*), plural of *artery*, 118, 120, 121

comparative structure of, 120

pulmonary, 123, 127

skin, 56

arteri/o, 122

**Arteriogram** (*ar-TEER-ee-oh-gram*), X-ray record of artery

**Arteriography** (*ar-teer-ee-OG-rah-fee*), process of recording an artery

**Arteriolar** (*ar-teer-ee-OH-lar*), pertaining to an arteriole

**Arteriole** (*ar-TEER-ee-ohl*), smallest branch of artery that carries blood to capillary; plural is *arterioles*, 122

**Arterioles** (*ar-TEER-ee-ohlz*), plural of *arteriole*

**Arteriolitis** (*ar-TEER-ree-oh-lye-tis*), arteriole inflammation

arteriol/o, 122

**Arteriorrhaphy** (*ar-teer-ee-OR-ah-fee*), suture an artery

**Arteriosclerosis** (*ar-teer-ee-oh-skleh-ROH-sis*), condition with thickening, hardening, and loss of elasticity of walls of arteries, 136

Arteriosclerotic cardiovascular disease (ASCVD), 136

**Arteriosclerotic heart disease** (ASHD) (*ar-teeree-oh-skler-OT-ik*), another name for *coronary artery disease* (CAD), 129, 136

**Artery**, blood vessels that carry blood away from heart; plural is *arteries*

arthr, 12



**Arthralgia** (*ar-THRAL-jee-ah*), pain in a joint

**Arthritis** (*ar-THRY-tis*), inflammation of a joint

- juvenile rheumatoid, 106
- osteoarthritis, 101, 106
- rheumatoid, 102, 106

*arthr/o*, 88

**Arthrocentesis** (*ar-throh-sen-TEE-sis*), removal of synovial fluid with needle from joint space, such as in knee, for examination

**Arthroclasia** (*ar-throh-KLAY-zee-ah*), surgically breaking loose a stiffened joint

**Arthrodesis** (*ar-throh-DEE-sis*), surgical fusion of joint to provide stability

**Arthrogram** (*AR-throh-gram*), record of a joint

**Arthrography** (*ar-THROG-rah-fee*), process of visualizing a joint by X-ray after injection of contrast medium into joint space

**Arthroplasty** (*AR-throh-plas-tee*), surgical repair of a joint

**Arthroscope** (*AR-throh-skohp*), instrument to view inside a joint

**Arthroscopy** (*ar-THROS-koh-pee*), examination of interior of joint with arthroscope; arthroscope contains small camera that allows physician to view interior of joint on monitor during procedure

**Articulation** (*ar-tik-yoo-LAY-shun*), another term for a joint, the point where two bones meet, 88

-ary, 89

**Asbestosis** (*az-bes-TOH-sis*), type of *pneumococ-niosis*; lung damage from inhaling asbestos

- ascending colon, section of colon following cecum; ascends right side of abdomen ascending tracts, column of white matter nervous tissue carrying sensory information up spinal cord to brain, 206

Ascending colon, 228

**Ascending tracts**, column of white matter nervous tissue carrying sensory information up spinal cord to brain, 321

**Ascites** (*ah-SIGH-teez*), collection or accumulation of fluid in abdominopelvic cavity, 235, 240

**Aspermia** (*ah-SPER-mee-ah*), lack of sperm

**Asphyxia** (*as-FIK-see-ah*), lack of oxygen that can lead to unconsciousness and death if not corrected immediately, 203

**Asphyxiation** (*as-fik-see-AY-shun*); lack of oxygen that can lead to unconsciousness and death if not corrected immediately; some common causes are drowning, foreign body in respiratory tract, poisoning, and electric shock; commonly called *suffocation*, 203

**Aspirate** (*AS-pih-rayt*), inhaling food or foreign object into airways, 203

**Asthma** (*AZ-mah*), disease caused by various conditions, such as allergies, and resulting in bronchospasm, excessive mucus production, airway constriction, wheezing, and coughing, 203

**Astigmatism** (Astigm) (*ah-STIG-mah-tizm*), condition in which light rays are focused unevenly on eye, causing distorted image due to abnormal curvature of cornea, 378, 384

Astrocytes, 325

**Astrocytoma** (*ass-troh-sigh-TOH-mah*), most common type of brain tumor, 325

**Atelectasis** (*at-eh-LEK-tah-sis*), condition in which lung tissue collapses, preventing respiratory exchange of oxygen and carbon dioxide, 204

**Atherectomy** (*ath-er-EK-toh-mee*), surgical removal of fatty substance

*ather/o*, 122

**Atherosclerosis** (*ath-er-oh-skleh-ROH-sis*), most common form of arteriosclerosis; caused by formation of yellowish plaques of cholesterol buildup on inner walls of arteries

**Atresia** (*ah-TREE-zha*), congenital lack of normal body opening, 236, 297

**Atria** (*AY-tree-ah*), plural of *atrium*, 123

**Atrial** (*AY-tree-al*), pertaining to atrium

**Atrial fibrillation** (AF, A-fib) (*AY-tree-al*), fibrillation of atrium, 129, 136

**Atrial septal defect** (*AY-tree-al*), congenital hole in interatrial septum, 136

*atri/o*, 123

**Atrioventricular** (*ay-tree-oh-ven-TRIK-yoo-lar*), pertaining to atria and ventricles, 136

**Atrium** (*AY-tree-um*), one of two upper chambers of heart; left atrium receives blood returning from lungs and right atrium receives blood returning from body; plural is *atria*

**Atrophy** (*AT-rah-fee*), without development, 26

Attracted to, 154

*audi/o*, 398

**Audiogram** (*AW-dee-oh-gram*), record of hearing

**Audiologist** (*aw-dee-ALL-oh-jist*), specialist providing comprehensive array of services related to prevention, diagnosis, and treatment of hearing impairment and its associated communication disorders, 395

**Audiology** (*aw-dee-ALL-oh-jee*), study of hearing, 395

**Audiometer** (*aw-dee-OM-eh-ter*), instrument to measure hearing

**Audiometry** (*aw-dee-OM-eh-tree*), process of measuring hearing

*audit/o*, 398

**Auditory** (*AW-dih-tor-ee*), pertaining to hearing

Auditory (Eustachian) tube, 402

**Auditory tube** (*AW-dih-tor-ee*), canal that connects middle ear with nasopharynx and allows for balance of pressure between outer and middle ear; also called *Eustachian tube*

**Aural** (*AW-ral*), pertaining to the ear

**Auricle** (*AW-rih-kl*), external ear; also called *pinna*, 398

*aur/o*, 398

**Auscultation** (*oss-kul-TAY-shun*), listening to sounds within body by using stethoscope, 131

**Autoimmune disease** (*aw-toh-ih-MYOON*), results from body's immune system attacking its own cells as if they were pathogens; examples include systemic lupus erythematosus, rheumatoid arthritis, and multiple sclerosis, 177

Autonomic nervous system (ANS), 331

**Autotransfusion** (*aw-toh-trans-FYOO-zhun*), procedure for collecting and storing patient's own blood several weeks prior to actual need; it can then be used to replace blood lost during

surgical procedure; also called *homologous transfusion* (*hoh-MALL-ohgus/trans-FYOO-zhun*), 158

**Axial plane** (*AK-see-al*), only horizontal plane; slices body into upper (superior) and lower (inferior) portions; also called *transverse plane*

**Axial section** (*AK-see-al*), sectional view of body produced by cut along axial plane, also called *transverse section*

**Axillary** (*AK-sih-lair-ee*), pertaining to underarm area

Axillary lymph nodes, 174

Axillary region, 43

**Azoturia** (*az-oh-TOO-ree-ah*), nitrogenous wastes in urine

## B

**Bacterial endocarditis** (*en-doh-kar-DYE-tis*), inflammation of inner lining of heart due to bacterial infection, 128

**Bacteriuria** (*bak-teer-ee-YOO-ree-ah*), bacteria in urine

**Balanitis** (*bal-ah-NYE-tis*), inflammation of glans penis

*balan/o*, 257

**Balanorrhea** (*bah-lah-noh-REE-ah*), discharge from glans penis

**Baldness**, common name for *alopecia*, 63

**Bariatric surgery** (*bair-ee-AT-rik*), group of surgical procedures designed to treat extreme obesity by reducing size of stomach or diverting food from passing through portion of GI tract, 240

Barium (Ba), 242

**Barium enema** (BE) (*BAIR-ee-um*), X-ray examination of intestine and colon using barium as contrast medium; also known as *lower GI series*, 239, 242

**Barium swallow** (*BAIR-ee-um*), another term for *upper gastrointestinal (GI) series*, 240

**Barrier contraception** (*kon-trah-SEP-shun*), any device that prevents pregnancy by keeping sperm from reaching and fertilizing ovum; examples include condoms, diaphragms, and cervical caps, 303

**Bartholin glands** (*BAR-toh-lin*), glands located in vulva; secrete mucus to lubricate vagina, 291

**Basal cell carcinoma** (BCC) (*BAY-sal/sell/kar-sih-NOH-mah*), tumor of basal cell layer of epidermis; frequent type of skin cancer that rarely metastasizes or spreads; arises on sun-exposed skin, 63, 71

**Basal layer** (*BAY-sal*), deepest part of epidermis; composed of living cells that grow and divide to replace dead cells sloughed off from skin surface, 58

**Basic metabolic panel** (BMP), group of eight blood tests providing information about body's blood counts, metabolism, chemical balance, kidney function, and liver function, 157

**Basophil** (*BAY-soh-fill*), type of white blood cell that releases histamine and heparin in damaged tissues

Basophils (basos), 149, 159

- Bear (offspring), 295
- Beats per minute (BPM, bpm), 137
- Bedsore**, common name for *pressure ulcer*, 67
- Bell palsy** (*BELL/PAWL-zee*), one-sided facial muscle weakness or paralysis; usually is temporary, 324
- Below elbow (BE), 106
- Below knee (BK), 106
- Benign, 267
- Benign prostatic hyperplasia** (BPH) (*bee-NINE/pross-TAT-ik/high-per-PLAY-zha*), enlargement of prostate gland commonly seen in males over age 50, 267, 274
- Beta-blocker drugs**, medications used to treat hypertension and angina pectoris by lowering heart rate, 134
- Bicuspid valve** (*bye-KUSS-pid*), another term for *mitral valve*
- Bile** (*BYE-al*), substance produced by liver and stored in gallbladder; transported to duodenum by common bile duct; aids fat digestion by breaking up large fat globules into smaller fat particles; also called *gall*, 226, 231
- Bile ducts** (*BYE-al*), carry bile from liver or gallbladder to duodenum, 231
- Bilevel positive airway pressure** (BiPAP), another term for *noninvasive ventilation* (NIV) or *noninvasive positive pressure ventilation* (NIPPV), 211
- Biopsy** (BX, bx) (*BYE-op-see*), piece of tissue is removed by syringe and needle, knife, punch, or brush to examine under microscope; aids in diagnosis, 70, 71
- Birth, 294
- Birth canal**, another term for *vagina*, 290
- Birth control pills**, common name for *oral contraceptive pills*, 304
- Birth defect**, another term for *congenital anomaly*, 290, 298
- Bladder neck obstruction** (BUN), blockage of bladder exit into ureter; may be due to *calculus* or tumor, 270
- Bleeding ulcer, 238
- blephar/o, 371
- Blepharoplasty** (*BLEF-ah-roh-plas-tee*), surgical repair of eyelid
- Blepharoplegia** (*blef-ah-roh-PLÉE-jee-ah*), paralyzed eyelid
- Blepharoptosis** (*blef-ah-rop-TOH-sis*), drooping eyelid
- Blister, 70
- Blood**, fluid found inside of blood vessels; approximately 55% of blood is watery fluid called *plasma*; 45% of blood consists of *formed elements*, which are cells (or cell fragments) floating in plasma, 152, 153. *See also* Hematology components of, 150
- Blood analyzer, 157
- Blood clot**, common term for *thrombus*, 126
- Blood condition, 152
- Blood condition of insufficient sugar, 6
- Blood culture and sensitivity** (C&S), sample of blood is incubated in laboratory to check for bacterial growth; if bacteria are present, they are identified and tested to determine which antibiotics they are sensitive to, 156, 159
- Blood dyscrasia** (*dis-KRAY-zee-ah*), general term indicating abnormal condition affecting blood, 155
- Blood poisoning**, common name for septicemia
- Blood poisoning sepsis, 156
- Blood pressure** (BP), measurement of pressure exerted by blood against walls of blood vessel, 131, 136
- Blood pressure cuff**, another term for *sphygmomanometer*, 133
- Blood serum test**, measures level of substances such as calcium, electrolytes, testosterone, insulin, and glucose; used to assist in determining function of various endocrine glands, 355
- Blood transfusion** (*trans-FYOO-zhun*), artificial transfer of blood into bloodstream, 158
- Blood typing**, test to determine markers on person's erythrocytes (or blood type); examples are types A, B, O, or AB blood and Rh+ or Rh– blood; must be performed before blood transfusion, 152
- Blood urea nitrogen** (BUN) (*yoo-REE-ah/NYEtroh-jen*), blood test to measure kidney function by level of nitrogenous waste, or urea, that is in blood, 270, 274
- Blood vessels**, closed system of tubes that conducts blood throughout body; consists of arteries, veins, and capillaries, 118, 127
- Blue, 197
- Body**, made up of cells, tissues, organs, and systems all working together
- boil, bacterial infection of hair follicle; also called *furuncle*
- Body (of uterus), 292
- Body cavities, 46–49
- abdominopelvic, 46–49
- cranial, 46
- dorsal, 46
- pleural, 47, 199
- spinal, 46
- thoracic, 46, 47, 194
- ventral, 46
- viscera, 46
- Body organization, levels of, 34–36
- Body position, prefixes indicating, 27
- Body regions
- abdominal, 42
- antecubital, 42
- axillary, 42
- brachial, 42
- cervical, 42
- cranial, 42
- femoral, 42
- genital, 42
- gluteal, 42
- inguinal, 42
- lower extremities, 42
- nasal, 42
- oral, 42
- orbital, 42
- otic, 42
- palmar, 42
- patellar, 42
- pelvic, 42
- plantar, 42
- popliteal, 42
- scapular, 42
- sternal, 42
- thoracic, 42
- trunk, 42
- umbilical, 42
- upper extremities, 42
- vertebral, 42
- Boil**, bacterial infection of hair follicle; also called *furuncle*, 63
- Bone**, type of connective tissue and organ of musculoskeletal system; provides support for body and serves as site of muscle attachment; plural is bones
- Bone density testing** (BDT), another name for *dual-energy absorptiometry* (DEXA, DXA), 104, 106
- Bone graft**, piece of bone taken from patient and used to replace removed bone or bony defect at another site, 104
- Bone marrow, 94
- Bone marrow aspiration** (*as-pih-RAY-shun*), removing a sample of bone marrow by syringe for microscopic examination; useful for diagnosing such diseases as leukemia, 157
- Bone marrow transplant** (BMT), patient receives red bone marrow from donor after patient's own bone marrow has been destroyed by radiation or chemotherapy, 158, 159
- Bone scan**, patient is given radioactive material and then scanning equipment is used to visualize bones; especially useful in observing progress of treatment for osteomyelitis and cancer metastases to bone, 103
- Bones**, plural of *bone*, 83, 95
- Bowel movement (BM), 242
- Bowel sounds (BS), 242
- Brachial** (*BRAY-kee-al*), pertaining to arm
- Brachial region, 42
- brachi/o + -al, 43
- Bradycardia** (*brad-ee-KAR-dee-ah*), abnormally slow heart rate, below 60 bpm, 128
- Bradykinesia** (*brad-ee-kih-NEE-zee-ah*), slow movement
- Bradypnea** (*brad-ee-PEP-see-ah*), slow digestion rate
- Bradypnea** (*brad-ip-NEE-ah*), slow breathing
- Brain**, one of largest organs in body; coordinates most body activities; center for all thought, memory, judgment, and emotion; each part of brain responsible for controlling different body functions, such as temperature regulation and breathing; four sections of brain are cerebrum, cerebellum, diencephalon, and brainstem; plural is *brains*, 316, 318, 319
- Brains**, plural of *brain*
- Brainstem**, area of brain including three components: medulla oblongata, pons, and midbrain; pathway for impulses to be conducted between brain and spinal cord; contains centers that control respiration, heart rate, and blood pressure; origin point for twelve pairs of cranial nerves, 319

**Brain tumor**, intracranial mass, either benign or malignant; most common brain tumor is *astrocytoma* (*ass-troh-sigh-TOH-mah*), 325

**Breast**, one of two milk-producing organs that provide nutrition for newborn; plural is *breasts*; also called *mammary gland*, 286, 293, 294

**Breast bone**, common name for *sternum*

**Breast cancer**, malignant tumor of breast; usually forms in milk-producing gland tissue or lining of milk ducts, 297

Breast self-examination (BSE), 304

**Breasts**, plural of *breast*

Breath sounds (BS), 212

Breathing, 200, 201

**Breech birth**, generally, top of baby's head (called *crown*) appears first in vagina during birth; if fetus positioned so that another body part, such as buttocks, shoulder, feet or forehead, appears first, this is called *breech presentation*; if fetus cannot be turned and breech birth continues, complications may occur, 298

Breech presentation, 298

**Bronchi** (*BRONG-kye*), plural of *bronchus*, 193, 195

**Bronchial** (*BRONG-kee-ah*), pertaining to bronchi

Bronchial tree, 202

**Bronchiectasis** (*brong-kee-EK-tah-sis*), stretched out or dilated bronchi

bronchi/o, 196

**Bronchiolar** (*brong-kee-OH-lar*), pertaining to bronchioles

**Bronchiolectasis** (*brong-kee-oh-LEK-tah-sis*), stretched out or dilated bronchioles

**Bronchiole** (*BRONG-kee-ohl*), one of narrowest air tubes in lungs; each terminates in tiny air sacs called *alveoli*; plural is *bronchioles*

**Bronchioles** (*BRONG-kee-ohlz*), plural of *bronchiole*, 197

bronchiol/o, 197

**Bronchitis** (*brong-KYE-tis*), inflammation of bronchi

bronch/o, 195

**Bronchodilator** (*BRONG-koh-dye-lay-ter*), medication that dilates bronchi to improve breathing, 210

**Bronchogenic** (*brong-koh-JEN-ik*), originating in bronchi

**Bronchogenic carcinoma** (*brong-koh-JEN-ik/kar-sih-NOH-mah*), malignant lung tumor originating in bronchi, 204

**Bronchogram** (*BRONG-koh-gram*), X-ray record of lungs and bronchial tubes

**Bronchography** (*brong-KOG-rah-fee*), process of taking X-ray of lung after radiopaque substance placed into trachea or bronchial tree

**Bronchoscope** (*BRONG-koh-skohp*), instrument to view inside bronchus

**Bronchoscopy** (Bronch) (*brong-KOSS-koh-pee*), using bronchoscope to visualize bronchi, 212

**Bronchospasm** (*BRONG-koh-spazm*), involuntary muscle spasm in bronchi

**Bronchus** (*BRONG-kus*), distal end of trachea splits into left and right main bronchi as it enters each lung; each main bronchus subdivided into smaller branches; smallest bronchi are bronchioles;

each bronchiole ends in tiny air sacs called *alveoli*; plural is bronchi

**Bruise**, common name for skin *hematoma*, 64, 155

**Bulbourethral gland** (*buhl-boh-yoo-REE-thral*), two small male reproductive system glands located on either side of urethra just distal to prostate; secrete substance that neutralizes acidity in urethra and vagina; also called *Cowper gland*, 254

**Bunion** (*BUN-yun*), inflammation and enlargement of bursa of first metatarsophalangeal joint (base of big toe), 98

**Burn, first-degree** (1st degree), mild burn damaging epidermis only; results in erythema but no blisters; generally, there is no scarring; also called *superficial burn*

**Burn, fourth-degree** (4th degree), burn damage past subcutaneous layer and into underlying tissue, muscle, bone, and tendons

**Burn, second-degree** (2nd degree), burn damage extending through epidermis and into dermis, causing blisters to form; scarring may occur; also called *partial-thickness burn*

**Burn, third-degree** (3rd degree), burn damage to full thickness of skin and into underlying tissues; infection and fluid loss are major concerns; usually requires skin grafts to cover burned areas; scarring will occur; also called *full-thickness burn*

Burns

first-degree, 63–64

second-degree, 63–64

third-degree, 63–64

**Bursa** (*BER-sah*), saclike connective tissue structure found in some joints; protects moving parts from friction; common locations are elbow, knee, and shoulder joints; plural is *bursae*

**Bursae** (*BER-see*), plural of *bursa*, 89

**Bursal** (*BER-sal*), pertaining to bursa

**Bursectomy** (*ber-SEK-toh-mee*), surgical removal of bursa

**Bursitis** (*ber-SIGH-tis*), inflammation of bursa

burs/o, 89

## C

**Calcitonin** (*kal-sih-TOH-nin*), hormone secreted by thyroid gland; stimulates deposition of calcium into bone, 352

**Calcium** (*KAL-see-um*), electrolyte necessary for proper function of body; major component of bone; necessary for muscle contraction and nerve function, 106, 346

calc/o, 346

**Calculus** (*KAL-kyoo-lus*), stone formed within organ by accumulation of mineral salts; found in kidney, renal pelvis, ureters, bladder, or urethra; plural is *calculi*; commonly called a *stone*, 259, 267

**Cancellous bone** (*KAN-sel-us*), another name for *spongy bone*

Cannula, 211, 408

**Capillaries**, plural of *capillary*, 118, 120

comparative structure of, 120

**Capillary** (*KAP-ih-lair-ee*), smallest blood or lymphatic vessels; blood capillaries are very thin to allow gas, nutrient, and waste exchange between blood and tissues; lymph capillaries collect lymph fluid from tissues and carry it to larger lymph vessels; plural is *capillaries*

-capnia, 197

**Carbon dioxide** (CO<sub>2</sub>), waste product of cellular energy production; removed from cells by blood and eliminated from body by lungs, 193, 212

Carbon dioxide condition, 197

**Cardiac** (*KAR-dee-ak*), pertaining to heart

**Cardiac arrest** (*KAR-dee-ak*), when heart stops beating and circulation ceases, 128

**Cardiac biomarkers** (*KAR-dee-ak*), complex proteins released by heart muscle when damaged; taken by blood sample to determine amount of heart disease or damage; most common types are *creatine kinase* (CK), and *troponin*, 131

**Cardiac catheterization** (*KAR-dee-ak/kath-ehter-ih-ZAY-shun*), passage of thin tube (catheter) through arm vein and blood vessel leading into heart; performed to detect abnormalities, to collect cardiac blood samples, and to determine pressure within cardiac area, 132, 137

**Cardiac muscle** (*KAR-dee-ak*), involuntary muscle found in heart, 83, 93

Cardiac ultrasonography, 132

cardi/o, 123

**Cardiodynia** (*kar-dee-oh-DIN-ee-ah*), heart pain, 14

**Cardiologist** (*kar-dee-ALL-oh-jist*), physician specializing in treating diseases and conditions of cardiovascular system, 118

**Cardiology** (*kar-dee-ALL-oh-jee*), branch of medicine specializing in conditions of cardiovascular system, 2, 14, 117–147

abbreviations, 136–137

case study, 137–138

combining forms, 118, 121–127

description of, 118

organs treated in, 119–120

prefixes, 119

suffixes, 118–119

vocabulary, 128–136

**Cardiomegaly** (*kar-dee-oh-MEG-ah-lee*), abnormally enlarged heart, 14

**Cardiomyopathy** (*kar-dee-oh-my-OP-ah-thee*), general term for disease of myocardium that may be caused by alcohol abuse, parasites, viral infection, and congestive heart failure

**Cardiopulmonary resuscitation** (CPR) (*kar-deeoh-PULL-mon-air-ee-ree-suss-ih-TAY-shun*), applying external compressions to sternum and rescue breathing in order to maintain blood flow and air movement in and out of lungs during cardiac and respiratory arrest, 134, 137, 210, 212

**Cardiovascular** (*kar-dee-oh-VAS-kyoo-lar*), pertaining to heart and blood vessels, 137

**Cardiovascular system** (*kar-dee-oh-VAS-kyoolar*), transports blood to all areas of body; organs include heart and blood vessels (arteries, veins,

and capillaries); also called circulatory system, 118. *See also* Cardiology

**Cardiovascular technologist** (*kar-dee-oh-VASkyoo-lar*), allied health professional who works alongside cardiologist; performs or assists in variety of diagnostic and therapeutic procedures including electrocardiography, echocardiography, exercise stress testing, and cardiac catheterization carotid pulse, pulse taken at neck, 118

Cardioversion, 135

Carditis, 30

**Carotid pulse**, pulse taken at neck, 133

**Carpal** (*KAR-pal*), pertaining to wrist; plural is *carpals*

**Carpals** (*KAR-pals*), plural of *carpal*

**Carpal tunnel syndrome** (CTS) (*KAR-pal*), painful disorder of wrist and hand, induced by compression of median nerve as it passes under ligaments on palm side of wrist; symptoms include weakness, pain, burning, tingling, and aching in forearm, wrist, and hand, 98, 106

**Carpus** (*KAR-pus*), bones of wrist in upper extremity

**Cartilage** (*KAR-tih-lij*), strong, flexible connective tissue found in several locations in body, such as covering ends of bones in synovial joint, nasal septum, external ear, eustachian tube, larynx, trachea, bronchi, and intervertebral disks, 90

**Cartilaginous joint** (*kar-tih-LAJ-ih-nus*), type of joint in which bones are held firmly in place by solid piece of cartilage; allows only slight movement; example is pubic symphysis, 86

Case studies

- cardiology, 106–107
- dermatology, 72–73
- endocrinology, 357–358
- gastroenterology, 242–244
- hematology, 159–160
- immunology, 182–183
- neurology, 332–333
- obstetrics and gynecology, 305–306
- ophthalmology, 385–386
- orthopedics, 106–108
- otorhinolaryngology, 409–411
- pulmonology, 213–214
- urology and nephrology, 274–276

**Cataract** (*KAT-ah-rakt*), diminished vision resulting from lens of eye becoming opaque or cloudy; treatment is usually surgical removal of cataract, 378

Catheter, 273

Catheterization (cath), 137, 274

Caudal direction, 40

**Caudal** (*KAWD-al*), directional term meaning toward feet or tail, or below

caud/o + -al, 40

**Cauterization** (*kaw-ter-ih-ZAY-shun*), destruction of tissue using electric current, caustic product, or by heating or freezing, 70

Cavities. *See* Body cavities

**Cecum** (*SEE-kum*), first portion of colon; blind pouch off beginning of large intestine; appendix grows out of end of cecum, 224, 228

-cele, 318

**Celiac disease** (*SEE-lee-ak*), autoimmune condition affecting small intestine; caused by reaction to eating gluten (protein found in wheat, rye, and barley); symptoms may include abdominal bloating and pain, diarrhea, and nutritional deficiencies, 235

**Cell**, basic unit of all living things; composes all tissues and organs in body; plural is *cells*

**Cells**, plural of cell, 151

Cellular, 30

**Cellulitis** (*sell-yoo-LYE-tis*), inflammation of cellular or connective tissues, 64

**Central nervous system** (CNS), portion of nervous system consisting of brain and spinal cord, 316, 331

**Cephalalgia** (*self-al-AL-jee-ah*), pain affecting head, face, or neck; may be result of tension, stress, dehydration, squinting in bright lights or may be something more serious such as brain tumor, infection, or trauma; commonly referred to as *headache*, 325

**Cephalic** (*seh-FAL-ik*), directional term meaning toward head

Cephalic direction, 40

cephal/o + -ic, 40

**Cerebella** (*sair-eh-BELL-uh*), plural of *cerebellum*

**Cerebellar** (*sair-eh-BELL-ar*), pertaining to cerebellum

**Cerebellitis** (*sair-eh-bell-EYE-tis*), inflammation of cerebellum

cerebell/o, 318

**Cerebellum** (*sair-eh-BELL-um*), second largest portion of brain; aids in coordinating voluntary body movements and maintaining balance and equilibrium; plural is *cerebella* or *cerebellums*, 318, 319

**Cerebellums** (*sair-eh-BELL-umz*), plural of *cerebellum*

**Cerebral aneurysm** (*AN-yoo-rizm*), abnormal widening of cerebral blood vessel resulting from weakened blood vessel wall; usually an artery, 325

**Cerebral angiography** (*seh-REE-bral/an-jee-OG-rah-fee*), diagnostic X-ray of blood vessels of brain after injection of radiopaque dye, 329

**Cerebral contusion** (*seh-REE-bral/kon-TOOzhun*), bruising of brain from blow or impact; symptoms last longer than 24 hours and include unconsciousness, dizziness, vomiting, unequal pupil size, and shock, 325

**Cerebral cortex** (*seh-REE-bral/KOR-teks*), highly convoluted layer of gray matter on surface of cerebrum, 319

**Cerebral palsy** (CP) (*seh-REE-bral/PAWL-zee*), group of disabilities caused by injury to brain either before or during birth or very early in infancy, 325, 331

**Cerebral** (*seh-REE-bral*), pertaining to cerebrum

**Cerebra** (*seh-REE-bruh*), plural of *cerebrum*

**Cerebritis** (*sair-eh-BRY-tis*), inflammation of cerebrum

cerebr/o, 319

**Cerebrosclerosis** (*sair-eh-broh-skleh-ROH-sis*), hardening of cerebrum

**Cerebrospinal fluid** (CSF) analysis (*seh-ree-broh-SPY-nal*), laboratory examination of clear, watery, colorless fluid from within brain and spinal cord, 329, 331

**Cerebrospinal** (*seh-ree-broh-SPY-nal*), pertaining to cerebrum and spine

**Cerebrotomy** (*sair-eh-BROT-oh-mee*), cutting into cerebrum

**Cerebrovascular** (*seh-ree-broh-VAS-kyoo-lar*), pertaining to cerebrum and blood vessels

**Cerebrovascular accident** (CVA) (*seh-ree-broh-VAS-kyoo-lar/AK-sih-dent*), development of brain infarct due to loss in blood supply to brain; may be caused by ruptured blood vessel (hemorrhage), floating clot (embolus), stationary clot (thrombosis), or compression; extent of damage depends on size and location of infarct and may include speech problems and muscle paralysis; commonly called *stroke*, 326, 331

Cerebrovascular disease (CVD), 331

**Cerebrum** (*seh-REE-brum*), largest part of brain; receives sensory information and sends motor commands; also responsible for memory, problem solving, and language; divided into frontal, parietal, temporal, and occipital lobes; plural is *cerebra* or *cerebrums*, 319

**Cerebrums** (*seh-REE-brumz*), plural of *cerebrum*

**Cervical** (*SER-vih-kal*), pertaining to neck or cervix

**Cervical cancer** (*SER-vih-kal*), malignant growth in cervix, 298

Cervical lymph nodes, 174

Cervical region, 43

Cervical vertebra (C1, C2, etc.), 106

**Cervicectomy** (*ser-vih-SEK-toh-mee*), surgical removal of cervix

**Cervices** (*SER-vi-seez*), plural of *cervix*

**Cervicitis** (*ser-vih-SIGH-tis*), inflammation of cervix

cervic/o, 289

cervic/o + -al, 43

**Cervicoplasty** (*SER-vih-koh-plas-tee*), surgical repair of cervix

**Cervix** (*SER-viks*), narrow, distal portion of uterus; opens into vagina to allow passage of menstrual fluids; dilates during labor to allow birth of baby; plural is *cervices*; also called *neck of uterus*, 289, 292, 304

**Cesarean section** (CS, C-section) (*seh-SAIRee-an*), surgical delivery of baby through incision into abdominal and uterine walls, 303, 304

**Chemabrasion** (*kee-mah-BRAY-zhun*), abrasion using chemicals; also called *chemical peel*, 70

**Chemical peel**, another term for *chemabrasion*, 70

**Chemical stress test**, cardiac stress test performed after patient is given medication to dilate blood vessels and increase heart rate and blood pressure, 133



Chest, 125, 201–202  
 Chest pain (CP), 137  
**Chest X-ray** (CXR), radiographic image of heart and lungs; may be anterior view, posterior view, or lateral view, 208, 212  
**Chickenpox**, common name for *varicella*, 69  
 Childbirth, 296  
**Chlamydia** (*klah-MID-ee-ah*), parasitic micro-organism causing genital infections in males and females; can lead to pelvic inflammatory disease in females and eventual infertility, 267  
 cholangi/o, 227  
**Cholangiogram** (*koh-LAN-jee-oh-gram*), X-ray record of bile duct  
**Cholangiography** (*koh-lan-jee-OG-rah-fee*), process of making X-ray of bile ducts after injecting a radiopaque dye  
 chol/e, 226  
**Cholecystectomy** (*koh-lee-sis-TEK-toh-mee*), surgical removal of gallbladder  
**Cholecystitis** (*koh-lee-sis-TYE-tis*), inflammation of gallbladder  
 cholecyst/o, 227  
**Cholecystogram** (*koh-lee-SIS-toh-gram*), X-ray record of gallbladder  
**Cholecystography** (*koh-lee-sis-TOG-rah-fee*), process of making X-ray of gallbladder after injecting radiopaque material  
 choledoch/o, 227  
**Choledocholithiasis** (*koh-LED-oh-koh-lith-eye-ah-sis*), condition of stones in common bile duct  
**Choledocholithotripsy** (*koh-led-oh-koh-LITH-oh-trip-see*), crushing of gallstone in common bile duct  
**Cholelithiasis** (*koh-lee-lih-THIGH-ah-sis*), condition of gallstones  
**Cholelithotripsy** (*koh-lee-LITH-oh-trip-see*), crushing of gallstones  
**Chondral** (*KON-dral*), pertaining to cartilage  
**Chondrectomy** (*kon-DREK-toh-mee*), surgical removal of cartilage  
**Chondritis** (*kon-DRY-tis*), inflammation of cartilage  
 chondr/o, 90  
**Chondroma** (*kon-DROH-mah*), cartilage tumor  
**Chondromalacia** (*kon-droh-mah-LAY-shee-ah*), softening of cartilage  
**Chondroplasty** (*KON-droh-plas-tee*), surgical repair of cartilage  
 chori/o, 289  
**Choriocarcinoma** (*KOR-ee-oh-kar-sih-noh-mah*), cancerous tumor of chorion  
**Chorion** (*KOR-ee-on*), outer of two membranous sacs surrounding fetus; helps to form placenta, 289  
**Chorionic** (*kor-ee-ON-ik*), pertaining to chorion  
**Chorionic villus sampling** (CVS) (*kor-ee-ON-ik/VILL-us*), removal of small piece of chorion for genetic analysis; may be done at earlier stage of pregnancy than amniocentesis, 302, 304  
**Choroidal** (*kor-OYD-al*), pertaining to choroid  
**Choroiditis** (*kor-oy-DYE-tis*), inflammation of choroid

**Choroid layer** (*KOR-oyd*), middle layer of eyeball; provides blood supply for eye; plural is *choroid layers*, 372  
**Choroid layers** (*KOR-oyd*), plural for *choroid layer*  
 choroid/o, 372  
**Chronic obstructive lung disease**, another term for *chronic obstructive pulmonary disease*, 204, 212  
**Chronic obstructive pulmonary disease** (COPD) (*PULL-mon-air-ee*), progressive, chronic, and usually irreversible condition in which airflow to and from lungs is decreased; patient may have difficulty breathing on exertion (dyspnea) and a cough; also called *chronic obstructive lung disease* (COLD), 204, 212  
 Chronic renal failure (CRF), 269, 274  
**Chronic traumatic encephalopathy** (CTE) (*en-seff-ah-LOP-ah-thee*), condition characterized by severe blow or repeated less-severe blows to head resulting in progressive degeneration of brain tissue; identified in athletes of contact sports, 326, 331  
 Chronic ulcerative colitis (CUC), 242  
**Chyme** (*KIME*), semisoft mixture of food and digestive fluids that pass from stomach into small intestine, 231  
**Cicatrix** (*SIK-ah-triks*), a scar, 64  
**Cilia** (*SIL-ee-ah*), term for eyelashes that protect eye from foreign particles or for nasal hairs that help filter dust and bacteria out of inhaled air, 371  
 Ciliary, 371  
**Ciliary bodies**, plural of *ciliary body*  
**Ciliary body** (*SIL-ee-air-ee*), intraocular eye muscles that change shape of lens; plural is *ciliary bodies*, 373  
**Circulatory system**, another term for *cardiovascular system*  
**Circumcision** (*ser-kum-SIH-zhun*), surgical removal of end of prepuce or foreskin of penis, 272  
**Cirrhosis** (*sih-ROH-sis*), chronic disease of liver, 235  
**Clavicle** (*KLAV-ih-kl*), bone of pectoral girdle; commonly called *collar bone*  
**Clavicular** (*klah-VIK-yoo-lar*), pertaining to clavicle  
**Clean catch specimen**, urine sample obtained after cleaning off urinary opening and catching or collecting sample in midstream (halfway through urination process) to minimize contamination from genitali, 270  
 Clear to auscultation (CTA), 212  
**Clinical divisions of abdominopelvic cavity**, method of dividing abdominopelvic cavity into four quadrants, 47  
**Clinical laboratory scientists/technicians**, another term for *medical laboratory scientists/technicians*, 149  
**Clitoris** (*KLIT-oh-ris*), small organ containing erectile tissue covered by labia minora; contains sensitive tissue aroused during sexual stimulation and similar to penis in male, 291  
**Closed fracture**, bone fracture with no open skin wound; also called *simple fracture*, 98

**Closed reduction**, realignment of fractured bone without surgically cutting into body, 105  
 Clostridium difficile (C. diff), 178  
**Clostridium difficile infection** (*klaw-STRIH-dee-um/dif-ee-SEEL*), bacterial contamination of colon; symptoms include diarrhea, nausea, fever, and abdominal pain; most commonly occurs in persons requiring extended periods of antibiotic use, 178  
 Clot, 154  
**Clot-busters**, common name for *intravascular thrombolytic therapy*, 135  
**Coagulate** (*koh-AG-yoo-layt*), convert liquid to gel or solid, as in blood coagulation, 155  
**Coccygeal** (*kok-SIH-jee-al*), pertaining to coccyx  
**Coccyx** (*KOK-siks*), three to five very small vertebrae attached to sacrum; often become fused; commonly called *tailbone*, 91  
**Cochlea** (*KOH-klee-ah*), portion of inner ear associated with hearing; rolled in shape of snail shell; plural is *cochleae* or *cochleas*  
**Cochleae** (*KOH-klee-ee*), plural of *cochlea*, 398, 399, 407  
**Cochlear** (*KOH-klee-ar*), pertaining to cochlea  
**Cochlear implant** (*KOH-klee-ar*), mechanical device surgically placed under skin behind outer ear; converts sound signals into magnetic impulses to stimulate auditory nerve, 407  
**Cochlear nerve** (*KOH-klee-ar*), eighth cranial nerve, carries hearing and balance information from inner ear to brain, 398  
**Cochleas** (*KOH-klee-uhz*), plural of *cochlea*  
**Cochleitis** (*koh-klee-EYE-tis*), inflammation of cochlea  
 cochle/o, 399  
 Coitus, 260  
 COLD (Chronic obstructive lung disease), 204  
**Cold sore**, common name for *herpes labialis*, 65  
**Colitis** (*koh-LYE-tis*), inflammation of colon  
**Collar bone**, common name for *clavicle*  
 col/o, 228  
**Colon** (*KOH-lon*), functions to reabsorb most of fluid in digested food; material that remains after water reabsorption is feces; sections include ascending colon, transverse colon, descending colon, and sigmoid colon; term *large intestine* includes cecum, appendix, colon, rectum, and anus, 224, 228  
**Colonic** (*koh-LON-ik*), pertaining to colon  
 colon/o, 228  
**Colonoscope** (*koh-LON-oh-skohp*), instrument to view inside colon  
**Colonoscopy** (*koh-lon-OSS-koh-pee*), flexible fiberscope passed through anus, rectum, and colon used to examine upper portion of colon  
**Colorectal** (*kohl-oh-REK-tal*), pertaining to colon and rectum  
**Colorectal cancer** (*kohl-oh-REK-tal*), cancerous tumor originating in lining of colon or rectum, 235  
**Color vision tests**, use of polychromatic (multicolored) charts to determine ability of patient to recognize color, 382

- Colostomy** (*koh-LOSS-toh-mee*), surgical creation of opening in some portion of colon through abdominal wall to outside surface; fecal material (stool) drains into bag worn on abdomen
- Colpectomy** (*kall-PEK-toh-mee*), surgical removal of vagina
- colp/o, 290
- Colporrhaphy** (*kall-POR-ah-fee*), surgical procedure to repair defect in wall of vagina
- Colposcope** (*KALL-poh-skohp*), instrument to view inside vagina
- Colposcopy** (*kall-POSS-koh-pee*), visual examination of cervix and vagina using colposcope
- Coma** (*KOH-mah*), profound unconsciousness resulting from illness or injury, 326
- Combining form**, word root plus combining vowel; always written with a “/” between word root and combining vowel; for example, in combining form *cardi/o*, *cardi* is word root and *o* is combining vowel
- anatomical, 34
- in cardiology, 118–127
- defined, 4–5
- in dermatology, 55, 57–62
- in endocrinology, 343, 345–352
- in gastroenterology, 224, 226–234
- in hematology, 149–154
- in immunology, 170–177
- in neurology, 316, 318–324
- in obstetrics and gynecology, 286, 288–297
- in ophthalmology, 369, 371–377
- in orthopedics, 83–84, 87–97
- in otorhinolaryngology, 395, 397–405
- in pulmonology, 193, 195–203
- in urology and nephrology, 254, 256–266
- Combining vowel**, inserted between word parts that makes it possible to pronounce long medical terms; usually vowel *o*, 4
- Comminuted, 99
- Comminuted fracture** (*koh-ih-NYOOT-ed*), break where bone is shattered, splintered, or crushed into many pieces or fragments, 99
- Common bile duct**, carries bile from gallbladder to duodenum, 226, 227, 242
- Compact bone**, dense, hard bone tissue that forms exterior surface of bones; also called *cortical bone*, 96
- Complete blood count** (CBC), blood test consisting of five components; red blood cell count (RBC), white blood cell count (WBC), hemoglobin (Hb), hematocrit (Hct), white blood cell differential, and platelet count, 157, 159
- Compound fracture**, bone break in which bone pushes through skin; also called *open fracture*, 99
- Comprehensive metabolic panel** (CMP), group of 14 blood tests providing information about body's blood counts, metabolism, chemical balance, kidney function, and liver function, 157
- Compression fracture**, bone break involving loss of height of vertebral body, 99
- Computed tomography** (CT scan) (*toh-MOG-rah-fee*), diagnostic imaging technique producing cross-sectional view of body; X-rays taken from multiple angles compiled by computer to construct composite cross-sectional view of body, 329, 331
- Concussion** (*kon-KUSH-un*), injury to brain resulting from blow or impact from object; can result in unconsciousness, dizziness, vomiting, unequal pupil size, and shock, 326
- Cones**, sensory receptors of retina active in bright light and see in color, 376
- Congenital, 129
- Congenital anomaly** (*kon-JEN-ih-tal/ah-NOM-ah-lee*), any abnormality in structure or function of any organ that occurred during gestation, meaning present at birth; also called *birth defect*, 290, 298
- Congenital hypothyroidism** (*high-poh-THIGH-royd-izm*), condition present at birth resulting in lack of thyroid hormones; results in poor physical and mental development, 353
- Congenital septal defect** (CSD) (*kon-JEN-ih-tal*), present at birth, in wall separating two chambers of heart; results in mixture of oxygenated and deoxygenated blood being carried to surrounding tissues; can be atrial septal defect (ASD) and ventricular septal defect (VSD), 129, 137
- Congestive heart disease (CHD), 137
- Congestive heart failure** (CHF) (*kon-JESS-tiv*), pathological condition of heart with reduced outflow of blood from left side of heart; results in weakness, breathlessness, and edema, 129, 137
- Conization** (*kon-ih-ZAY-shun*), surgical removal of core of cervical tissue, 302
- Conjunctiva** (*kon-junk-TYE-vah*), protective mucous membrane lining on underside of each eyelid and across anterior surface of each eyeball; plural is *conjunctivae* or *conjunctivas*
- Conjunctivae** (*kon-junk-TYE-vee*), plural of *conjunctiva*
- Conjunctival** (*kon-junk-TYE-val*), pertaining to conjunctiva
- Conjunctivas** (*kon-junk-TYE-vuhz*), plural of *conjunctiva*, 369, 372
- Conjunctivitis** (*kon-junk-tih-VYE-tis*), inflammation of conjunctiva; commonly called *pinkeye*
- conjunctiv/o, 372
- Constipation** (*kon-stih-PAY-shun*), difficulty passing a bowel movement (BM) or infrequent bowel movements, 235
- Continuous positive airway pressure** (CPAP), constant and steady air pressure provided through mask by machine; keeps airways continuously open; common treatment for sleep apnea, 210, 212
- Contracture** (*kon-TRAK-chur*), abnormal shortening of muscle, making it difficult to stretch muscle, 99
- Contusion** (*kon-TOO-zhun*), blunt trauma to skin resulting in bruising but no break in skin, 63, 64, 325
- Convulsion** (*kon-VUL-shun*), severe, involuntary, alternating muscle contractions and relaxations; has variety of causes, such as epilepsy, fever, and toxic conditions, 326
- core/o, 372
- Coreometer** (*koh-ree-OM-eh-ter*), instrument to measure pupil
- Coreometry** (*koh-ree-OM-eh-tree*), process of measuring pupil
- Cornea** (*KOR-nee-ah*), portion of sclera that is clear and transparent and allows light to enter interior of eye; also plays role in bending light rays; plural is *corneas*, 369, 373, 374
- Corneal** (*KOR-nee-al*), pertaining to cornea
- Corneal abrasion** (*KOR-nee-al*), scraping injury to cornea; if it does not heal, may develop into ulcer, 379
- Corneal transplant** (*KOR-nee-al*), surgical replacement of damaged cornea with healthy donor cornea, 383
- Corneas** (*KOR-nee-uhz*), plural of *cornea*
- corne/o, 373
- Corneoscleral** (*KOR-nee-oh-sklayr-al*), pertaining to cornea and sclera
- Coronal (frontal) plane, 37
- Coronal plane** (*koh-ROHN-al*), vertical division that separates body into front (anterior or ventral) and back (posterior or dorsal) sections; also called *frontal plane*
- Coronal section** (*koh-ROHN-al*), view of body produced by cut along frontal plane; also called *frontal section*
- Coronal (frontal) section, 37–38
- Coronary** (*KOR-ah-nair-ee*), pertaining to heart, 124
- Coronary artery bypass graft** (CABG) (*KOR-ah-nair-ee*), open-heart surgery in which blood vessel is grafted to route blood around point of constriction in a diseased coronary artery, 134, 137
- Coronary artery disease** (CAD) (*KOR-ah-nair-ee*), insufficient blood supply to heart muscle due to obstruction of one or more coronary arteries; may be caused by atherosclerosis and may cause angina pectoris and myocardial infarction; also called *arteriosclerotic heart disease*, 129, 137
- Coronary care unit (CCU), 137
- Coronavirus disease** (COVID-19), highly infectious, potentially fatal respiratory infection; caused by *severe acute respiratory syndrome coronavirus 2* (SARS-CoV-2); symptoms include fever, cough, and dyspnea; may be mild or life-threatening, 204
- coron/o, 124
- Corpus albicans** (*KOR-pus/AL-bih-kanz*), scar-like remains of corpus luteum; forms at end of menstrual cycle, 295
- Corpus luteum** (*KOR-pus/LOO-tee-um*), follicle left behind after it ruptures to release ovum at ovulation; secretes estrogen and progesterone, 295, 347
- Correction with glasses (c.gl.), 384
- Cortex, 345
- Cortical bone** (*KOR-tih-kal*), another name for *compact bone*
- Corticosteroids** (*kor-tih-koh-STAIR-oydz*), general term for group of hormones secreted by adrenal cortex; includes mineralocorticoid hormones,

glucocorticoid hormones, and steroid sex hormones; used as medication for its strong anti-inflammatory properties, 181, 355

**Cortisol** (*KOR-tih-zawl*), steroid hormone secreted by adrenal cortex; regulates carbohydrate metabolism, 345

**Cosmetic surgery**, procedure performed to enhance or reshape structures to improve their appearance, 55

**Costal** (*KOSS-tal*), pertaining to ribs

**Cowper gland** (*KOW-perz*), another name for *bulbourethral gland*

**Crackles**, abnormal rattling or crackling sound made during inhalation; caused by mucus or fluid in airway; also called *rales*, 204

**Cranial cavity** (*KRAY-nee-al*), located on dorsal side of body; within skull and contains brain, 46

**Cranial nerves** (*KRAY-nee-al*), 12 pairs of peripheral nerves that arise from brain, 322

**Cranial** (*KRAY-nee-al*), pertaining to skull

Cranial region, 43

**Crania** (*KRAY-nee-ah*), plural of *cranium*

crani/o, 90

crani/o +-al, 43

**Craniotomy** (*kray-nee-OT-oh-mee*), incision into skull

**Cranium** (*KRAY-nee-um*), protects brain and serves as attachment for facial and chewing muscles; plural is *crania*; also called *skull*, 90

**Creatine kinase** (CK) (*KREE-ah-teen/KYE-nase*), cardiac biomarker; muscle enzyme found in skeletal muscle and cardiac muscle; blood test becomes elevated in disorders such as heart attack, muscular dystrophy, and other skeletal muscle pathologies, 106, 131, 137

Crick in the neck, 103

crin/o, 346

**Crohn disease** (*KROHN*), form of chronic inflammatory bowel illness affecting ileum and/or colon; also called *regional ileitis*, 236

**Cross-eyed**, common name for *strabismus*, 381

**Cross-section**, internal view of body produced by slice perpendicular to long axis of structure, 38

**Croup** (*KROOP*), acute viral respiratory infection common in infants and young children and characterized by hoarse cough, 204, 405

Crown, 298

**Cryoretinopexy** (*kry-oh-ret-ih-noh-PEK-see*), surgical fixation of retina with cold

**Cryosurgery** (*kry-oh-SER-jer-ee*), exposing tissues to extreme cold in order to destroy them; used in treating malignant tumors and to control pain and bleeding, 70

**Cryptorchidism** (*krip-TOR-kih-dizm*), congenital anomaly involving failure of one or both testes to descend into scrotal sac before birth; surgical procedure called *orchiopexy* may be required to bring testes down into scrotum permanently; commonly called *undescended testicle*, 268

Culture, 156

**Culture and sensitivity** (C&S), laboratory test in which colony of pathogens removed from infected area are grown to identify pathogen

and then determine its sensitivity to variety of antibiotic, 70, 71, 274

Curette, 303

**Cushing syndrome** (*KUSH-ing*), condition resulting from hypersecretion of adrenal cortex; may be product of adrenal gland tumor; symptoms include weakness, edema, excess hair growth, skin discoloration, and osteoporosis, 353

cutane/o, 58

**Cutaneous** (*kyoo-TAY-nee-us*), pertaining to skin

**Cuticle** (*KYOO-tih-kl*), area of skin overlying nail root at base of nail, 61

cyan/o, 197

**Cyanosis** (*sigh-ah-NOH-sis*), slightly bluish color of skin due to deficiency of oxygen and excess of carbon dioxide in blood

cycl/o, 373

**Cycloplegia** (*sigh-kloh-PLÉE-jee-ah*), paralysis of ciliary body

**Cyclotomy** (*sigh-KLOT-oh-mee*), cutting into ciliary body

-cyesis, 290

Cylindrical lens (cyl), 384

**Cystalgia** (*sis-TAL-jee-ah*), bladder pain

**Cystectomy** (*sis-TEK-toh-mee*), surgical removal of bladder

**Cyst** (*SIST*), fluid-filled sac under skin, 64

**Cystic** (*SIS-tik*), pertaining to bladder

**Cystic duct** (*SIS-tik*), leads from gallbladder to common bile duct; carries bile, 231

**Cystic fibrosis** (CF) (*SIS-tik/fye-BROH-sis*), genetic condition that causes patient to produce very thick mucus resulting in severe congestion within lungs and digestive system, 205, 212

**Cystitis** (*sis-TYE-tis*), inflammation of bladder

cyst/o, 257

**Cystocele** (*SIS-toh-seel*), hernia or outpouching of bladder that protrudes into vagina, 298

**Cystogram** (*SIS-toh-gram*), record of bladder

**Cystography** (*sis-TOG-rah-fee*), process of instilling contrast material into bladder by catheter to visualize urinary bladder on X-ray

**Cystolith** (*SIS-toh-lith*), bladder stone

**Cystolithiasis** (*sis-toh-lih-THIGH-ah-sis*), condition of having stones in bladder

**Cystoscope** (*SIS-toh-skohp*), instrument used to visually examine bladder

**Cystoscopy** (*cysto*) (*sis-TOSS-koh-pee*), visual examination of urinary bladder using instrument called cystoscope, 274

**Cystostomy** (*sis-TOSS-toh-mee*), creation of opening through abdominal wall and into bladder

-cyte, 151

-cytosis, 151

**Cytotoxic cells** (*sigh-toh-TOK-sik*), pertaining to poisoning cell, 181

## D

dacry/o, 373

**Dacryoadenitis** (*dak-ree-oh-ad-eh-NYE-tis*), inflammation of tear gland

**Dacryocystitis** (*dak-ree-oh-sis-TYE-tis*), inflammation of tear sac

**Dacryolith** (*DAK-ree-oh-lith*), stone in tear duct

**Dacryorrhea** (*dak-ree-oh-REE-ah*), flow of tears

**Deafness**, inability to hear or having some degree of hearing impairment, 405

**Debridement** (*dih-BREED-mint*), removal of foreign material and dead or damaged tissue from wound, 70

**Decongestant** (*dee-kon-JESS-tant*), substance that reduces nasal congestion and swelling, 407

**Deep**, directional term meaning further below from surface of body

Deep position, 40

**Deep tendon reflexes** (DTR), muscle contraction in response to stretch caused by striking muscle tendon with reflex hammer; test used to determine if muscles are responding properly, 103, 106

**Deep vein thrombosis** (*throm-BOH-sis*), formation of blood clots in vein deep in body; usually occurs in legs; pieces of clot may break away forming *emboli*, 129, 136

**Defibrillation** (*dee-fib-rih-LAY-shun*), procedure that converts serious irregular heartbeats, such as fibrillation, by giving electric shocks to heart, 134

Defibrillator, 135

**Degenerative joint disease** (DJD), another name for *osteoarthritis*, 101, 106

Delayed puberty, 301

**Delirium** (*deh-LEER-ee-um*), abnormal mental state characterized by confusion, disorientation, and agitation, 326

**Dementia** (*deh-MEN-sha*), progressive impairment of intellectual function that interferes with performing activities of daily living; patients have little awareness of their condition; found in disorders such as Alzheimer disease, 326

-derma, 59

**Dermabrasion** (*DERM-ah-bray-zhun*), abrasion or rubbing using wire brushes or sandpaper, 71

**Dermal** (*DER-mal*), pertaining to skin, 30

dermat / itis, 20

**Dermatitis** (*der-mah-TYE-tis*), inflammation of skin

dermat/o, 59

**Dermatologist** (*der-mah-TALL-oh-jist*), physician specialized in diagnosis and treatment of diseases of integumentary system, 55

**Dermatology** (Derm, dermat) (*der-mah-TALL-oh-jee*), branch of medicine specializing in conditions of integumentary system, 54–81

abbreviations, 71

case study, 72–73

combining forms, 55, 57–62

description of, 55

prefixes, 56

structures treated in, 56–57

suffixes, 56

vocabulary, 63–71

**Dermatome** (*DER-mah-tohm*), instrument for cutting skin or thin transplants of skin, 71

**Dermatomycosis** (*der-mah-toh-my-KOH-sis*), fungal infection of skin

**Dermatopathy** (*der-mah-TOP-ah-thee*), general term for skin disease

**Dermatoplasty** (*DER-mah-toh-plas-tee*), surgical repair of skin

**Dermatosis** (*der-mah-TOH-sis*), abnormal condition of skin

**Dermic** (*DER-mik*), pertaining to dermis layer of skin

**Dermis** (*DER-mis*), inner layer of skin; dense connective tissue; houses hair follicles, sweat glands, sebaceous glands, sensory receptors, and blood vessels, 58

derm/o, 59

**Descending colon**, section of large intestine that descends left side of abdomen, 228

**Descending tracts**, columns of white matter nervous tissue carrying motor commands from brain down spinal cord to ventral roots, 321

**Diabetes insipidus** (DI) (*dye-ah-BEE-teez/in-SIP-ih-dus*), disorder caused by inadequate secretion of hormone by posterior lobe of pituitary gland; there may be polyuria and polydipsia, 353, 357

**Diabetes mellitus** (DM) (*dye-ah-BEE-teez/MEL-ih-tus*), serious disease in which pancreas fails to produce insulin or insulin does not work properly; patient has very high blood sugar, 353, 357

**Diabetic acidosis** (*dye-ah-BET-ik/ass-ih-DOH-sis*), another term for *ketoacidosis*, 354

**Diabetic nephropathy** (*dye-ah-BET-ik/neh-FROP-ah-thee*), kidney disease resulting from accumulation of damage to the glomerular capillaries due to chronic high blood sugars of diabetes mellitus, 268

**Diabetic retinopathy** (*dye-ah-BET-ik/ret-ih-NOP-ah-thee*), secondary complication of diabetes affecting blood vessels of retina, resulting in visual changes and even blindness, 397

Diagnostic procedures, suffixes indicating, 16

**Diaphoresis** (*dye-ah-foh-REE-sis*), excessive sweating; often result of medical condition, 64

**Diaphragmatic hernia** (*dye-ah-frag-MAT-ik*), another term for *hiatal hernia*, 237

**Diaphragmatic** (*dye-ah-frag-MAT-ik*), pertaining to diaphragm

diaphragmat/o, 198

**Diaphragm** (*DYE-ah-frag*), major muscle of inspiration; separates thoracic from abdominal cavity, 46, 198

**Diarrhea** (*dye-ah-REE-ah*), passing frequent, watery, or bloody bowel movements, 236

**Diastolic pressure** (*dye-ah-STOL-ik*), pressure in blood vessels while heart is relaxed, 131

**Dietetic Technician**, assists Dietitian Nutritionist, 224

**Dietetics**, science of how diet can be used to prevent or treat disease, 224

**Dietitian Nutritionist**, health care specialist in dietetics; designs individual nutritional plans, develops facility-wide nutrition programs, patient education regarding diet, nutrition, and disease, public education on proper nutritional habits, 224

Differential (diff), 159

Digestion, 232

**Digestive system**, another term for *gastrointestinal system*, 224. See also *Gastroenterology*

**Digital rectal exam** (DRE) (*DIJ-ih-tal/REK-tal*), manual examination for enlarged prostate gland performed by palpating (feeling) prostate gland through wall of rectum, 270, 274

Dilated vein, 126

**Dilation and curettage** (D&C) (*dye-LAY-shun/kyoo-reh-TAHZH*), surgical procedure in which opening of cervix is dilated and uterus is scraped or suctioned of its lining or tissue; often performed after spontaneous abortion and to stop excessive bleeding from other causes, 303, 304

Diopter (lens strength) (D), 384

**Diphtheria** (*dif-THEAR-ee-ah*), bacterial infection of respiratory system characterized by severe inflammation that can form membrane coating in upper respiratory tract that can cause marked difficulty breathing, 405

Diphtheria, pertussis, tetanus (DPT), 406

**Diplegia** (*dye-PLEE-jee-ah*), paralysis of two limbs

**Diplopia** (*dip-LOH-pee-ah*), double vision

Directional terminology, 39–42

anterior, 40

building, 40–42

caudal, 40

cephalic, 40

deep, 40

distal, 40

dorsal, 40

inferior, 40

lateral, 41

medial, 41

midline, 41

posterior, 41

prone position, 41

proximal, 41

superficial, 41

superior, 41

supine position, 41

ventral, 42

Direction, prefixes indicating, 27

**Disease**, an illness, 118

prefixes indicating, 26

suffixes indicating, 14–15

**Dislocation**, occurs when bones in joint are displaced from their normal alignment, 99

**Distal** (*DIS-tal*), directional term meaning located farthest from point of attachment to body

Distal direction, 40

dist/o +-al, 40

**Diuresis** (*dye-yoo-REE-sis*), increased formation and secretion of urine, 268

**Diuretic** (*dye-yoo-RET-ik*), medication used to increase production and secretion of urine and thereby decrease amount of water in body; treatment for kidney failure, edema, heart failure, and hypertension, 272

**Diverticula** (*dye-ver-TIK-yoo-lah*), plural of *diverticulum*, 229

**Diverticulectomy** (*dye-ver-tik-yoo-LEK-toh-mee*), surgical removal of diverticulum

**Diverticulitis** (*dye-ver-tik-yoo-LYE-tis*), inflammation of diverticulum

diverticul/o, 229

**Diverticulosis** (*dye-ver-tik-yoo-LOH-sis*), abnormal condition of having diverticula

**Diverticulum** (*dye-ver-TIK-yoo-lum*), small, abnormal, blind pouch that forms off intestinal or colon wall; plural is *diverticula*, 229

Doctor of medicine (MD), 384

Doctor of optometry (OD), 384

Doctor of osteopathic medicine (DO), 384

**Doppler ultrasonography** (*DOP-ler/ul-trah-NOG-rah-fee*), measurement of sound-wave echoes as they bounce off tissues and organs to produce an image; in cardiovascular system, used to measure velocity of blood moving through blood vessels to look for blood clots; image produced is *ultrasonogram*, 132

Dorsal cavity, 46

Dorsal direction, 40

**Dorsal** (*DOR-sal*), directional term meaning near or on back or spinal cord side of body

**Dorsal roots** (*DOR-sal*), pathway for sensory neurons entering spinal cord carrying sensory information, 321

**Dorsiflexion** (*dor-sih-FLEK-shun*), action of bending (toward) back of body

dors/o +-al, 40

**Down syndrome**, genetic condition in which person has three chromosome 21s (instead of normal two); symptoms may include flattened face, small mouth, decreased muscle tone, and developmental disabilities; there may also be heart, visual, hearing, or gastrointestinal problems; also called *trisomy 21*, 298

**Dual-energy X-ray absorptiometry** (DEXA, DXA) (*ab-sorp-shee-AHM-eh-tree*), measurement of bone density using low dose X-ray for purpose of detecting osteoporosis; also called *bone density testing* (BDT), 104, 106

**Duchenne muscular dystrophy** (*doo-SHEN/MUS-kyoo-lar/DIS-troh-fee*), another name for *pseudohypertrophic muscular dystrophy*, 102

**Duodena**, plural of *duodenum*

**Duodenal** (*doo-oh-DEE-nal* or *doo-OD-eh-nal*), pertaining to duodenum

duoden/o, 229

**Duodenostomy** (*doo-oh-deh-NOSS-teh-mee*), to create opening between duodenum and body wall

**Duodenum** (*doo-oh-DEE-num* or *doo-OD-eh-num*), first section of small intestine; location where digestion is completed after chyme mixes with digestive juices from pancreas and gallbladder; plural is *duodena*, 224, 229

**Dura mater** (*DOO-rah/MAH-ter*), term means “tough mother”; fibrous outermost meninges layer that forms tough protective layer, 321

Dust, 206

**Dwarfism** (*DWARF-izm*), condition of being abnormally small, 354

**Dysentery** (*DIS-en-tair-ee*), disease characterized by diarrhea, often with mucus and blood, severe abdominal pain, fever, and dehydration, 236



**Dyskinesia** (*dis-kih-NEE-zee-ah*), difficult or painful movement

**Dysmenorrhea** (*dis-men-oh-REE-ah*), painful cramping associated with menstruation, 6

**Dyspepsia** (*dis-PEP-see-ah*), indigestion

**Dysphagia** (*dis-FAY-jee-ah*), having difficulty eating

**Dysphasia** (*dis-FAY-zee-ah*), impairment of speech as result of brain lesion

**Dysphonia** (*dis-FOH-nee-ah*), abnormal voice

**Dyspnea** (*DISP-nee-ah*), difficult, labored breathing

Dyspnea on exertion (DOE), 212

**Dystrophy** (*DIS-troh-fee*), abnormal development, 26

**Dysuria** (*dis-YOO-ree-ah*), painful or difficult urination

## E

-eal, 91

**Ear**, special sense organ responsible for hearing and equilibrium (balance); divided into external ear, middle ear, and inner ear; pinna (auricle) captures sound waves and funnels them into external auditory canal; sound waves strike tympanic membrane (eardrum) causing it to vibrate; three tiny bones (ossicles) in middle ear, the malleus, incus, and stapes, conduct this vibration across middle ear from tympanic membrane to oval window; oval window movement initiates vibrations in fluid inside inner ear; vibrating fluid bends hair cells in cochlea which stimulates nerve endings; auditory nerve sends message to brain; inner ear also contains organs for equilibrium, semicircular canals; plural is *ears*, 401–402. *See also* Otorhinolaryngology (ENT)

**Ear, nose, and throat doctor**, common name for *otorhinolaryngologist*, 395

functions of, 395

structures of, 396, 398

**Eardrum**, common name for *tympanic membrane*, 398, 400, 405

**Ears**, plural of *ear*

Ears, nose, and throat (ENT), 409

Eating, 175, 233

**Ecchymosis** (*ek-ih-MOH-sis*), skin discoloration or bruise caused by blood collecting under skin, 64

**Echocardiogram** (ECHO) (*ek-oh-KAR-dee-oh-gram*), record of repeated sound from heart, 132, 137

**Echocardiography** (ECHO) (*ek-oh-kar-dee-OG-rah-fee*), diagnostic imaging procedure that records internal heart structures using ultrasound; computer uses echoes bouncing off structures to produce either image or video of heart movement, 137

**Eclampsia** (*eh-KLAMP-see-ah*), worsening of preeclampsia symptoms with development of seizures and possibly coma; may occur between 20th week of pregnancy and up to 6 weeks postpartum, 298

Ectopic, 298

**Ectopic pregnancy** (*ek-TOP-ik*), pregnancy occurring outside uterus, 298

**Eczeema** (*EK-zeh-mah*), skin condition of unknown cause; symptoms include redness, vesicles, itching, and crusting, 65

**Efferent nerves** (*EF-er-ent*), another term for *motor nerves*

**Ejection fraction** (EF), measurement of percentage of blood exiting heart with each contraction; weakened heart, such as in congestive heart failure, will have lower ejection fraction, 132

**Elective abortion**, legal termination of pregnancy, 303

**Electrocardiogram** (ECK, EKG) (*ee-lek-troh-KAR-dee-oh-gram*), hard copy record of *electrocardiography* (ECG, EKG), 137

**Electrocardiography** (ECG, EKG) (*ee-lek-troh-kar-dee-OG-rah-fee*), process of recording electrical activity of heart; hardcopy record produced is *electrocardiogram* (ECG, EKG), 132, 137

**Electroencephalogram** (EEG) (*ee-lek-troh-en-SEFF-ah-loh-gram*), record of brain's electrical activity, 330, 331

**Electroencephalography** (EEG) (*ee-lek-troh-en-seff-ah-LOG-rah-fee*), recording electrical activity of brain by placing electrodes at various positions on scalp, 330, 331

**Electrolyte** (*ee-LEK-troh-lite*), chemical compound that separates into charged particles, or ionizes, in solution; examples include sodium chloride (NaCl) and potassium (K), 149

**Electromyogram** (EMG) (*ee-lek-troh-MY-oh-gram*), record of muscle electrical activity, 106

**Electromyography** (EMG) (*ee-lek-troh-my-OG-rah-fee*), recording of electrical patterns of muscle in order to diagnose diseases

**Elephantiasis** (*el-eh-fan-TYE-ah-sis*), inflammation, obstruction, and destruction of lymph vessels resulting in enlarged tissues due to edema, 178

**Embolectomy** (*em-boh-LEK-toh-mee*), surgical removal of embolus, or clot, from blood vessel

**Emboli** (*EM-boh-lye*), plural of *embolus*, 124, 156

**Embolism** (*EM-boh-lizm*), piece of broken off clot or mass of fat or bacteria that floats through blood vessels until it plugs up small blood vessel, blocking blood flow

embol/o, 124

**Embolus** (*EM-boh-lus*), obstruction of blood vessel by blood clot that moves from another area; plural is *emboli*, 124

embry/o, 290

**Embryo** (*EM-bree-oh*), term to describe developing infant from fertilization until end of second month of pregnancy; during this time period, all major organs and body systems are formed; plural is *embryos*

**Embryonic** (*em-bree-ON-ik*), pertaining to embryo

**Embryos** (*EM-bree-ohz*), plural of *embryo*, 290

-emesis, 230

**Emesis** (*EM-eh-sis*), to expel stomach contents through mouth; commonly called *vomiting*, 236

-emia, 6, 152

**Emphysema** (*em-fih-SEE-mah*), pulmonary condition that can occur as a result of long-term heavy smoking, 205

Emulsification, 226

**Encephalgia** (*en-seff-ah-LAL-jee-ah*), term translates as *brain pain*, but is used to mean headache

**Encephalic** (*en-seh-FAL-ik*), pertaining to brain

**Encephalitis** (*en-seff-ah-LYE-tis*), inflammation of brain due to disease factors such as rabies, influenza, measles, or smallpox

encephal/o, 319

**Encephaloma** (*en-seff-ah-LOH-mah*), brain tumor

**Encephalomalacia** (*en-seff-ah-loh-mah-LAY-shee-ah*), abnormal softening of brain

**Encephalopathy** (*en-seff-ah-LOP-ah-thee*), brain disease

**Enderterectomy** (*end-ar-teh-REK-toh-mee*), removal of inside layer of artery, 135

**Endocarditis** (*en-doh-kar-DYE-tis*), inflammation of inner lining of heart, 6

**Endocardium** (*en-doh-KAR-dee-um*), smooth layer of tissue lining heart chambers; reduces friction as blood passes through, 123

**Endocervicitis** (*en-doh-ser-vih-SIGH-tis*), inflammation of inner aspect of cervix

**Endocrine glands** (*EN-doh-krin*), secrete directly into bloodstream; includes adrenal glands, parathyroid glands, pancreas, pituitary gland, testes, ovaries, thymus gland, and thyroid gland, 57

**Endocrine system** (*EN-doh-krin*), consists of glands that secrete hormones directly into bloodstream; includes adrenal glands, parathyroid glands, pancreas, pituitary gland, testes, ovaries, thymus gland, and thyroid gland. *See also* Endocrinology functions of, 343 organs in, 344

**Endocrinologist** (*en-doh-krin-ALL-oh-jiist*), physician specializing in treatment of endocrine glands, 343

**Endocrinology** (*en-doh-krin-ALL-oh-jee*), branch of medicine specializing in conditions of endocrine system, 342–367

abbreviations, 357

case study, 357–359

combining forms, 343, 345–352

description of, 343

organs treated in, 344

prefixes, 344

suffixes, 343

vocabulary, 352–357

**Endocrinoma** (*en-doh-krih-NOH-mah*), tumor of endocrine gland

**Endocrinopathy** (*en-doh-krih-NOP-ah-thee*), disease of endocrine system

**Endometrial ablation** (*en-doh-MEE-tree-al/ab-LAY-shun*), surgical procedure to remove thin layer of endometrium; may use electricity, high-energy radio waves, cold, or microwaves; treatment for abnormally heavy menstrual periods, 303

Endometrial biopsy (EMB), 304

- Endometrial cancer** (*en-doh-MEE-tree-al*), cancer of endometrial lining of uterus, 299
- Endometriosis** (*en-doh-mee-tree-OH-sis*), abnormal condition of endometrium tissue appearing throughout pelvis or on abdominal wall, 299
- Endometritis** (*en-doh-meh-TRY-tis*), inflammation of endometrial lining of uterus
- Endometrium** (*en-doh-MEE-tree-um*), inner lining of uterus; much of this layer is sloughed off during menstruation, 292
- Endoscopic retrograde cholangiopancreatography (ERCP), 242
- Endothelium** (*en-doh-THÉE-lee-um*), smooth inner lining of a blood vessel, 122
- Endotracheal** (*en-doh-TRAY-kee-al*) (ET), pertaining to inside trachea, 212, 409
- Endotracheal (ET) intubation** (*en-doh-TRAY-kee-al/in-too-BAY-shun*), placing tube through mouth to create airway, 210, 408
- End-stage renal disease (ESRD), 274
- Enteric** (*en-TAIR-ik*), pertaining to small intestine
- Enteritis** (*en-ter-EYE-tis*), inflammation of small intestine
- enter/o, 230
- Enucleation** (*ee-noo-klee-AY-shun*), surgical removal of eyeball, 383
- Enuresis** (*en-yoo-REE-sis*), involuntary discharge of urine after age by which bladder control should have been established; also called *urinary incontinence*, 268, 270
- Eosinopenia** (*ee-oh-sin-oh-PEE-nee-ah*), too few eosinophils
- Eosinophil** (*ee-oh-SIN-oh-fill*), white blood cells that destroy parasites and increase during allergic reactions, 149, 159
- Epidermal** (*ep-ih-DER-mal*), pertaining to above the skin
- Epidermis** (*ep-ih-DER-mis*), superficial layer of skin; composed of dead keratinized cells that form protective barrier to keep out bacteria and other pathogens, 58
- Epididymal** (*ep-ih-DID-ih-mal*), pertaining to epididymis
- Epididymides** (*ep-ih-DID-ih-mih-deez*), plural of epididymis
- Epididymis** (*ep-ih-DID-ih-mis*), coiled tubule that lies on top of testes within scrotum; stores sperm as they are produced and releases them into vas deferens during ejaculation; plural is *epididymides*, 254, 258
- Epididymitis** (*ep-ih-did-ih-MY-tis*), inflammation of epididymis; plural is *epididymides*
- epididym/o, 258
- Epigastric** (*ep-ih-GAS-trik*), pertaining to above stomach; anatomical division of abdomen, middle section of upper row
- Epigastric region, 49
- Epiglottic** (*ep-ih-GLOT-ik*), pertaining to epiglottis
- Epiglottides** (*ep-ih-GLOT-ih-deez*), plural of epiglottis
- Epiglottises** (*ep-ih-GLOT-tih-seez*), plural of epiglottis
- Epiglottis** (*ep-ih-GLOT-iss*), flap of cartilage covering larynx when person swallows; prevents food and drink from entering larynx and trachea; plural is *epiglottides* or *epiglottises*, 399
- Epiglottitis** (*ep-ih-glot-EYE-tis*), inflammation of epiglottis
- epiglott/o, 399
- Epilepsy** (*EP-ih-lep-see*), recurrent disorder of brain; seizures and loss of consciousness occur as result of uncontrolled neuron electrical activity, 326
- Epinephrine** (*ep-ih-NEF-rin*), hormone produced by adrenal medulla; some actions include increased heart rate and force of contraction, bronchodilation, and relaxation of intestinal muscles; also called *adrenaline*, 345
- episi/o, 291
- Episioplasty** (*eh-PEEZ-ee-oh-plas-tee*), surgical repair of vulva
- Episiorrhaphy** (*eh-pee-ee-OR-ah-fee*), surgical procedure to suture episiotomy incision made to facilitate delivery
- Episiotomy** (*eh-pee-ee-OT-oh-mee*), surgical incision of vulva to facilitate delivery process
- Epispadias** (*ep-ih-SPAY-dee-as*), congenital malformation of penis with urethra opening on upper side of penis, 268
- Epistaxis** (*ep-ih-STAK-sis*), nosebleed; also called *rhinorrhagia*, 405
- Eponym** (*EP-oh-nim*), medical term based on person's name; example is Parkinson disease
- Equilibrium** (*ee-kwiH-LIB-ree-um*), sense of balance, 398
- Erectile dysfunction** (ED) (*ee-REK-tile*), inability to copulate due to inability to maintain erection; also called *impotence*, 268, 274
- Erythema** (*air-ih-THÉE-mah*), redness or flushing of skin, 63, 65
- Erythroblastosis fetalis** (*eh-RITH-roh-blass-toh-sis/fih-TAL-is*), another term for *hemolytic disease of the newborn*, 300
- Erythrocyte** (*eh-RITH-roh-sight*), one of *formed elements* of blood; contain hemoglobin, an iron-containing pigment that binds oxygen in order to transport it to cells of body; also called *red blood cells* (RBC); plural is *erythrocytes*, 149
- Erythrocyte sedimentation rate** (ESR, sed rate) (*eh-RITH-roh-sight/sed-ih-men-TAY-shun*), blood test to determine rate at which mature red blood cells settle out of blood after addition of anticoagulant; indicator of presence of inflammatory disease, 157, 159
- Erythrocytes** (*eh-RITH-roh-sights*), plural of erythrocyte
- Erythrocytosis** (*eh-rith-roh-sigh-TOH-sis*), too many red cells
- Erythroderma** (*eh-rith-roh-DER-mah*), red skin
- Erythropenia** (*eh-rith-roh-PEE-nee-ah*), too few red cells
- Erythropoiesis** (*eh-rith-roh-poy-EE-sis*), process of forming erythrocytes
- Esophageal** (*eh-soff-ah-JEE-al*), pertaining to esophagus
- Esophageal atresia** (*eh-soff-ah-JEE-al/ah-TREE-zha*), congenital anomaly in which connection between esophagus and stomach is missing, 236
- Esophageal varices** (*eh-soff-ah-JEE-al/VAIR-ih-seez*), enlarged and swollen varicose veins in lower end of esophagus; they can rupture and result in serious hemorrhage, 236
- Esophagi** (*eh-SOFF-ah-jye*), plural of *esophagus*
- Esophagitis** (*eh-soff-ah-JYE-tis*), inflammation of esophagus
- esophag/o, 230
- Esophagogastroduodenoscopy (EGD), 242
- Esophagoplasty** (*eh-soff-ah-goh-PLAS-tee*), surgical repair of esophagus
- Esophagoscope** (*eh-SOFF-ah-goh-skohp*), instrument to view esophagus
- Esophagoscopy** (*eh-soff-ah-GOSS-koh-pee*), procedure of using esophagoscope to examine inside esophagus
- Esophagus** (*eh-SOFF-ah-gus*), tube that carries food from pharynx to stomach; plural is *esophagi*, 224, 230
- esthesia, 320
- esthesi/o, 320
- Estrogen** (*ESS-troh-jen*), one hormone produced by ovaries; works with progesterone to control menstrual cycle and is responsible for producing secondary sexual characteristics, 286, 345, 347
- Estrogen replacement therapy (ERT), 304
- Eupnea** (*yoop-NEE-ah*), normal breathing
- Eustachian tube** (*yoo-STAY-shee-en*), another term for *auditory tube*, 402
- Eversion** (*ee-VER-zhun*), action of turning outward
- Excision** (*ek-SIZH-zhun*), action of cutting out structure or organ; to remove it from body, 71
- Exercise stress test**, cardiac *stress test* performed while patient exercises
- Exhalation** (*eks-hah-LAY-shun*), removing carbon dioxide from lungs; also called *expiration*, 193
- Exocrine glands** (*EKS-oh-krin*), secrete into a duct; examples include sweat glands and sebaceous glands, 57
- Exophthalmos** (*eks-off-THAL-muss*), condition in which eyeballs protrude, such as in Graves' disease, 354
- Expectorant** (*ek-SPEK-toh-rent*), medication that improves ability to cough up mucus from respiratory tract, 211
- Expiration** (*eks-pih-RAY-shun*), another term for *exhalation*, 193
- Extension** (*eks-TEN-shun*), action of stretching out
- External anal sphincter** (*SFINGK-ter*), ring of voluntary skeletal muscle that controls opening and closing of anal orifice to eliminate feces, 226
- External auditory canal** (*AW-dih-tor-ee*), opening in outer ear that carries soundwaves from external environment to tympanic membrane, 398
- External ear**, outermost portion of ear; consists of auricle, auditory canal, and eardrum, 398
- External fixation, 104

Extracapsular cataract extraction (ECCE), 384

**Extracorporeal shockwave lithotripsy** (ESWL) (*eks-trah-kor-POR-ee-al/shockwave/LITH-oh-trip-see*), use of ultrasound waves to break up stones; process does not require surgery, 272, 274

**Eye**, one of two special sense organs responsible for vision; consists of three layers, sclera, choroid, and retina; light rays entering eyeball travel through cornea, pupil, iris, lens, and land on retina in order to produce an image, which is then carried to brain by optic nerve; plural is *eyes*

**Eyeball**, eye by itself, without any appendages such as eye muscles or tear ducts, 369

**Eyelid**, one of upper or lower folds of skin providing protection from foreign particles, injury from sun and intense light, and trauma; plural is *eyelids*

**Eyelids**, plural of *eyelid*, 369, 371

**Eyes**, plural of *eye*, 374, 375. *See also* Ophthalmology (Ophth)

Eyes, ears, nose, and throat (EENT), 409 structures of, 370–371

## F

**Facial bones**, parts of skull surrounding mouth, nose, and eyes; location where muscles for chewing are attached, 90

**Falling test**, group of assessments to evaluate balance and equilibrium; for example, balancing on one foot, heel to toe walking, and walking forward with eyes open; test is repeated with patient's eyes closed; swaying and falling with eyes closed may indicate an equilibrium malfunction, 407

**Fallopian tubes** (*fah-LOH-pee-an*), another term for *uterine tubes*, 286, 296

**Farsightedness**, common name for *hyperopia*, 380

**Fasciae** (*FASH-ee-ee*), plural of *fascia*

**Fascia** (*FASH-ee-ah*), layers of thin connective tissue surrounding skeletal muscle cells, bundles, and entire muscles; blend together at end of skeletal muscle to for tendons; plural is *fascia*, 91

**Fasciitis** (*flash-ee-EYE-tis*), fascia inflammation *fasci/o*, 91

**Fasciotomy** (*flash-ee-OT-oh-mee*), cutting into fascia

**Fasting blood sugar** (FBS), blood test to measure amount of sugar circulating throughout body after 12-hour fast, 357

**Fat**, another term for *adipose*, 58, 61  
Fatty substance, 122

**Fecal occult blood test** (FOBT) (*uh-KULT*), laboratory assessment of feces to determine if microscopic amounts of blood are present; also called *hemocult* or *stool guaiac*, 239, 242

**Feces** (*FEE-seez*), waste material remaining after digestion and absorption of nutrients; eliminated through anus, 228, 230

Female, 292

**Female reproductive system**, responsible for producing eggs for reproduction and provides

place for growing baby; organs include ovaries, uterine tubes, uterus, vagina, and mammary glands, 287. *See also* Obstetrics and gynecology

**Femoral** (*FEM-or-al*), pertaining to femur or thigh bone

**Femoral pulse**, pulse taken at groin, 133

Femoral region, 43

femor/o +-al, 43

**Femur** (*FEE-mer*), lower extremity bone; commonly called *thigh bone*

**Fertilization** (*fur-tuh-lih-ZAY-shun*), also called *impregnation*; fusion of ova and sperm to produce embryo, 286, 296

**Fetal** (*FEE-tal*), pertaining to fetus

Fetal heart rate (FHR), 304

Fetal heart tone (FHT), 304

**Fetal monitoring** (*FEE-tal*), using electronic equipment placed on mother's abdomen to check baby's heart rate and strength during labor, 302

fet/o, 291

**Fetometry** (*fee-TOM-eh-tree*), process of measuring size of fetus

**Fetoscope** (*FEE-toh-skohp*), instrument to visually examine fetus or listen to fetal heartbeat

**Fetoscopy** (*fee-TOSS-koh-pee*), process of examining fetus or listening to fetal heart rate

**Fetus** (*FEE-tus*), term to describe developing newborn from beginning of third month to birth; during this period of time, organs and systems grow, mature, and begin to function; plural is *fetuses*, 291

**Fetuses** (*FEE-tuh-sihz*), plural of *fetus*

**Fever blister**, common name for *herpes labialis*, 65

**Fibrillation** (*fih-brill-AY-shun*), abnormal quivering or contractions of heart fibers; when this occurs within fibers of ventricle of heart, arrest and death can occur; emergency equipment to defibrillate, or convert heart to normal beat, is necessary, 129

**Fibrocystic breast** (*fye-broh-SIS-tik*), benign cysts forming in breast, 299

**Fibroid tumor** (*FYE-broyd/TOO-mer*), benign tumor or growth that contains fiber-like tissue, 300

**Fibromyalgia** (*fye-broh-my-AL-jee-ah*), condition with widespread aching and pain in muscles and soft tissue, 99

**Fibrous joint** (*FYE-bruss*), joint in which ends of bone are joined together by thick fibrous tissue; allows almost no movement; example is suture joint of the skull, 86

**Fibula** (*FIB-yoo-lah*), one of lower leg bones in lower extremity

**Fibular** (*FIB-yoo-lar*), pertaining to fibula, lower leg bone

**Fimbriae** (*FIM-bree-ee*), finger-like extensions that drape over ovary to catch ovum released at ovulation, 296

First birth (PI, para I), 305

First-degree burns, 63

First pregnancy (GI, grav I), 304

**Fissure** (*FISH-er*), deep groove or slit-type opening, 65

**Fistula** (*FIS-tyoo-lah*), abnormal passageway that develops between two structures; *vesicovaginal fistula* is between urinary bladder and vagina; *rectovaginal fistula* is between rectum and vagina, 300

**Fixation**, procedure to stabilize fractured bone while it heals; *external fixation* includes casts, splints, and pins inserted through skin; *internal fixation* includes pins, plates, rods, screws, and wires applied during *open reduction*, 104

**Flat-plate abdomen**, another term for *kidneys, ureters, bladder* (KUB), 271

**Flexion** (*FLEK-shun*), action of bending

Floating clot, 155

**Fluorescein** (*floor-ESS-see-in*), bright green fluorescent dye dropped onto surface of eyeball to highlight corneal abrasions, 382

**Fluorescein angiography** (*floor-ESS-see-in/an-jee-OG-rah-fee*), procedure using intravenous fluorescein, making it possible to observe movement of blood through blood vessels of eye, 382

**Follicle** (*FALL-ih-kl*), structure surrounding ova within ovary, 295

**Follicle cells** (*FALL-ih-kl*), make up a follicle, 347

**Follicle-stimulating hormone** (FSH) (*FALL-ih-kl/STIM-yoo-lay-ting*), hormone secreted by anterior pituitary gland; stimulates growth of eggs in females and sperm in males, 350, 357

**Foreskin**, common name for *prepuce*, 257

Formation, 149

**Formed elements**, solid, cellular portion of blood; consists of erythrocytes, leukocytes, and platelets, 149

Fourth-degree burns, 63

**Fovea centralis** (*FOH-vee-ah/sen-TRAH-lis*), area of retina that has sharpest vision, 376

**Fracture** (FX, Fx), injury to bone that causes it to break; named to describe type of damage to bone, 99, 104, 106

closed, 98

comminuted, 99

compound, 99

compression, 99

greenstick, 100

impacted, 100

oblique, 100

pathologic, 101

simple, 98

spiral, 102

stress, 103

transverse, 103

**Free edge**, exposed edge of nail, 61

**Frequency**, greater than normal occurrence in urge to urinate, without increase in total daily volume of urine, 268

**Frontal lobe**, one of four cerebral hemisphere lobes; controls motor functions, 319

Frontal (coronal) plane, 37

**Frontal plane**, vertical division that separates body into front (anterior or ventral) and back (posterior or dorsal) sections; also called *coronal plane*

**Frontal section**, another term for *coronal section*, 37–38

Full-term normal delivery (FTND), 304

**Full-thickness burn**, another name for *third-degree burn*, 63

Full-thickness skin graft (FTSG), 71

**Functional bowel syndrome**, another term for *irritable bowel syndrome* or *spastic colon*, 238

**Fundus** (*FUN-dus*), domed upper portion of organ such as stomach or uterus, 292

**Furuncle** (*FYOO-rung-kl*), another term for *boil*, 63

## G

Gall, 226

**Gallbladder** (GB), small organ located just under liver; functions to store bile produced by liver; releases bile into duodenum through common bile duct, 224, 227, 242

**Ganglion cyst** (*GANG-lee-on/SIST*), formation of cyst in sheath covering a tendon; frequently seen on hand, wrist, or ankle, 99

**Gangrene** (*GANG-green*), necrosis of skin usually due to deficient blood supply, 65

**Gastralgia** (*gas-TRAL-jee-ah*), stomach pain

**Gastrectomy** (*gas-TREK-toh-mee*), surgical removal of stomach

**Gastric banding** (*GAS-trik*), one type of bariatric surgery; restrictive band (commonly called *lap-band*) is placed around stomach; prevents stomach from expanding to hold large amount of food, leading to smaller meals, 240

**Gastric bypass** (*GAS-trik*), surgical treatment for obesity; portion of stomach is stapled off and bypassed so that it holds less food; commonly called *stomach stapling*, 241

**Gastric** (*GAS-trik*), pertaining to stomach, 17, 18

**Gastric pouch** (*GAS-trik*), results of gastric bypass surgery leaving small pouch to receive food from esophagus, 241

**Gastric stapling** (*GAS-trik*), one type of bariatric surgery; closes off large section of stomach with rows of staples; results in smaller stomach that cannot hold large meal, 241

**Gastritis** (*gas-TRY-tis*), inflammation of stomach

gastr/o, 231

**Gastrodynia** (*gas-troh-DIN-ee-ah*), stomach pain

**Gastroenteritis** (*gas-troh-en-ter-EYE-tis*), inflammation of stomach and small intestine

**Gastroenterologist** (*gas-troh-en-ter-ALL-oh-jist*), physician specialized in treating diseases and conditions of gastrointestinal tract, 224

**Gastroenterology** (*gas-troh-en-ter-ALL-oh-jee*), branch of medicine specializing in conditions of gastrointestinal system, 223–252

abbreviations, 242

case study, 243–244

combining forms, 224, 226–234

description of, 224

organs treated in, 225

prefixes, 225

suffixes, 224–225

vocabulary, 235–242

**Gastroesophageal reflux disease** (GERD) (*gas-troh-eh-soff-ah-JEE-al/REE-fluks*), acid from stomach backs up into esophagus, causing inflammation and pain, 236, 242

Gastrointestinal (GI), 242

**Gastrointestinal (GI) system** (*gas-troh-in-TESS-tih-nal*), digests food and absorbs nutrients; organs include mouth, pharynx, esophagus, stomach, small and large intestines, liver, gallbladder, and anus; also called *digestive system*, 224

gastr / o / scope, 20

**Gastroscope** (*GAS-troh-skohp*), instrument to view inside stomach

**GastroscoPy** (*gas-TROSS-koh-pee*), flexible gastroscope is passed through mouth and down esophagus to visualize inside stomach; used to diagnose peptic ulcers and gastric carcinoma

**Gastrostomy** (*gas-TROSS-toh-mee*), surgical creation of gastric fistula or opening through abdominal wall

**Gavage** (*guh-VAHZH*), placing liquid nourishment directly into stomach, 241

**Genital** (*JEN-ih-tal*), pertaining to genitals

**Genital herpes** (*JEN-ih-tal/HER-peeZ*), highly infectious viral sexually transmitted disease; causes blister-like lesions on penis of males or cervix and vagina of females, 268

Genital region, 44

genit/o +-al, 44

Genitourinary (GU), 274

**Genitourinary system** (*jen-ih-toh-YOO-rih-nair-ee*), organs of urinary system and female or male sexual organs, 254

**Gestational diabetes** (*jess-TAY-shun-al/dye-ah-BEE-teeZ*), development of difficulty with carbohydrate metabolism and high blood sugar during a pregnancy; usually resolves after delivery, 300

**Gestation** (*jess-TAY-shun*), length of time of pregnancy; 40 weeks in humans, 292

**Gigantism** (*JYE-gan-tizm*), excessive development of body due to overproduction of growth hormone by pituitary gland, 354

**Gland**, body organ that releases secretions; exocrine gland, like sweat gland, releases its secretions into ducts; endocrine gland, such as thyroid gland, releases its hormones directly into bloodstream; plural is *glands*

**Glands**, plural of *gland*, 55, 316, 343, 345

adrenal, 343, 346

bulbourethral, 254

endocrine, 57

exocrine, 57

lacrimal, 369, 373

mammary, 293

master, 350

parathyroid, 343, 349

pineal, 343, 349

pituitary, 343, 350

prostate, 254, 261

sebaceous, 57

sweat, 57, 60

thymus, 170, 176, 343, 351

thyroid, 343, 352

**Glans penis** (*GLANS/PEE-nis*), larger and softer tip of penis; protected by covering called *prepuce* or *foreskin*, 257

Glassy, 377

**Glaucoma** (*glaw-KOH-mah*), condition resulting from increase in intraocular pressure, which, if untreated, may result in atrophy of optic nerve and blindness; patient notices vision becomes blurry around edges; treated with medication and surgery, 379

**Glomerulonephritis** (*gloh-mair-yoo-loh-neh-FRY-tis*), inflammation of kidney (primarily of glomerulus)

**Glomerulus** (*gloh-MAIR-yoo-lus*), ball of capillaries encased by Bowman capsule; in filtration stage of urine production, wastes filtered from blood leave glomerulus capillaries and enter Bowman capsule, 259

**Glucagon** (*GLOO-kuh-gon*), hormone secreted by pancreas; stimulates liver to release glucose into blood, 348

**Glucometer** (*gloo-KOM-eh-ter*), device for home use by diabetics to monitor level of glucose in bloodstream, 356

**Glucose** (*GLOO-kohs*), form of sugar used by cells of body to make energy, 149, 346

**Glucose tolerance test** (GTT) (*GLOO-kohs*), used for initial diagnosis of diabetes mellitus; patient given dose of glucose; then blood samples taken at regular intervals to determine patient's ability to use glucose properly, 355, 357

**Gluteal** (*GLOO-tee-al*), pertaining to buttocks

Gluteal region, 44

glute/o +-al, 44

glyc/o, 6, 346

glycos/o, 346

**Glycosuria** (*gly-kohs-YOO-ree-ah*), presence of excess of sugar in urine

**Goiter** (*GOY-ter*), enlargement of thyroid gland, 354

**Gonorrhea** (*gon-oh-REE-ah*), sexually transmitted inflammation of mucous membranes of either sex; can be passed on to infant during birth process, 268

**Gout** (*GOWT*), type of arthritis consisting of pain and swelling at joint between big toe and forefoot; caused by body depositing crystals of uric acid (metabolic waste product) in soft tissues; more common in men, 100

Graft, 30

**Grand mal seizure**, former name for *tonic-clonic seizure*

**Graves disease**, condition resulting in overactivity of thyroid gland and can result in crisis situation; also called *hyperthyroidism*, 354

-gravida, 292

**Gray matter**, nervous tissue that appears gray because not covered by myelin, 321

Greek-based medical terminology, 2–5

**Greek**, root source of many medical terms

**Greenstick fracture**, where there is incomplete break; one side of bone is broken and other



side is bent; fracture is commonly found in children due to their softer and more pliable bone structure, 100

**Growth hormone** (GH), hormone secreted by anterior pituitary that stimulates growth of body, 350, 357

**Guillain-Barré syndrome** (*ghee-YAN/bah-RAY*), condition in which some nerves lose their myelin insulation; symptoms include loss of sensation and/ or muscle control, starting in legs; symptoms then move toward trunk and may even result in paralysis of diaphragm, 327

gynec/o, 292

**Gynecologist** (*gigh-neh-KALL-oh-jist*), physician specializing in treating conditions and diseases of female reproductive system, 286

**Gynecology** (GYN) (*gigh-neh-KALL-oh-jee*), branch of medicine specializing in conditions of female reproductive system, 286, 304. *See also* Obstetrics and gynecology

## H

**Hair**, structure in integumentary system; shaft of keratinized cells growing up through layers of skin, 55  
arrector pili, 62  
follicle, 62  
keratin, 60  
root, 62  
shaft, 62  
structures of, 57

**Hair follicle**, cell surrounding hair shaft within layers of skin

**Hair root**, area from which hair shaft grows longer

**Hair shaft**, older keratinized cells that grow longer from hair root and extend through toward skin surface within hair follicle

**Hammer**, common name for *malleus*

Hand, 85

Hardening, 125

**Hashimoto thyroiditis** (*hash-ee-MOH-toh/thigh-roy-DYE-tis*), chronic autoimmune condition that gradually destroys thyroid gland, 354

Head, eyes, ears, nose, and throat (HEENT), 409

**Headache**, common term for *cephalgia*, 325, 331

**Health care-associated infection** (HAI), another term for *nosocomial infection*, 179, 181

**Hearing**, one of special senses; ability to hear sound, 398

**Hearing aid**, apparatus or mechanical device used by persons with impaired hearing to amplify sound, 408

**Heart**, organ composed of cardiac muscle tissue that contracts to develop pressure needed to push blood through blood vessels, 118, 119, 123, 125

**Heart attack**, common name for *myocardial infarction*, 130

**Heart murmur** (*MUR-mur*), abnormal heart sound such as soft blowing sound or harsh click; may be soft and heard only with stethoscope, or so loud it can be heard several feet away, 129

Heart rate (HR), 137

**Heart transplantation**, replacement of diseased or malfunctioning heart with donor's heart, 135

**Heart valve incompetence**, another name for *heart valve prolapse*, 130

**Heart valve insufficiency**, another name for *heart valve prolapse*, 130

**Heart valve prolapse** (*PROH-laps*), cusps or flaps of heart valve are too loose and fail to shut tightly, allowing blood to flow backward through valve when heart chamber contracts; most commonly occurs in mitral valve, but may affect any of heart valves; also called *heart valve incompetence* or *heart valve insufficiency*, 135

**Heart valve stenosis** (*steh-NOH-sis*), cusps or flaps of heart valve are too stiff; unable to open fully, making it difficult for blood to flow through, or to shut tightly, allowing blood to flow backward, 130

**Heimlich maneuver** (*HYME-lik*), technique for removing foreign body from trachea or pharynx by exerting sharp pressure on diaphragm, 211

**Helicobacter pylori antibody test** (*hel-ih-koh-BAK-ter/pye-LOR-eye*), clinical lab assessment for presence of bacteria known to cause peptic ulcer disease, 239

Heliophobia, 381

**Hematemesis** (*hee-mah-TEM-eh-sis*), to vomit blood from gastrointestinal tract, often looks like coffee grounds

**Hematic** (*hee-MAT-ik*), pertaining to blood hemat/o, 153

**Hematochezia** (*hee-mat-oh-KEE-zee-ah*), presence of bright red blood in bowel movement, 236

**Hematocrit** (HCT, Hct, crit) (*hee-MAT-oh-krit*), blood test to measure volume of red blood cells (erythrocytes) within total volume of blood, 157, 159

**Hematocytopenia** (*hee-mah-toh-sigh-toh-PEE-nee-ah*), reduction in number of all blood cells

**Hematologist** (*hee-mah-TALL-oh-jist*), physician specializing in treating diseases and conditions of blood, 149

**Hematology analyzer** (*hee-mah-TALL-oh-jee*), machine that automatically performs multiple blood chemistry tests, such as complete blood count, erythrocyte sedimentation rate, and blood-clotting tests, 157

**Hematology** (*hee-mah-TALL-oh-jee*), branch of medicine specializing in conditions of hematic system, 148–168  
abbreviations, 159  
blood components, 150

case study, 159–161

combining forms, 149–154

description of, 149

prefixes, 150

suffixes, 149–150

vocabulary, 154–158

**Hematoma** (*hee-mah-TOH-mah*), collection of blood under skin as result of blood escaping into

tissue from damaged blood vessel; commonly called a *bruise*, 155

**Hematopathology** (*hee-mah-toh-pah-THOL-oh-jee*), study of blood disease

**Hematopoiesis** (*hee-mah-toh-poy-EE-sis*), formation of blood, 149

**Hematosalpinx** (*hee-mah-toh-SAL-pinks*), blood in uterine tube

**Hematuria** (*hee-mah-TOO-ree-ah*), condition of blood in urine

**Hemianopia** (*hem-ee-ah-NOH-pee-ah*), loss of vision in half of visual field; stroke patients may suffer from this disorder

**Hemiparesis** (*hem-ee-pah-REE-sis*), weakness of left or right side of body

**Hemiplegia** (*hem-ee-PLÉE-jee-ah*), paralysis on only one side of body

hem/o, 152

**Hemoccult** (*HEE-mah-kult*), another term for *fecal occult blood test* or *stool guaiac*

Hemoccult test, 239

**Hemocyte** (*HEE-moh-sight*), blood cell

**Hemocytolysis** (*hee-moh-sigh-TALL-ih-sis*), to destroy blood cells

**Hemodialysis** (HD) (*hee-moh-dye-AL-ih-sis*), use of artificial kidney machine to filter blood of person to remove waste products; use of technique in patients who have defective kidneys is lifesaving, 272, 274

**Hemoglobin A1c** (HbA1c) test (*hee-moh-GLOH-bin*), estimates average amount of glucose in blood-stream over past three months; when blood glucose levels are continuously high, excess glucose attaches to hemoglobin molecule in red blood cells; helps to detect and monitor diabetes mellitus, 355

**Hemoglobin** (Hgb, Hb) (*hee-moh-GLOH-bin*), iron-containing pigment of red blood cells that carries oxygen from lungs to tissue; also name of blood test that measures amount of hemoglobin present in given volume of blood, 149, 156, 157

**Hemolysis** (*hee-MALL-ih-sis*), to destroy blood cells

**Hemolytic disease of the newborn** (HDN) (*hee-moh-LIT-ik*), condition in which antibodies in mother's blood enter fetus's blood and cause anemia, jaundice, edema, and enlargement of liver and spleen; also called *erythroblastosis fetalis*, 300, 304

**Hemophilia** (*hee-moh-FILL-ee-ah*), hereditary blood disease in which there is prolonged blood clotting time, 155

**Hemoptysis** (*hee-MOP-tih-sis*), coughing up blood or blood-stained sputum

**Hemorrhage** (*HEM-eh-rij*), blood flow, escape of blood from blood vessel

**Hemorrhoids** (*HEM-oh-royds*), varicose veins in rectum, 236

**Hemostasis** (*hee-moh-STAY-sis*), to stop bleeding or stagnation of circulating blood, 149

**Hemothorax** (*hee-moh-THOR-aks*), condition of having blood in chest cavity

**Hepatic duct** (*heh-PAT-ik*), leads from liver to common bile duct; transports bile, 231

**Hepatic** (*heh-PAT-ik*), pertaining to liver

**Hepatitis** (*hep-ah-TYE-tis*), infectious, inflammatory disease of liver; hepatitis B and C types are spread by contact with blood and bodily fluids of infected person

hepat/o, 231

**Hepatoma** (*hep-ah-TOH-mah*), liver tumor

hepat / o / megaly, 20

**Hepatomegaly** (*hep-pah-toh-MEG-ah-lee*), enlarged liver

**Herniated disk**, another name for *herniated nucleus pulposus*; commonly called *slipped disk* or *ruptured disk*, 100

**Herniated nucleus pulposus** (HNP) (*HER-nee-ay-ted/NOO-klee-us/pul-POH-sus*), rupture of fibrocartilage disk between two vertebrae; results in pressure on spinal nerve and causes pain, weakness, and nerve damage; also called *herniated disk*; commonly called *slipped disk* or *ruptured disk*, 100, 106

**Herpes labialis** (*HER-peeZ/lay-bee-AL-iss*), infection by herpes simplex virus (HSV) causing painful blisters around lips and nose; commonly called *fever blisters* or *cold sores*, 65

**Herpes simplex** (*HER-peeZ/SIM-pleks*), infection by herpes simplex virus (HSV) causing painful blisters around lips and nose; commonly called *fever blisters*, 65

Herpes simplex virus (HSV), 71

**Herpes zoster** (*HER-peeZ/ZOS-ter*), viral infection of nerve root causing appearance of very painful blisters along path of nerve; commonly called *shingles*, 68

**Hesitancy**, decrease in force of urine stream, often with difficulty initiating flow, 268

**Heterologous transfusion** (*HET-er-ol-oh-gus/trans-FYOO-zhun*), blood transfusion of blood donated by another person, 158

**Hiatal hernia** (*high-AY-tal/HER-nee-ah*), protrusion of portion of stomach through diaphragm and into thoracic cavity; gastroesophageal reflux disease is common symptom; also called *diaphragmatic hernia*, 237

**Hidradenitis** (*high-drad-eh-NYE-tis*), inflammation of sweat glands

hidr/o, 60

**Hidrosis** (*high-DROH-sis*), abnormal condition of sweating

**High-density lipoprotein** (HDL, "good" cholesterol) (*LIP-oh-proh-teen*), one type of cholesterol found in blood; high levels provide some protection for heart disease, 157

**H<sub>2</sub> inhibitors**, medication that blocks H<sub>2</sub> receptors in stomach lining; results in low acid level in stomach; treats peptic ulcers and gastroesophageal reflux disease, 241

**HIV antigen and/or antibody immunoassay** (*AN-tih-jen/AN-tih-bod-ee/im-yoo-noh-ASS-ay*), blood test for both HIV antigen and antibodies; antigens can be detected very shortly after infection; antibodies appear later (2 to 8 weeks after infection); antibody-only test may be performed using saliva, 180

**Hives**, common term for *urticaria*, 69, 178

**Hodgkin disease** (HD) (*HOJ-kin*), cancer of lymphatic cells found in concentration in lymph nodes; also called *Hodgkin lymphoma*, 178, 181

**Hodgkin lymphoma** (*HOJ-kin/lim-FOH-mah*), another term for *Hodgkin disease* (HD), 178

Hold back, 125

**Holter monitor**, portable ECG monitor worn by patient for period of few hours to few days to assess heart and pulse activity as person goes through activities of daily living, 133

**Homeostasis** (*hoh-mee-oh-STAY-sis*), steady state or state of balance within body, 254

**Homologous transfusion** (*hoh-MALL-oh-gus/trans-FYOO-zhun*), another term for *autotransfusion*, 158

**Hordeolum** (*hor-DEE-oh-lum*), small purulent inflammatory infection of sebaceous gland of eye, treated with hot compresses and surgical incision; also called *stye*, 381

**Hormone replacement therapy** (HRT) (*HOR-mohn*), artificial replacement of hormones in patient unable to produce sufficient hormones; example is estrogen replacement in menopausal women, 303, 304, 356, 357

**Hormones** (*HOR-mohnz*), chemical substance secreted by endocrine gland; enters bloodstream and is carried to target tissue; work to control functioning of target tissue, 135, 343. *See also* Endocrinology

adrenocorticotrophic, 350, 357

aldosterone, 345

antidiuretic, 350, 357

calcitonin, 352

cortisol, 345

epinephrine, 345

estrogen, 286, 345, 347

follicle-stimulating, 350, 357

glucagon, 348

growth, 348, 357

insulin, 348, 356

luteinizing, 350, 357

melanocyte-stimulating, 350, 357

melatonin, 349

oxytocin, 350, 357

parathyroid, 349, 357

progesterone, 286, 347

prolactin, 350, 357

testosterone, 254, 345, 347

thymosin, 351

thyroid-stimulating, 350, 351

thyroxine, 352, 357

triiodothyronine, 352, 357

**Human growth hormone** (IGH) **therapy**, treatment for insufficient growth hormone (GH) secretion; stimulates growth of bones to treat children with abnormally short stature, 356

Human immunodeficiency virus (HIV), 181

**Human papillomavirus** (HPV) (*pap-ih-LOH-mah-vigh-russ*), sexually transmitted virus; many different strains of virus exist, some cause genital warts and some strains develop into cervical cancer, 268, 274, 298, 304

**Humeral** (*HYOO-mer-al*), pertaining to humerus or upper arm bone

**Humerus** (*HYOO-mer-us*), upper arm bone in upper extremity

**Humpback**, common name for *kyphosis*

**Hunchback**, common name for *kyphosis*

**Hyaline membrane disease** (*HIGH-ah-lin*), another term for *infant respiratory distress syndrome* or *respiratory distress syndrome of the newborn*, 206, 212

**Hydrocele** (*HIGH-droh-seel*), accumulation of fluid within testes, 268

**Hydrocephalus** (*high-droh-SEFF-ah-lus*), accumulation of cerebrospinal fluid within ventricles of brain, causing head to be enlarged; treated by creating artificial shunt for fluid to leave brain, 327

**Hydronephrosis** (*high-droh-neh-FROH-sis*), abnormal condition characterized by enlarged renal pelvis due to urine (water) being unable to enter ureter; example is ureter blocked by kidney stone, 269

**Hymen** (*HIGH-men*), thin membrane that surrounds inside of vaginal orifice like curtain, not like wall, 291

**Hypercalcemia** (*high-per-kal-SEE-mee-ah*), condition of excessive calcium in blood

**Hypercapnia** (*high-per-KAP-nee-ah*), condition of excessive carbon dioxide

**Hyperemesis** (*high-per-EM-eh-sis*), excessive vomiting

**Hyperesthesia** (*high-per-ess-THÉE-zee-ah*), abnormally heightened sense of feeling, sense of pain, or sensitivity to touch

**Hyperglycemia** (*high-per-gly-SEE-mee-ah*), having excessive amount of glucose (sugar) in blood

**Hyperhidrosis** (*high-per-high-DROH-sis*), abnormal condition of excessive sweat

**Hyperkinesia** (*high-per-kih-NEE-zee-ah*), excessive amount of movement

**Hyperlipemia** (*high-per-lih-PEE-mee-ah*), condition of having too high level of lipids such as cholesterol in bloodstream

**Hyperopia** (*high-per-OH-pee-ah*), condition where person can see things in distance but has trouble reading material at close vision; commonly called *farsightedness*, 380

**Hyperosmia** (*high-per-OZ-mee-ah*), condition of excessive sense of smell

**Hyperparathyroidism** (*high-per-pair-ah-THIGH-royd-izm*), excessive secretion of parathyroid hormone

**Hyperphagia** (*high-per-FAY-jee-ah*), to eat excessively

**Hyperpituitarism** (*high-per-pih-TOO-ih-tuh-rizm*), excessive secretion of one or more pituitary gland hormones

**Hyperpnea** (*high-per-NEE-ah*), excessive deep breathing

**Hypersecretion** (*high-per-seh-KREE-shun*), excessive hormone production by endocrine gland, 343

**Hypertension** (HTN) (*high-per-TEN-shun*), high blood pressure, 130, 137

**Hyperthyroidism** (*high-per-THIGH-royd-izm*), another term for *Graves disease*

**Hypertrophy** (*high-PER-troh-fee*), excessive development, 26

**Hyperventilation** (*high-per-ven-tih-LAY-shun*), to breathe both fast (tachypnea) and deep (hyperpnea), 205

hypo-, 6

**Hypocalcemia** (*high-poh-kal-SEE-mee-ah*), condition of insufficient calcium in blood

**Hypocapnia** (*high-poh-KAP-nee-ah*), condition of insufficient carbon dioxide

Hypochondriacs, 48, 49

**Hypodermic** (*high-poh-DER-mik*), pertaining to below the skin

**Hypodermis** (*high-poh-DER-mis*), another name for *subcutaneous layer* of skin, 58

**Hypogastric** (*high-poh-GAS-trik*), pertaining to below the stomach; anatomical division of abdomen, middle section of bottom row

Hypogastric region, 49

**Hypoglycemia** (*high-poh-gly-SEE-mee-ah*), condition of having low sugar level in blood

**Hypoparathyroidism** (*high-poh-pair-ah-THIGH-royd-izm*), state of insufficient thyroid hormone

**Hypopituitarism** (*high-poh-pih-TOO-ih-tuh-rizm*), state of insufficient pituitary gland hormones

**Hypopnea** (*high-POP-nee-ah*), insufficient or shallow breathing

**Hyposecretion** (*high-poh-seh-KREE-shun*), deficient hormone production by endocrine gland, 343

**Hypospadias** (*high-poh-SPAY-dee-as*), congenital malformation of penis with urethra opening on underside of penis, 269

**Hypotension** (*high-poh-TEN-shun*), low blood pressure, 130

**Hypothyroidism** (*high-poh-THIGH-royd-izm*), state of insufficient thyroid secretion

**Hypoventilation** (*high-poh-ven-tih-LAY-shun*), to breathe both slow (bradypnea) and shallow (hypopnea), 205

**Hypoxemia** (*high-poh-SEE-mee-ah*), condition of having insufficient amount of oxygen in bloodstream; measured by arterial blood gases (ABGs) test, 206

**Hypoxia** (*high-POK-see-ah*), state of insufficient oxygen in bloodstream or tissues, 206

Hysteratresia, 297

**Hysterectomy** (*hiss-ter-EK-toh-mee*), surgical removal of uterus

hyster/o, 292

**Hysteroqram** (*HISS-ter-oh-gram*), X-ray record of uterus

**Hysteroqramy** (*hiss-ter-OG-rah-fee*), process of making X-ray of uterus after insertion of radiopaque dye

**Hysteropexy** (*HISS-ter-oh-pek-see*), surgical fixation of uterus

**Hysterorrhexis** (*hiss-ter-oh-REK-sis*), rupture of uterus

Hysterosalpingography (HSG), 304

**I**

-ic, 91

-ic, 40

**Ichthyoderma** (*ik-thee-oh-DER-mah*), dry and scaly skin condition

**Ileal** (*IL-ee-al*), pertaining to ileum

**Ilea** (*IL-ee-ah*), plural of *ileum*

ile/o, 232

**Ileostomy** (*il-ee-OSS-toh-mee*), surgical creation of passage through abdominal wall into ileum

**Ileum** (*IL-ee-um*), third portion of small intestine; plural is *ilea*, 224, 232

**Ileus** (*IL-ee-us*), severe abdominal pain, inability to pass stools, vomiting, and abdominal distention because of intestinal blockage; may require surgery to reverse blockage, 237

**Iliac** (*IL-ee-ak*), pertaining to ilium, one of pelvic bones

**Ilium** (*IL-ee-um*), one of three bones that form pelvis, 232

Immune, 170

**Immune system**, network of cells, tissues, and organs throughout body that work together to protect body against pathogens, anything that can damage body including viruses, bacteria, toxins, or cancerous cells; many of functions are carried out by white blood cells called *lymphocytes*; cells are concentrated throughout body in organs of lymphatic system: lymph nodes, tonsils, thymus gland, and spleen, 170. *See also* Immunology

Immunity, 172

**Immunization** (*im-yoo-nih-ZAY-shun*), another term for *vaccination*, 181

immun/o, 172

**Immunocompromised** (*im-yoo-noh-KOM-proh-myzd*), another term for *immunodeficiency*, 178

**Immunodeficiency** (*im-yoo-noh-dih-FIH-shen-see*), having immune system unable to respond properly to pathogens; also called *immunocompromised*, 179

**Immunogenic** (*im-yoo-noh-JEN-ik*), producing immunity

**Immunoglobulin** (Ig) (*im-yoo-noh-GLOB-yoo-lin*), antibodies; assist in protecting body and its surfaces from invasion of bacteria, 181

**Immunologist** (*im-yoo-NALL-oh-jist*), physician specializing in treating infectious diseases and other disorders of immune system, 170

**Immunology** (*im-yoo-NALL-oh-jee*), branch of medicine specializing in conditions of lymphatic and immune systems, 169–191

abbreviations, 181

case study, 182–183

combining forms, 170–177

description of, 170

organs treated in, 171

prefixes, 170–171

suffixes, 170

vocabulary, 177–181

**Immunosuppressant** (*im-yoo-noh-suh-PRESS-ant*), substances that block certain actions of

immune system; required to prevent rejection of transplanted organ, 181

**Immunotherapy** (*im-yoo-noh-THAIR-ah-pee*), boosting or strengthening of patient's immune system to treat a disease, 181

**Impacted fracture**, break in which bone fragments are pushed into each other, 100

**Impetigo** (*im-peh-TYE-goh*), highly contagious staphylococcal skin infection, most commonly occurring on faces of children, 65

**Implantable cardioverter defibrillator** (ICD) (*KAR-dee-oh-ver-ter/dee-FIB-rih-lay-ter*), electrical device implanted in chest cavity with electrodes to heart; applies shock to heart to stop potentially life-threatening arrhythmias like fibrillation, 135, 137

Impotence, 268

**In vitro fertilization** (*IN-VEE-troh*), infertility treatment; ova removed from woman and fertilized by sperm externally; resulting embryos returned to uterus for development; commonly called *test tube baby*, 304

Incarcerated, 237

**Incision** (*in-SIZH-zhun*), action of cutting into structure or organ; to open it up, 71

**Incision and drainage** (I&D) (*in-SIZH-zhun*), procedure of cutting into area of infection for purpose of draining pus from area, 71

Incontinence, 270

**Incus** (*ING-kus*), one of three ossicles of middle ear; commonly called *anvil*, 398

**Infant respiratory distress syndrome** (IRDS) (*RES-pih-rah-tor-ee*), lung condition most commonly found in premature infants characterized by tachypnea and respiratory grunting; also called *hyaline membrane disease* (HMD) and *respiratory distress syndrome of the newborn*, 206, 212

**Infarct** (*IN-farkt*), area of tissue within organ that undergoes necrosis (death) following loss of blood supply, 130

**Inferior** (*in-FEER-ee-or*), directional term meaning toward feet or tail, or below

Inferior direction, 40

**Inferior vena cava** (*VEE-nah / KAY-vah*), large vein carrying deoxygenated blood from lower body to right atrium, 123, 125

infer/o + -ior, 40

**Infertility**, inability to produce children; generally defined as no pregnancy after properly timed intercourse for one year, 269, 300

**Inflammation** (*in-flah-MAY-shun*), tissue response to injury from pathogens or physical agents; characterized by redness, pain, swelling, and feeling hot to touch, 178

**Inflammatory bowel disease** (*in-FLAM-ah-tor-ee*), another term for *ulcerative colitis*, 238, 242

**Influenza** (*in-floo-EN-zah*), viral infection of respiratory system characterized by chills, fever, body aches, and fatigue; commonly called the *flu*, 206, 212

**Inguinal** (*ING-gwih-nal*), pertaining to groin area

**Inguinal hernia** (*ING-gwih-nal/HER-nee-ah*), protrusion of loop of small intestine through weak spot in abdominal muscle wall and into groin

region; may become *incarcerated* (trapped) and *strangulated* if muscle tightens around loop and cuts off its blood supply, 237

Inguinal lymph nodes, 174

Inguinal region, 48

inguin/o +-al, 44

**Inhalation** (*in-hah-LAY-shun*), bringing fresh oxygen into blood; also called *inspiration*, 193

**Inner ear**, innermost section of ear; contains cochlea, semicircular canals, sacculle, and utricle, 398

**Inner ear infection**, common name for *otitis interna* or *labyrinthitis*, 406

**Inspiration** (*in-spih-RAY-shun*), another term for *inhalation*, 193

**Insulin** (*IN-suh-lin*), hormone secreted by pancreas; regulates level of sugar in bloodstream; the more insulin present in blood, the lower blood sugar will be, 348, 356

**Insulin-dependent diabetes mellitus** (IDDM) (*dye-ah-BEE-teez/MEL-ih-tus*), develops early in life when pancreas stops insulin production; also called *type 1 diabetes mellitus*, 353, 354, 357

**Insulin pump** (*IN-suh-lin*), small, electronic device that delivers continuous small doses throughout day in response to changes in person's blood sugar level, 356

Intake and output (I&O), 274

**Integument** (*in-TEG-yoo-ment*), another term for *skin*. See *Skin*

**Integumentary system** (*in-teg-yoo-MEN-tah-ree*), skin and its appendages including sweat glands, oil glands, hair, and nails; sense organs that allow us to respond to changes in temperature, pain, touch, and pressure are located in skin; largest organ in body, 55. See also *Dermatology*

Intensive care unit (ICU), 137

**Interatrial** (*in-ter-AY-tree-ah*), pertaining to between atria

**Interatrial septum** (*in-ter-AY-tree-ah/SEP-tum*), wall separating left and right atria, 123

**Intercostal** (*in-ter-KOSS-tal*), pertaining to between ribs

**Internal anal sphincter** (*SFINGK-ter*), ring of involuntary smooth muscle that controls opening and closing of anal orifice to eliminate feces, 226

Internal fixation, 104, 105

**Interventricular** (*in-ter-ven-TRIK-yoo-lar*), pertaining to between ventricles

**Interventricular septum** (*in-ter-ven-TRIK-yoo-lar/SEP-tum*), wall composed of cardiac muscle that divides left and right ventricles of the heart, 123, 127

**Intervertebral** (*in-ter-VER-teh-bral*), pertaining to between vertebrae

**Intestine** (*in-TESS-tin*), portion of digestive system between stomach and colon; receives food from stomach, digestive enzymes from pancreas, and bile from liver; absorption of nutrients begins in intestine; consists of duodenum, jejunum, and ileum; plural is *intestines*, 230

**Intestines**, plural of *intestine*

intra-, 12

Intracapsular cataract extraction (ICCE), 384

**Intracerebral** (*in-trah-seh-REE-bral*), pertaining to within cerebrum

**Intracranial** (*in-trah-KRAY-nee-al*), pertaining to inside skull

Intracranial pressure (ICP), 331

**Intradermal** (ID) (*in-trah-DER-mal*), pertaining to within skin, 71

**Intramuscular** (IM) (*in-trah-MUS-kyoo-lar*), injection of medication into muscle, 106

**Intraocular** (*in-trah-OK-yoo-lar*), pertaining to within eye

**Intraocular lens** (IOL) implant (*in-trah-OK-yoo-lar*), replacing defective natural lens with artificial lens following cataract extraction, 383, 384

Intraocular pressure (IOP), 384

**Intrauterine** (*in-trah-YOO-ter-in*), pertaining to inside uterus

Intrauterine blood transfusion, 300

**Intrauterine device** (IUD) (*in-trah-YOO-ter-in*), placed into uterus through cervix by physician for purpose of contraception, 304

**Intravascular thrombolytic therapy** (*in-trah-VAS-kyoo-lar/throm-boh-LIT-ik*), treatment for clots occluding blood vessel; drugs, such as streptokinase (SK) or tissue plasminogen activator (tPA), are injected into blood vessels to chemically dissolve clots; commonly referred to as *clot-busters*, 135

**Intravenous** (IV) (*in-trah-VEE-nus*), pertaining to inside vein, 137

**Intravenous pyelogram** (IVP) (*in-trah-VEE-nus/PYE-eh-loh-gram*), injecting contrast medium into vein and taking X-ray to visualize renal pelvis, 271, 274

**Intussusception** (*in-tuh-suh-SEP-shun*), intestinal condition in which one portion of intestine telescopes into adjacent portion causing obstruction and gangrene if untreated, 237

**Inversion** (*in-VER-shun*), action of turning inward

-ion, 91

-ior, 40

**Irides** (*IR-ih-deez*), plural of *iris*

irid/o, 374

**Iridoplegia** (*ir-id-oh-PLÉE-jee-ah*), paralysis of iris

**Iridotomy** (*ir-ih-DOT-oh-mee*), cutting into iris

**Iris** (*EYE-ris*), colored portion of eye; can dilate or constrict to change size of pupil and control amount of light entering interior of eye; plural is *irides* or *irises*, 369, 374

**Irises** (*EYE-rih-sihs*), plural of *iris*

**Iritis** (*eye-RYE-tis*), inflammation of iris

ir/o, 374

**Iron-deficiency anemia**, anemia resulting from having insufficient iron to manufacture hemoglobin, 155

**Irritable bowel syndrome** (IBS), disturbance in functions of intestine from unknown causes; symptoms generally include abdominal discomfort and alteration in bowel activity; also called *functional bowel syndrome* or *spastic colon*, 2, 238, 242

**Ischemia** (*iss-KEE-mee-ah*), localized and temporary deficiency of blood supply due to obstruction of circulation, 130

**Ischial** (*ISS-kee-al*), pertaining to ischium, one of pelvic bones

**Ischium** (*ISS-kee-um*), one of three bones that form pelvis

isch/o, 125

**Islets of Langerhans** (*EYE-lets/LAHNG-er-hahns*), another term for *pancreatic islets*, 348

-itis, 12

## J

**Jaundice** (*JAWN-dis*), yellow cast to skin, mucous membranes, and whites of eyes caused by deposit of bile pigment from too much bilirubin in blood; may be symptom of disorders such as gallstones blocking common bile duct or carcinoma of liver, 238

**Jejuna** (*jeh-JOO-nuh*), plural of *jejunum*

**Jejunal** (*jeh-JOO-nal*), pertaining to jejunum

jejun/o, 232

**Jejunostomy** (*jeh-joo-NOSS-teh-mee*), creation of connection between jejunum and body wall

**Jejunum** (*jeh-JOO-num*), middle portion of small intestine; plural is *jejuna*, 224, 232

**Joint**, point at which two bones meet; provides flexibility; plural is *joints*

**Joints**, plural of *joint*, 83, 88

cartilaginous, 86

fibrous, 86

synovial, 86, 88

Juvenile rheumatoid arthritis (JRA), 106

## K

**Kaposi sarcoma** (KS) (*KAP-oh-see/sar-KOH-mah*), form of skin cancer frequently seen in acquired immunodeficiency syndrome (AIDS) patients; consists of brownish-purple papules that spread from skin and metastasize to internal organs, 179, 181

**Keloid** (*KEE-loyd*), an excessively raised and thickened scar, 66

**Keratotomy** (*kair-ah-TEK-toh-mee*), surgical removal of cornea

**Keratin** (*KAIR-ah-tin*), hard protein substance produced by body; found in hair and nails, and filling inside of epidermal cells, 60

**Keratitis** (*kair-ah-TYE-tis*), inflammation of cornea

kerat/o, 60, 374

**Keratoderma** (*kair-ah-toh-DER-mah*), hardening of skin

**Keratometer** (*kair-ah-TOM-eh-ter*), instrument to measure cornea

**Keratometry** (*kair-ah-TOM-eh-tree*), measurement of curvature of cornea using instrument called *keratometer*

Keratomileusis, 383

**Keratoplasty** (*KAIR-ah-toh-plas-tee*), surgical repair of cornea (corneal transplant)



**Keratoses** (*kair-ah-TOH-sis*), overgrowth and thickening of skin

**Keratotomy** (*kair-ah-TOT-oh-mee*), cutting into cornea

**Ketoacidosis** (*kee-toh-ass-ih-DOH-sis*), accumulation of acidic ketone bodies (waste product); serious condition requiring immediate treatment as may result in death for diabetic patient if not reversed; also called *diabetic acidosis*

**Kidney**, one of a pair of organs located on either side of spine at level of lower ribs; each consists of thousands of nephrons; glomerulus portion of each nephron filters waste products and excess water and electrolytes out of blood in order to produce urine; urine drains out of kidney into ureter and on to urinary bladder for storage; plural is *kidneys*

**Kidneys**, plural of *kidney*, 47, 254, 259, 261

**Kidneys, ureters, bladder**, abdominal X-ray to demonstrate location and size of kidneys, ureters, and bladder; does not use any contrast material; also called *flat-plate abdomen*, 271, 274

-*kinesia*, 92

Knee replacement (TKR), 105

**Kneecap**, common name for *patella*

**Kyphosis** (*kye-FOH-sis*), abnormal increase in outward curvature of thoracic spine; commonly called *hunchback* or *humpback*

## L

**Labia majora** (*LAY-bee-ah/mah-JOR-ah*), outer folds of skin that serve as protection for female external genitalia and urethral meatus; singular is *labium majora*, 291

**Labia minora** (*LAY-bee-ah/mih-NOR-ah*), inner folds of skin that serve as protection for female external genitalia and urethral meatus; singular is *labium minora*, 291

**Labium majora** (*LAY-bee-um/mah-JOR-ah*), singular of *labia majora*

**Labium minora** (*LAY-bee-ah/mih-NOR-ah*), singular of *labia minora*

**Labyrinth** (*LAB-ih-rinth*), anatomical term for structures of inner ear; includes *cochlea* and organs responsible for equilibrium and balance, including *semicircular canals*, 399

**Labyrinthectomy** (*lab-ih-rin-THEK-toh-mee*), surgical removal of labyrinth

**Labyrinthitis** (*lab-ih-rin-THIGH-tis*), inflammation of labyrinth; also called *otitis interna*; commonly called *inner ear infection*, 406

labyrinth/o, 399

**Labyrinthotomy** (*lab-ih-rin-THOT-oh-mee*), cutting into labyrinth

**Laceration** (*lass-er-AY-shun*), torn or jagged wound; incorrectly used to describe a cut, 66

Lack of a normal body opening, 297

**Lacrimal** (*LAK-rim-al*), pertaining to tears

**Lacrimal canals** (*LAK-rim-al*), tear ducts located in inner corner of eye socket; collect tears and drain them into lacrimal sac, 373

**Lacrimal glands** (*LAK-rim-al*), located in outer corner of each eyelid; washes anterior

surface of eye with fluid called *tears*, 369, 373

**Lacrimal sac** (*LAK-rim-al*), receives tears from lacrimal canals and drains them into nasolacrimal duct, 373

lacrim/o, 374

**Lactation** (*lak-TAY-shun*), production of milk by breast to provide nourishment for newborn, 293

**Lactiferous ducts** (*lak-TIF-er-us*), channels in breast that carry milk from lactiferous gland to nipple, 293

**Lactiferous glands** (*lak-TIF-er-us*), glands in breast that produce milk, 293

lapar/o, 232, 293

**Laparoscope** (*LAP-ah-roh-skohp*), instrument to view inside abdomen

**Laparoscopy** (*lap-ar-OSS-koh-pee*), process of examining inside abdominopelvic cavity with laparoscope

**Laparotomy** (*lap-ah-ROT-oh-mee*), cutting into abdomen

**Lap-band**, restrictive band placed around stomach during *gastric banding*, 240

**Large intestine**, consists of cecum, appendix, colon, rectum, and anus; receives remains of digested food from small intestine; reabsorbs water and produces feces for elimination, 224, 228

laryng, 12

**Laryngeal** (*lair-IN-jee-al*), pertaining to larynx

**Laryngectomy** (*lair-in-JEK-toh-mee*), surgical removal of larynx

**Larynges** (*la-RIN-jeez*), plural of *larynx*

**Laryngitis** (*lair-in-JYE-tis*), inflammation of larynx

laryng/o, 399

**Laryngoplasty** (*lah-RING-goh-plas-tee*), surgical repair of larynx

**Laryngoplegia** (*lah-ring-goh-PLÉE-jee-ah*), paralysis of larynx

**Laryngoscope** (*lah-RING-goh-skohp*), instrument to view larynx, 400

**Laryngoscopy** (*lair-in-GOSS-koh-pee*), examination of interior of larynx with a lighted instrument called a *laryngoscope*

**Laryngospasm** (*lah-RING-goh-spazm*), strong involuntary muscle contraction of larynx

**Larynx** (*LAIR-inks*), respiratory system organ responsible for producing speech; located just below pharynx; plural is *larynges* or *larynxes*; commonly called *voice box*, 395, 399

**Larynxes** (*LAIR-ink-sihs*), plural of *larynx*

**Laser-assisted in situ keratomileusis** (LASIK) (*IN-SIGH-tyoo/kair-ah-toh-mih-LOO-sis*), correction of myopia using laser surgery to remove corneal tissue, 383, 384

**Laser retinal photocoagulation** (*LAY-zer/RET-ih-nal/foh-toh-koh-ag-yoo-LAY-shun*), use of laser beam to destroy very small precise areas of retina; may be used to treat retinal detachment or macular degeneration, 383

**Laser surgery**, removal of skin lesions and birthmarks using laser beam that emits intense heat and power at close range; laser converts frequencies of light into one small, powerful beam, 71

Last menstrual period (LMP), 304

**Lateral** (*lat*) (*LAT-er-al*), directional term meaning to the side, 30

Lateral direction, 41

later/o +-al, 41

Latin-based medical terminology, 2–5

**Latin**, root source for many medical terms

**Lavage** (*lah-VAHZH*), washing out stomach to remove dangerous substance, 241

**Laxative**, medication to treat constipation, 241

**Lazy eye**, common name for *amblyopia*, 378

Left atrium, 123

**Left hypochondriac** (*high-poh-KON-dree-ak*), anatomical division of abdomen, left side of upper row

Left hypochondriac region, 49

**Left iliac region** (*IL-ee-ak*), anatomical divisions of abdominopelvic cavity; refers to left lateral side of lower (or groin) region of trunk; also called *left inguinal*, 49

**Left inguinal** (*ING-gwih-nal*), anatomical division of abdomen, left side of lower row; also called *left iliac*

Left lower extremity (LLE), 106

Left lower lobe (LLL), 212

**Left lower quadrant** (LLQ), clinical division of abdomen; contains portions of small and large intestines, left ovary and uterine tube, and left ureter, 48

**Left lumbar** (*LUM-bar*), anatomical division of abdomen, left side of middle row

Left lumbar region, 49

**Left primary bronchus** (*BRONG-kus*), division of trachea carrying air to and from left lung, 196

Left upper extremity (LUE), 106

Left upper lobe (LUL), 212

**Left upper quadrant** (LUQ), clinical division of abdomen; contains left lobe of liver, spleen, left kidney, stomach, portion of pancreas, and portion of small and large intestines, 48

Left ventricle, 123

Left ventricular hypertrophy (LVH), 137

**Lens**, transparent structure behind pupil and iris; functions to bend light rays so they land on retina; plural is *lenses*, 369, 376

**Lenses**, plural of *lens*

**Lesion** (*LEE-zhun*), general term for wound, injury, or abnormality, 66, 71

**Leukemia** (*loo-KEE-mee-ah*), cancer of WBC-forming bone marrow; results in large number of abnormal WBCs circulating in blood, 155

**Leukocyte** (*LOO-koh-sight*), one of formed elements of blood; provide protection against pathogens; five types are *neutrophils*, *basophils*, *eosinophils*, *monocytes*, and *lymphocytes*; also called *white blood cells* (WBC); plural is *leukocytes*

**Leukocytes** (*LOO-koh-sight*), plural of *leukocyte*, 135

**Leukocytosis** (*loo-koh-sigh-TOH-sis*), too many white cells

**Leukoderma** (*loo-koh-DER-mah*), disappearance of pigment from skin in patches, causing milk-white appearance; also called *vitiligo*

**Leukopenia** (*loo-koh-PEE-nee-ah*), too few white (cells)

**Leukopoiesis** (*loo-koh-poy-EE-sis*), white (cell) producing

Lie face down, 41  
 Lie face up, 41  
 Ligament, 83  
**Ligaments** (*LIG-ah-mentz*), very strong bands of connective tissue that bind bones Together at joint  
**Lingual tonsils** (*LING-gwal*), tonsils located on very posterior section of tongue as it joins with pharynx, 177, 402  
**Lipectomy** (*lih-PEK-toh-mee*), surgical removal of fat  
**Lipid panel**, blood test measuring amount of cholesterol and triglycerides in blood; includes *high-density lipoprotein* (HDL; “good” cholesterol) and *low-density lipoprotein* (LDL; “bad” cholesterol); indicator of atherosclerosis and heart disease, 157  
 lip/o, 61  
**Lipocyte** (*LIP-oh-sight*), medical term for cells that contain fat molecules  
**Lipoma** (*lih-POH-mah*), fatty tumor  
 Listening, 125  
 lith/o, 259  
**Lithotripsy** (*LITH-oh-trip-see*), destroying or crushing kidney stones in bladder or urethra with device called *lithotripter*  
**Liver**, large organ located in right upper quadrant of abdomen; serves many functions in body; digestive system role includes producing bile, processing absorbed nutrients, and detoxifying harmful substances, 224  
**Lobar** (*LOH-bar*), pertaining to a lobe  
**Lobe**, subdivisions of organ such as lungs or brain; plural is *lobes*  
**Lobectomy** (*loh-BEK-toh-mee*), surgical removal of lobe from organ, such as lung  
**Lobes**, plural of *lobe*  
 brain, 319  
 lungs, 198, 212  
 pituitary gland, 198, 212, 350  
 lob/o, 198  
 -logy, 12  
**Longitudinal section** (*lon-jih-TOO-dih-nal*), internal view of body produced by lengthwise slice along long axis of structure, 38  
**Lordosis** (*lor-DOH-sis*), abnormal increase in forward curvature of lumbar spine; commonly called *swayback*  
**Lou Gehrig’s disease**, common name for *amyotrophic lateral sclerosis* (ALS), 324  
**Low-density lipoprotein** (LDL, “bad” cholesterol), one type of cholesterol found in blood; high levels are risk factor for atherosclerosis and heart disease, 157  
**Lower esophageal sphincter** (LES) (*eh-soff-ah-JEE-al/SFINGK-ter*), ring of muscle that closes to prevent acidic gastric acid from splashing up into esophagus, 230, 242  
**Lower extremity** (LE), refers to entire leg, 44, 106  
**Lower GI series**, another term for *barium enema*, 239  
 Lub-dupp, 126  
**Lumbar puncture** (LP) (*LUM-bar/PUNK-chur*), pierce with needle into lumbar area (usually

fourth intervertebral space) to withdraw fluid for examination and for injection of anesthesia; also called *spinal puncture* or *spinal tap*, 330, 331  
 Lumbar vertebra (L1, L2, etc.), 106  
**Lumen** (*LOO-men*), open channel through tubular organ such as blood vessel or intestine, 122  
**Lung**, major organ of respiration; consists of air passageways, bronchi and bronchioles, and air sacs, alveoli; gas exchange takes place within alveoli; plural is *lungs*  
**Lungs**, plural of *lung*, 193, 200  
**Lunula** (*LOO-nyoo-lah*), light-colored half-moon area at base of nail, 61  
**Luteinizing hormone** (LH) (*LOO-tee-in-eye-zing*), hormone secreted by anterior pituitary; regulates function of male and female gonads and plays a role in releasing ova in females, 350, 357  
**Lymph** (*LIMF*), clear, transparent, colorless fluid found in lymphatic vessels, 173  
 Lymph gland, 173  
**Lymph node**, one of many small organs in lymphatic system that filter bacteria and other foreign organisms from body fluids; plural is *lymph nodes*  
**Lymph nodes** (*LIMF*), plural of *lymph node*, 170, 173–174  
**Lymphadenectomy** (*lim-fad-eh-NEK-toh-mee*), surgical removal of lymph node  
**Lymphadenitis** (*lim-fad-en-EYE-tis*), inflammation of lymph nodes  
 lymphaden/o, 173  
**Lymphadenopathy** (*lim-fad-eh-NOP-ah-thee*), disease of lymph nodes  
**Lymphadenosis** (*lim-fad-eh-NOH-sis*), abnormal condition involving lymph nodes  
**Lymphangiectasis** (*lim-fan-jee-EK-tah-sis*), dilated lymphatic vessels  
 lymphangi/o, 174  
**Lymphangiogram** (*lim-FAN-jee-oh-gram*), X-ray taken of lymph vessels after injection of dye  
**Lymphangiography** (*lim-fan-jee-OG-rah-fee*), process of taking X-ray of lymph vessels after injection of radiopaque material  
**Lymphangioma** (*lim-fan-jee-OH-mah*), lymph vessel tumor  
**Lymphangioplasty** (*lim-fan-jee-oh-PLAS-tee*), surgical repair of lymphatic vessels  
**Lymphatic** (*lim-FAT-ik*), pertaining to lymph  
**Lymphatic system** (*lim-FAT-ik*), helps body fight infection; organs include spleen, tonsils, thymus gland, lymph vessels, and lymph nodes, 170, 171  
**Lymphatic vessels** (*lim-FAT-ik*), an extensive network of vessels throughout entire body; conduct lymph from tissue toward thoracic cavity  
**Lymphedema** (*limf-eh-DEE-mah*), edema appearing in extremities due to obstruction of lymph flow through lymphatic vessels  
 lymph/o, 173  
**Lymphocyte** (*LIM-foh-sight*), white blood cell that provides protection through immune response

Lymphocytes (lymphs), 149, 159, 170  
**Lymphocytic** (*lim-foh-SIT-ik*), pertaining to lymph cell  
**Lymphogenic** (*lim-foh-JEN-ik*), lymph producing  
**Lymphoid** (*LIM-foyd*), resembling lymph  
**Lymphoma** (*lim-FOH-mah*), tumor of lymphatic tissue  
**Lymphostasis** (*lim-FOSS-tah-sis*), stoppage of lymph flow  
**Lymph vessel** (*LIMF*), extensive network of vessels throughout entire body; conduct lymph from tissues toward thoracic cavity; plural is *lymph vessels*  
**Lymph vessels** (*LIMF*), plural of *lymph vessel*, 121, 174  
**M**  
**Macrophage** (*MAK-roh-fayj*), monocyte that migrated out of bloodstream and into surrounding body tissue; engulfs pathogens  
 Macrophages, 175  
**Macula lutea** (*MAK-yoo-lah/LOO-tee-ah*), localized region of retina where images are projected; point of central vision, 376  
**Macular degeneration** (*MAK-yoo-lar*), deterioration of macular area of retina of eye, 380  
**Macule** (*MAK-yool*), flat, discolored area that is flush with skin surface; example is freckle or birthmark, 66  
**Magnetic resonance imaging** (MRI) (*REZ-oh-nens*), diagnostic imaging technique using electromagnetic energy to produce image; especially useful for viewing soft tissues, such as spinal cord and intervertebral disks, 2, 104, 106  
**Male reproductive system**, responsible for producing sperm for reproduction; organs include testes, epididymis, vas deferens, seminal vesicles, bulbourethral glands, urethra, prostate gland, and penis, 254, 256. *See also* Urology and nephrology  
**Malignant melanoma** (MM) (*mah-LIG-nant/mel-ah-NOH-mah*), cancerous, darkly pigmented tumor or mole on skin, 66, 71  
**Malleus** (*MAL-ee-us*), one of three ossicles of middle ear; commonly called *hammer*, 398  
**Mammary** (*MAM-ah-ree*), pertaining to breast  
 mamm/o, 293  
**Mammary gland** (*MAM-ah-ree*), anatomical term for breast  
 Mammary glands, 293  
**Mammogram** (*MAM-oh-gram*), X-ray record of breast  
**Mammography** (*mam-OG-rah-fee*), process of X-raying breast  
**Mammoplasty** (*MAM-oh-plas-tee*), surgical repair of breast  
**Mandible** (*MAN-dih-bl*), lower jawbone  
**Mandibular** (*man-DIB-yoo-lar*), pertaining to mandible  
**Mantoux test** (*mahn-TU*), another term for *tuberculin skin test*, 209  
**Mastalgia** (*mas-TAL-jee-ah*), breast pain

**Mastectomy** (*mas-TEK-toh-mee*), surgical removal of breast

Master gland, 350

**Mastitis** (*mas-TYE-tis*), inflammation of breast

mast/o, 294

**Maxilla** (*mak-SIL-ah*), upper jawbone

**Maxillary** (*MAK-sih-lair-ee*), pertaining to maxilla

**Measles**, extremely contagious viral infection; symptoms include skin rash, fever, and cough, 66

**Meatus** (*mee-AY-tus*), opening of duct or canal to outside of body; example is urinary meatus, 264

**Medial** (*MEE-dee-al*), directional term meaning to middle or near middle of body or structure

Medial direction, 41

**Mediastinal** (*mee-dee-as-TYE-nal*), pertaining to mediastinum

mediastin/o, 198

**Mediastinotomy** (*mee-dee-as-tih-NOT-oh-mee*), cutting into mediastinum

**Mediastinum** (*mee-dee-as-TYE-num*), central region of chest cavity; contains organs between lungs, including heart, aorta, esophagus, and trachea, 47, 198

**Medical laboratory scientists/technicians**, health care specialists trained to examine and analyze body fluids (such as blood and urine), tissues, and cells for presence of abnormalities, including blood disorders, metabolic problems, cancer, or pathogens; also known as *clinical laboratory scientists/technicians*, 149

Medical personnel, suffixes indicating, 17

Medical specialties, suffixes indicating, 17

Medical terminology

- analyzing, strategies for, 5–6
- building, 6
- combining forms, 4–5
- combining vowels, 4
- defining, 5–6
- introduction to, 2
- Latin-and Greek-based, 2–5
- plurals, rules for building, 6–7
- prefixes, 3–4, 25–32
- pronunciation of, 7
- suffixes, 3, 13–24
- word roots, 3

Medieval, 89

medi/o + -al, 41

Medulla, 345

**Medulla oblongata** (*meh-DULL-ah/ob-long-GAH-tah*), portion of brainstem connecting spinal cord with brain; contains respiratory, cardiac, and blood pressure control centers; plural is *medullae oblongatae* or *medulla oblongatas*, 320

**Medulla oblongatas** (*meh-DULL-ah/ob-long-GAH-tahz*), plural of *medulla oblongata*

**Medullae oblongatae** (*meh-DULL-ee/ob-long-GAH-tee*), plural of *medulla oblongata*

**Medullary** (*MED-yoo-lair-ee*), pertaining to medulla

medull/o, 320

**Melanin** (*MEL-ah-nin*), black pigment that gives skin its color and protects against ultraviolet rays of sun, 61

melan/o, 61

**Melanocyte-stimulating hormone** (MSH) (*mel-AN-oh-sight*), secreted by anterior pituitary; stimulates pigment production in skin, 350, 357

**Melanocytes** (*mel-AN-oh-sights*), special cells in epidermis that contain pigment melanin, 58, 61

**Melanoma** (*mel-ah-NOH-mah*), also called *malignant melanoma*; dangerous form of skin cancer caused by overgrowth of melanin in melanocyte; may metastasize or spread

**Melanotic** (*mel-ah-NOT-ik*), pertaining to melanin

**Melatonin** (*mel-ah-TOH-nin*), hormone secreted by pineal gland; plays role in regulating body's circadian rhythm, 349

**Melena** (*meh-LEE-nah*), passage of dark tarry stools; color is result of digestive enzymes working on blood in stool, 238

Mellitus, 353

**Menarche** (*men-AR-kee*), first menstrual period of puberty; in the United States, average age for menarche is 12–½ years, 294

**Ménière disease** (*may-nee-AIR*), abnormal condition within labyrinth of inner ear that can lead to progressive loss of hearing; symptoms are vertigo, hearing loss, and tinnitus (ringing in ears), 405

**Meningeal** (*meh-NIN-jee-al*), pertaining to meninges

**Meninges** (*men-IN-jeez*), three connective tissue membrane layers surrounding brain and spinal cord; three layers are dura mater, arachnoid layer, and pia mater; dura mater and arachnoid layer are separated by subdural space and arachnoid layer and pia mater are separated by subarachnoid space; plural is *meninx*, 46, 321

meningi/o, 321

**Meningioma** (*meh-nin-jee-OH-mah*), meninges tumor

**Meningitis** (*men-in-JYE-tis*), inflammation of membranes of spinal cord and brain caused by microorganism

mening/o, 321

**Meningocele** (*meh-NING-goh-seel*), congenital hernia in which meninges protrude through opening in spinal column or skull, 328

**Meningomyelitis** (*meh-ning-goh-my-eh-LYE-tis*), inflammation of meninges and spinal cord

**Meningomyelocele** (*meh-ning-goh-MY-eh-loh-seel*), congenital hernia in which meninges and spinal cord protrude through an opening in spinal column, 328

**Meninx** (*MEE-ninks*), singular of *meninges*

**Meniscectomy** (*men-ih-SEK-toh-mee*), surgical removal of meniscus

**Menisci** (*men-NIS-sigh*), plural of *meniscus*

**Meniscitis** (*men-ih-SIGH-tis*), inflammation of meniscus

menisc/o, 92

**Meniscus** (*men-NIS-kuhs*), C-shaped pad of cartilage found between bones of knee and jaw; plural is *menisci*, 92

men/o, 294

**Menopause** (*MEN-oh-pawz*), period of time associated with ending of menstrual activity and childbearing years, 294

**Menorrhagia** (*men-oh-RAY-jee-ah*), excessive bleeding during menstrual period

**Menstrual period** (*MEN-stroo-al*), fertility cycle in women regulated by estrogen; includes ovulation and sloughing off of endometrium if pregnancy does not occur, 292

**Menstruation** (*men-stroo-AY-shun*), period of time each month during which endometrial lining of uterus is shed; appears as bloody flow through cervix and vagina, 294

**Metabolic panel**, group of 8, called *basic metabolic panel* (BMP), or 14, called *comprehensive metabolic panel* (CMP), blood tests providing information about body's blood counts, metabolism, chemical balance, kidney function, and liver function, 157

**Metacarpal** (*met-ah-KAR-pal*), pertaining to metacarpus

**Metacarpus** (*met-ah-KAR-pus*), hand bones in upper extremity

Metastasized, 174

**Metatarsal** (*met-ah-TAR-sal*), pertaining to metatarsus

**Metatarsus** (*met-ah-TAR-sus*), foot bones in lower extremity

**Metered-dose inhaler** (MDI), mechanism that delivers *aerosol therapy* in single puff of mist or powder, 210–212

**Methicillin-resistant *Staphylococcus aureus* (MRSA) infection** (*meth-ih-SIL-in/ree-ZISS-tent/staf-ih-loh-KOK-us/OR-ee-iss*), *Staphylococcus aureus* bacteria is resistant to methicillin and many common antibiotics; symptoms depend on area of body infected, often beginning in skin and then spreading through body in bloodstream, 179

metr/o, 294

**Metrorrhagia** (*mee-troh-RAY-jee-ah*), uterine bleeding between menstrual periods

**Metrorrhea** (*mee-troh-REE-ah*), discharge from uterus, such as mucus or pus; does not refer to menstrual flow

**Micturition** (*mik-too-RISH-un*), another term for *urination*, 265

**Middle ear**, middle section of ear; contains ossicles, 398

**Middle ear infection**, common name for *otitis media*, 406

Midline direction, 39

**Midsagittal line** (*mid-SAJ-ih-tal*), vertical line that divides body into equal left and right halves, 37

**Migraine** (*MY-grain*), specific type of headache characterized by severe head pain, photophobia, vertigo, and nausea, 327

Millimeters of mercury (mmHg), 137

**Miotic eyedrops** (*my-OT-ik*), medicated eyedrops that cause iris to relax; results in pupil becoming smaller, 383

Miscarriage (spontaneous abortion), 297

Mitral stenosis (MS), 8, 136

**Mitral valve** (*MY-tral*), located between left atrium and ventricle in heart; prevents blood from flowing backward into atrium; also called *bicuspid valve*, 123, 126

Mitral valve prolapse (MVP), 137

**Modern English**, English language as it has been since about 1500; many new medical terms are formed from modern English words

**Monocyte** (monos) (*MON-oh-sight*), white blood cell important for phagocytosis, 149, 159, 175

**Mononucleosis** (mono) (*mon-oh-noo-kee-OH-sis*), acute infectious disease with large number of atypical lymphocytes, 179, 181

**Monoparesis** (*mon-oh-pah-REE-sis*), weakness of one limb

**Monoplegia** (*mon-oh-PLÉE-jee-ah*), paralysis of one extremity

**Monospot**, blood test for mononucleosis, 180

**Motor nerves**, nerves that carry activity instructions from CNS to muscles and glands; also called *efferent nerves*, 322

**Mouth**, opening of alimentary canal; chewed and swallowed food passes out of mouth and into pharynx, 224

Movement, 92

**Mucolytic** (*myoo-koh-LIT-ik*), medication that liquifies mucus so it is easier to cough up and out of airways, 211

**Mucous membrane** (*MYOO-kus*), lines body passages that open directly to exterior of body, such as mouth and reproductive tract, and secretes thick substance, or mucus, 401

**Multigravida** (*mull-tih-GRAY-ih-dah*), person who has had more than one pregnancy

**Multipara** (*mull-TIP-ah-rah*), person who has given birth to more than one child

**Multiple myeloma** (*my-eh-LOH-mah*), cancer that originates in lymphocytes that make antibodies; over time, cancerous cells collect in bone marrow, resulting in bone marrow tumors, 156

**Multiple sclerosis** (MS) (*skleh-ROH-sis*), inflammatory autoimmune disease of central nervous system; immune system damages myelin around neurons and results in extreme weakness and numbness, 8, 327, 331

**Muscle**, bundles of parallel muscle tissue fibers; as fibers contract (shorten in length) they pull whatever they are attached to closer together; may move two bones closer together or make opening narrower; plural is *muscles*

**Muscles**, plural of *muscle*, 83, 86, 93, 316

cardiac, 83, 93

skeletal, 83, 93

smooth, 83, 93, 122

muscul, 12

**Muscular** (*MUS-kyoo-lar*), pertaining to muscles

**Muscular dystrophy** (MD) (*MUS-kyoo-lar/DIS-troh-fee*), inherited disease causing progressive muscle weakness and atrophy, 102, 106

muscul/o, 93

Musculoskeletal (MS), 8

**Musculoskeletal system** (*mus-kyoo-loh-SKEL-eh-tal*), provides support for body and produces movement; organs include muscles, tendons, bones, joints, and cartilage, 83. *See also* Orthopedics

**Myalgia** (*my-AL-jee-ah*), muscle pain

**Myasthenia** (*my-as-THEE-nee-ah*), lack of muscle strength

**Myasthenia gravis** (MG) (*my-as-THEE-nee-ah/GRAY-iss*), autoimmune disease with severe muscular weakness and fatigue due to difficulty of electrical impulse passing across synapse from one nerve to the next, 101, 237

*Mycobacterium tuberculosis*, 208

**Mydriatic eyedrops** (*mid-ree-AT-ik*), medicated eyedrops that cause iris to contract; results in pupil dilating, 383

**Myelin** (*MY-eh-lin*), tissue that wraps around many of nerve fibers; composed of fatty material and functions as insulator, 316, 327

**Myelitis** (*my-eh-LYE-tis*), inflammation of spinal cord

myel/o, 94, 321

**Myelogenic** (*my-eh-loh-JEN-ik*), red bone marrow producing

**Myelogram** (*MY-eh-loh-gram*), X-ray record of spinal cord following injection of meninges with radiopaque dye

**Myelography** (*my-eh-LOG-rah-fee*), injection of radiopaque material into spinal canal; X-ray is taken to examine normal and abnormal outlines made by material

**Myeloma** (*my-eh-LOH-mah*), cancerous tumor in bone marrow

**Myelomalacia** (*my-eh-loh-mah-LAY-shee-ah*), softening of spinal cord

Myelomeningocele, 328

**Myeloneuritis** (*my-eh-loh-noo-RYE-tis*), inflammation of spinal cord and nerves

**Myelopathy** (*my-eh-LOP-ah-thee*), spinal cord disease or red bone marrow disease

**Myelotomy** (*my-eh-LOT-oh-mee*), cutting into spinal cord

my/o, 94

**Myocardial** (*my-oh-KAR-dee-al*), pertaining to heart muscle

**Myocardial infarction** (MI) (*my-oh-KAR-dee-al/in-FARK-shun*), condition caused by partial or complete occlusion or closing of one or more of coronary arteries; symptoms include severe chest pain or heavy pressure in middle of chest; commonly called *heart attack*, 130, 137

**Myocardium** (*my-oh-KAR-dee-um*), muscular tissue forming walls of heart, 123

**Myometrium** (*my-oh-MEE-tree-um*), middle muscle layer of uterus, 292

**Myopathy** (*my-OP-ah-thee*), any disease of muscles

**Myopia** (MY) (*my-OH-pee-ah*), condition in which person can see things that are close up but distance vision is blurred; commonly called *nearsightedness*, 380, 382

**Myorrhaphy** (*my-OR-ah-fee*), suture a muscle

**Myorrhexis** (*my-oh-REK-sis*), tearing a muscle

**Myringectomy** (*mir-in-JEK-toh-mee*), surgical removal of eardrum

**Myringitis** (*mir-in-JYE-tis*), eardrum inflammation

myring/o, 400

**Myringoplasty** (*mir-IN-goh-plas-tee*), surgical reconstruction of eardrum; also called *tympa-noplasty*

**Myringosclerosis** (*mir-IN-goh-skleh-roh-sis*), hardening of eardrum

**Myringotomy** (*mir-in-GOT-oh-mee*), cutting into eardrum

**Myxedema** (*miks-eh-DEE-mah*), condition resulting from hypofunction of thyroid gland; symptoms can include anemia, slow speech, enlarged tongue and facial features, edematous skin, drowsiness, and mental apathy, 354

## N

**Nail**, structure in integumentary system; consists of flat plates of keratin that cover ends of fingers and toes; plural is *nails*, 55, 61

bed, 61

body, 61

cuticle, 61

free edge, 61

keratin, 60

lunula, 61

root, 61

structures of, 61

**Nail bed**, connects nail body to underlying tissue

**Nail body**, flat plate of keratin; bulk of nail

**Nail root**, area at base of nail from which nail grows longer, covered by cuticle

**Nails**, plural of *nail*

**Narcotic analgesic** (*nar-KOT-ik/an-al-JEE-zik*), drug to treat severe pain; has potential to be habit-forming; also called *opiate*, 331

**Nares** (*NAIR-eez*), external openings of nose that open into nasal cavity, 401

**Nasal** (*NAY-zal*), pertaining to nose

**Nasal cannula** (*KAN-yoo-lah*), two-pronged plastic device for delivering oxygen into nose, 211, 408

**Nasal cavity** (*NAY-zal*), large cavity just behind external nose that receives outside air; covered with mucous membrane to cleanse air; nasal septum divides nasal cavity into left and right halves, 401

Nasal region, 44

**Nasal septum** (*NAY-zal*), flexible cartilage wall dividing nasal cavity into left and right halves; covered by mucous membrane, 401

nas/o, 401

nas/o +-al, 44

**Nasogastric** (*nay-zoh-GAS-trik*), pertaining to nose and stomach

**Nasogastric (NG) intubation** (*nay-zoh-GAS-trik/in-too-BAY-shun*), procedure in which flexible tube is placed through nose, down esophagus, and into stomach; may be used for *gavage* or *lavage*, 241, 242



**Nasolacrimal** (*nay-zoh-LAK-rim-al*), pertaining to nose and tearducts

**Nasopharyngeal** (*nay-zoh-fah-RIN-jee-al*), pertaining to nose and throat

**Nasosinusitis** (*nay-zoh-sigh-nyoo-SIGH-tis*), inflammation of nose and sinuses

**Natal** (*NAY-tal*), pertaining to birth  
nat/o, 294

**Natural immunity** (*im-YOO-nih-tee*), body's non-specific defense mechanisms (such as macrophages), 172

**Nausea** (*NAW-zee-ah*), feeling of needing to vomit, 238

Nausea and vomiting (N&V), 242

Nearer the surface, 41

**Nearsightedness**, common name for *myopia*, 380

**Nebulizer** (*NEB-yoo-lye-zer*), mechanism that delivers *aerosol therapy* mist, usually via mask, over time as person breathes, 210, 212

**Neck of the uterus**, another term for *cervix*, 289

**Necrosis** (*neh-KROH-sis*), dead tissue, 67

**Neonatal** (*nee-oh-NAY-tal*), pertaining to newborn

**Neonatologist** (*nee-oh-nay-TALL-oh-jist*), specialist in treatment of newborn

**Neonatology** (*nee-oh-nay-TALL-oh-jee*), study of newborn

**Nephrectomy** (*neh-FREK-toh-mee*), surgical removal of kidney

**Nephritis** (*neh-FRY-tis*), inflammation of kidney  
neph/r/o, 259

**Nephrolithiasis** (*nef-roh-lith-EYE-ah-sis*), presence of calculi in kidney

**Nephrolith** (*NEF-roh-lith*), kidney stone

**Nephrologist** (*neh-FROL-oh-jist*), specialist in treatment of kidney disorders, 254

**Nephrology** (*neh-FROL-oh-jee*), branch of medicine specializing in conditions of urinary system, 254.  
*See also* Urology and nephrology

**Nephroma** (*neh-FROH-mah*), kidney tumor

**Nephromegaly** (*nef-roh-MEG-ah-lee*), enlarged kidney

**Nephron** (*NEF-ron*), functional or working unit of kidney that filters blood and produces urine, 259

**Nephropathy** (*neh-FROP-ah-thee*), kidney disease

**Nephropexy** (*NEF-roh-pek-see*), surgical fixation of kidney

**Nephroptosis** (*nef-rop-TOH-sis*), drooping kidney

**Nephrosclerosis** (*nef-roh-skleh-ROH-sis*), hardening of kidney

**Nephrosis** (*neh-FROH-sis*), abnormal condition (degeneration) of kidney

**Nephrostomy** (*neh-FROS-toh-mee*), creating new opening across body wall into kidney

**Nephrotomy** (*neh-FROT-oh-mee*), cutting into kidney

**Nerve conduction study** (NCS), another term for *nerve conduction velocity*, 330, 331

**Nerve conduction velocity** (NCV), diagnostic test to determine if nerves are damaged by recording rate at which electrical impulse travels

along nerve; if nerve is damaged, velocity is decreased; also called *nerve conduction study* (NCS), 330, 331

**Nerve**, one of many structures in nervous system that conducts electrical impulses from brain and spinal cord to muscles and other organs; plural is *nerves*

**Nerve root**, segment of spinal nerve that connects to spinal cord; plural is *nerve roots*

**Nerve roots**, plural of *nerve root*, 323

**Nerves**, plural of *nerve*, 316, 322

cochlear, 398

cranial, 322

motor, 322

optic, 369

roots, 323

sensory, 322

spinal, 321, 322

**Nervous system**, coordinates all conscious and subconscious activities of body; organs include brain, spinal cord, and nerves, 316, 317. *See also* Neurology

autonomic, 331

central, 316, 331

peripheral, 316, 331

neur, 12

**Neural** (*NOO-ral*), pertaining to nerves

**Neuralgia** (*noo-RAL-jee-ah*), nerve pain

**Neurectomy** (*noo-REK-toh-mee*), surgical removal of nerve

neur/o, 322

**Neurologist** (*noo-RALL-oh-jist*), physician specializing in disorders of nervous system, 316

**Neurology** (*noo-RALL-oh-jee*), branch of medicine specializing in conditions of nervous system, 315–341

abbreviations, 331

case study, 332–333

combining forms, 316, 318–324

description of, 316

prefixes, 317

structures treated in, 317–318

suffixes, 295

vocabulary, 324–331

**Neuroma** (*noo-ROH-mah*), nerve tumor

**Neuron** (*NOOR-on*), name for individual nerve cell; neurons group together to form nerves and other nervous tissue, 316

**Neuropathy** (*noo-ROP-ah-thee*), disease of nerves

**Neuroplasty** (*NOOR-oh-plas-tee*), surgical repair of nerves

**Neurorrhaphy** (*noo-ROR-ah-fee*), translates as *suture a nerve*, but actually refers to suturing connective tissue sheath around nerve so nerve can regenerate

**Neurosurgery** (*noor-oh-SER-jer-ee*), branch of medicine specializing in surgery of nervous system, 316

**Neurotransmitter** (*noor-oh-TRANS-mit-ter*), chemical messenger that carries electrical impulse across gap between two neurons, 316, 327

Neutral protamine Hagedorn (insulin) (NPH), 357

**Neutropenia** (*noo-troh-PEE-nee-ah*), too few neutrophils

**Neutrophil** (*NOO-troh-fill*), white blood cells are important for phagocytosis, 149

**Nevus** (*NEE-vus*), pigmented (colored) congenital skin blemish, birthmark, or mole; usually benign but may become cancerous, 67

Newborn (NB), 304

Night blindness, 381

**Nipple**, point at which milk is released from breast, 293

Nits, 67

**Nocturia** (*nok-TOO-ree-ah*), excessive urination during night

**Nocturnal enuresis** (*en-yoo-REE-sis*), bedwetting, 268

**Nodule** (*NOD-jool*), solid, raised group of cells, 67

**Non-Hodgkin lymphoma** (NHL) (*non-HOJ-kin/lim-FOH-mah*), cancer of lymphatic tissues other than Hodgkin lymphoma, 179, 181

**Non-insulin-dependent diabetes mellitus** (NIDDM) (*dye-ah-BEE-teez/MEL-ih-tus*), develops later in life when pancreas produces insufficient insulin; persons may take oral hypoglycemics to stimulate insulin secretion, or may eventually have to take insulin; also called *type 2 diabetes mellitus*, 353, 354, 357

**Noninvasive positive pressure ventilation** (NIPPV) (*non-in-VAY-siv/VEN-tih-lay-shun*), another term for *noninvasive ventilation* (NIV) or *bilevel positive airway pressure* (BiPAP), 211

**Noninvasive ventilation** (NIV) (*non-in-VAY-siv/VEN-tih-lay-shun*), use of mechanical device to provide breathing support to person able to breathe on their own, but not getting enough oxygen; does not require intubation or artificial airway; also called *noninvasive positive pressure ventilation* (NIPPV) or *bilevel positive airway pressure* (BiPAP), 211

**Nonsteroidal anti-inflammatory drugs** (NSAIDs) (*non-steh-ROY-dal*), large group of drugs including aspirin and ibuprofen that provide mild pain relief and anti-inflammatory benefits for conditions such as arthritis, 104, 106

Normal sinus rhythm (NSR), 137

**Nose**, opening into respiratory system; air enters through two openings called *nares*, passes through *nasal cavity*, and enters pharynx; divided down middle by cartilage plate called *nasal septum*; lined by *mucous membrane*; air is warmed, moisturized, and cleansed as it passes through; houses sensory receptors for sense of smell, 375, 401, 403. *See also* Otorhinolaryngology (ENT)

Nosocomial, 179

**Nosocomial infection** (*noh-soh-KOH-mee-al*), contracted as result of hospital exposure; also called *health care-associated infection* (HAI), 179

**Nulligravida** (*null-ih-GRAV-ih-dah*), person who has never been pregnant

**Nullipara** (*null-IP-ah-rah*), person who has never produced viable baby

Numbers, prefixes indicating, 27–28

**Nutrition Technicians**, assists Dietitian Nutritionists, 224

**Nyctalopia** (*nik-tah-LOH-pee-ah*), difficulty seeing in dim light; usually due to damaged rods, 381

**Nystagmus** (*niss-TAG-mus*), jerky-appearing involuntary eye movement, 381

## O

o, 12

OB-GYN, 305

**Oblique fracture** (*oh-BLEEK*), break at an angle to bone, 100

**Obstetrician** (*ob-steh-TRISH-un*), physician specializing in pregnancy and childbirth, 286

Obstetrics and gynecology, 285–314

- abbreviations, 304–305
- case study, 305–306
- combining forms, 286, 288–297
- description of, 286
- organs and structures treated in, 287–288
- prefixes, 287
- suffixes, 286–287
- vocabulary, 297–304

**Obstetrics** (OB) (*ob-STET-riks*), branch of medicine that treats pregnancy and childbirth, and immediately after childbirth, 286, 304. *See also* Obstetrics and gynecology

**Occipital lobe** (*ok-SIP-ih-tal*), one of four cerebral hemisphere lobes; controls eyesight, 319

**Occlusion**, blockage, 130

Occult, 239

**Ocular** (*OK-yoo-lar*), pertaining to eye

ocul/o, 374

**Oculomycosis** (*ok-yoo-loh-my-KOH-sis*), condition of eye fungus

Oil, 62

**Oil glands**, common name for *sebaceous glands*, 57

**Oligomenorrhea** (*ol-ih-goh-men-oh-REE-ah*), scanty menstrual flow

**Oligospermia** (*ol-ih-goh-SPER-mee-ah*), condition of having few sperm

**Oliguria** (*ol-ig-YOO-ree-ah*), condition of scanty amount of urine

-oma, 12

**Onychectomy** (*on-ih-KEK-toh-mee*), surgical removal of nail

**Onychia** (*oh-NIK-ee-ah*), infected nailbed, 67

**Onychitis** (*on-ih-KYE-tis*), inflamed nail

onych/o, 61

**Onychomalacia** (*on-ih-koh-mah-LAY-shee-ah*), abnormal softening of nails

**Onychomycosis** (*on-ih-koh-my-KOH-sis*), abnormal condition of nail fungus

**Onychophagia** (*on-ih-koh-FAY-jee-ah*), nail biting

o/o, 295

**Oocyte** (*OH-oh-sight*), egg cell

**Oogenesis** (*oh-oh-JEN-eh-sis*), process that produces eggs

**Oophorectomy** (*oh-of-or-EK-toh-mee*), surgical removal of ovary

**Oophoritis** (*oh-of-or-EYE-tis*), inflammation of ovary

oophor/o, 295, 347

**Oophoropexy** (*oh-OF-or-oh-pek-see*), surgical fixation of ovary

**Oophorotomy** (*oh-of-or-OT-oh-mee*), cutting into ovary

**Open fracture**, another name for *compound fracture*, 99

**Open reduction**, realignment of fracture bone after making surgical incision at fracture site, 104, 105

Open reduction–internal fixation (ORIF), 106

Operative, 30

Ophthalm, 12

**Ophthalmalgia** (*off-thal-MAL-jee-ah*), eye pain

**Ophthalmic** (*off-THAL-mik*), pertaining to eyes

ophthalm/o, 375

**Ophthalmologist** (*off-thal-MALL-oh-jist*), physician specialized in treating conditions and diseases of eye, 369

**Ophthalmology** (Ophth) (*off-thal-MALL-oh-jee*), branch of medicine specializing in condition of eye, 368–393

- abbreviations, 384
- case study, 385–386
- combining forms, 369, 371–377
- description of, 369
- prefixes, 370
- structures treated in, 370–371
- suffixes, 370
- vocabulary, 378–384

**Ophthalmoplegia** (*off-thal-moh-PLÉE-jee-ah*), paralysis of eye

**Ophthalmoscope** (*off-THAL-moh-skohp*), instrument to view inside eye, 375

**Ophthalmoscopy** (*off-thal-MOSS-koh-pee*), process of examining interior of eyes using ophthalmoscope

-opia, 375

**Opiate** (*OH-pee-it*), another term for *narcotic analgesic*, 331

Opioid, 331

**Opportunistic infections** (*op-er-too-NIS-tik*), infectious diseases associated with patients who have compromised immune systems and lowered resistance to infections and parasites, 179

**Optician** (*op-TISH-an*), specialist who grinds and fits prescription lenses and contact lenses as prescribed by physician or optometrist, 369

**Optic** (*OP-tik*), pertaining to eye

**Optic nerve** (*OP-tik*), second cranial nerve that carries impulses from retinas to brain, 369

opt/o, 376

**Optometer** (*op-TOM-eh-ter*), instrument to measure vision

**Optometrist** (OD) (*op-TOM-eh-trist*), doctor of optometry; provides care for eyes including examining eyes for diseases, assessing visual acuity, prescribing corrective lenses and eye treatments, and educating patients, 369

**Optometry** (*op-TOM-eh-tree*), process of measuring vision, 369

**Oral** (*OR-al*), pertaining to mouth

**Oral contraceptive pills** (OCPs) (*kon-trah-SEP-tiv*), form of birth control using low doses of hormones to block ovulation; commonly called *birth control pills*, 304, 305

**Oral hypoglycemic agents** (*high-poh-gly-SEE-mik*), medication taken by mouth to decrease blood sugar levels in persons with type 2 diabetes; not used for persons with type 1 diabetes, 357

Oral region, 44

**Orbital** (*OR-bih-tal*), pertaining to orbit (region around eye)

Orbital region, 44

orbit/o +-al, 44

**Orchialgia** (*or-kee-AL-jee-ah*), testicular pain

**Orchidectomy** (*or-kih-DEK-toh-mee*), surgical removal of one or both testes

orchid/o, 261

**Orchiectomy** (*or-kee-EK-toh-mee*), surgical removal of one or both testes

orch/o, 260, 347

**Orchiopexy** (*OR-kee-oh-pek-see*), surgical fixation of a testis, 268

**Orchiotomy** (*or-kee-OT-oh-mee*), cutting into testes

**Orchitis** (*or-KYE-tis*), inflammation of testes

orch/o, 260

**Organs**, composed of several different types of tissues working as unit to perform specific activity, 46

- in cardiology, 119–120
- in endocrinology, 344
- in gastroenterology, 225
- in immunology, 171
- in obstetrics and gynecology, 287–288
- in otorhinolaryngology, 396–397
- in pulmonology, 194–195
- target, 343
- in urology and nephrology, 256

orth/o, 198

**Orthopedic surgeon** (*or-thoh-PEE-dik*), physician trained in surgical treatment of musculoskeletal conditions

Orthopedic surgeons, 83

**Orthopedic surgery** (*or-thoh-PEE-dik*), branch of medicine specializing in surgical treatments of musculoskeletal system. *See* Orthopedics

**Orthopedics** (Orth, Ortho) (*or-thoh-PEE-diks*), branch of medicine specializing in diagnosis and treatment of conditions of musculoskeletal system, 82–116

- abbreviations, 106
- case study, 106–108
- combining forms, 83–84, 87–97
- description of, 83
- prefixes, 84–85
- structures treated in, 85–86
- suffixes, 84
- vocabulary, 98–105

**Orthopedist** (*or-thoh-PEE-dist*), physician trained in treatment of conditions of musculoskeletal system, 83

**Orthopnea** (*or-THOP-nee-ah*), describes patient who needs to sit up straight in order to breathe comfortably

Orthoses, 104

**Orthosis** (*or-THOH-sis*), equipment, such as splints and braces, to support paralyzed muscle, promote specific motion, or correct musculoskeletal deformities, 104

Orthotic, 104  
 Orthotist, 104  
 -osis, 95  
 -osmia, 401  
**Ossicles** (*OSS-ih-kls*), three small bones in middle ear: incus, malleus, and stapes; work to amplify and conduct sound waves to inner ear, 398  
**Ostealgia** (*oss-tee-AL-jee-ah*), bone pain  
*oste/o*, 95  
**Osteoarthritis** (OA) (*oss-tee-oh-ar-THRY-tis*), noninflammatory type of arthritis resulting in degeneration of bones and joints, especially those bearing weight; also called *degenerative joint disease* (DJD), 101, 106  
**Osteochondritis** (*oss-tee-oh-kon-DRY-tis*), inflammation of bone and cartilage  
**Osteochondroma** (*oss-tee-oh-kon-DROH-mah*), tumor composed of both cartilage and bony substance  
**Osteoclasia** (*oss-tee-oh-KLAY-zee-ah*), intentional breaking of bone in order to correct deformity  
**Osteocyte** (*OSS-tee-oh-sight*), mature bone cell  
**Osteogenic** (*oss-tee-oh-JEN-ik*), bone producing  
**Osteogenic sarcoma** (*oss-tee-oh-JEN-ik/sar-KOH-mah*), bone cancer; usually begins in osteocytes found at ends of long bones, 101  
**Osteomalacia** (*oss-tee-oh-mah-LAY-shee-ah*), abnormal softening of bones  
**Osteomyelitis** (*oss-tee-oh-my-eh-LYE-tis*), inflammation of bone and bone marrow due to infection  
**Osteopathy** (*oss-tee-OP-ah-thee*), branch of medicine that places great emphasis on musculoskeletal system and body system as a whole  
**Osteoporosis** (*oss-tee-oh-poh-ROH-sis*), decrease in bone mass resulting in thinning and weakening of bone with resulting fractures; bone becomes more porous, especially in spine and pelvis, 101  
**Osteotome** (*OSS-tee-oh-tohm*), instrument to cut bone  
**Otalgia** (*oh-TAL-jee-ah*), ear pain  
**Otic** (*OH-tik*), pertaining to ear  
 Otic region, 44  
**Otitis** (*oh-TYE-tis*), ear inflammation  
**Otitis externa** (OE) (*oh-TYE-tis/eks-TER-nah*), external ear infection; most commonly caused by fungus; also called *otomycosis* and commonly referred to as *swimmer's ear*, 406, 409  
**Otitis interna** (OI) (*oh-TYE-tis/in-TER-nah*), inflammation of inner ear; can affect both hearing and equilibrium; also called *labyrinthitis*; commonly called *inner ear infection*, 406, 409  
**Otitis media** (OM) (*oh-TYE-tis/MEE-dee-ah*), bacterial or viral infection of middle ear; seen frequently in children; commonly called *middle ear infection*, 406, 409  
*ot/o*, 401  
*ot/o +-ic*, 44  
**Otolaryngology** (*oh-toh-lair-in-GALL-oh-jee*), another term for *otorhinolaryngology*, 395

**Otologist** (*oh-TALL-oh-jist*), physician specializing in diagnosis and treatment of diseases of ear  
**Otology** (Oto) (*oh-TALL-oh-jee*), study of ear, 409  
**Otomyces** (*oh-toh-my-KOH-sis*), fungal infection of ear, usually in auditory canal; also called *otitis externa* and commonly called *swimmer's ear*, 406  
**Otoplasty** (*OH-toh-plas-tee*), surgical repair of external ear  
**Otopyorrhea** (*oh-toh-pye-oh-REE-ah*), pus discharge from ear  
**Otorhinolaryngologist** (ENT), (*oh-toh-rye-noh-lair-in-GALL-oh-jist*), physician trained to diagnose and treat conditions of ears, nose, and throat; commonly called *ear, nose, and throat doctor*, 395  
**Otorhinolaryngology** (ORL) (ENT) (*oh-toh-rye-noh-lair-in-GALL-oh-jee*), branch of medicine that treats diseases of ears, nose, and throat; also called *otolaryngology*, 394–418  
 abbreviations, 409  
 case study, 409–411  
 combining forms, 395, 397–405  
 description of, 395  
 organs and structures treated in, 396–397  
 prefixes, 396  
 suffixes, 396  
 vocabulary, 405–408  
**Otosclerosis** (*oh-toh-sklair-OH-sis*), condition affecting stapes bone in middle ear; bone forms around stapes and loses ability to vibrate and conduct sound waves to inner ear; results in progressive loss of hearing, 406  
**Otoscope** (*OH-toh-skohp*), instrument to view inside ear  
**Otосcopy** (*oh-TOSS-koh-pee*), examination of ear canal, eardrum, and outer ear using otoscope  
**ova** (*OH-vah*), plural of *ovum*, 286, 295  
**Ova and parasites** (O&P) (*OH-vah/PAIR-ah-sights*), laboratory examination of feces with microscope for presence of parasites or their eggs, 239, 242  
**Oval window**, division between middle and inner ear, 398  
**Ovarian** (*oh-VAIR-ee-an*), pertaining to ovaries  
**Ovarian cancer** (*oh-VAIR-ee-an*), cancer of ovary, 300  
**Ovaries** (*OH-vah-reez*), plural of *ovary*, 286, 295, 343, 347, 348  
*ovari/o*, 295, 348  
**Ovariocentesis** (*oh-vair-ee-oh-sen-TEE-sis*), puncture of ovary to withdraw fluid  
**Ovariorrhexis** (*oh-vair-ee-oh-REK-sis*), ruptured ovary  
**Ovariosalpingitis** (*oh-vair-ee-oh-sal-pin-JYE-tis*), inflammation of ovary and *uterine tube*  
**Ovary** (*OH-vah-ree*), one of two main female reproductive organs; located on either side of lower abdominopelvic region; responsible for production of ova and hormones estrogen and progesterone; plural is *ovaries*

**Oviduct** (*OH-vih-dukht*), another term for *uterine tube*, 296  
**Ovulation** (*ov-yoo-LAY-shun*), rupture of follicle to release ovum from ovary, 295  
**Ovum** (*OH-vum*), egg cell; plural is *ova*  
*ox/i*, 199  
**Oximeter** (*ok-SIM-eh-ter*), instrument to measure oxygen  
**Oximetry** (*ok-SIM-eh-tree*), process of measuring oxygen  
**Oxygen** (O<sub>2</sub>) (*OK-sih-jen*), gaseous element absorbed by blood from air sacs in lungs; necessary for cells to make energy, 193, 195, 216  
**Oxytocin** (OXT) (*ok-see-TOH-sin*), hormone secreted by posterior pituitary; stimulates uterine contractions during labor and delivery, 350, 357

## P

Pacemaker, 135  
**Pacemaker implantation**, electrical device that artificially stimulates contraction of heart muscle; treatment for bradycardia; placed in chest cavity with wires running to heart, 135  
**Pachyderma** (*pak-ee-DER-mah*), thickened skin  
**Packed red cells**, blood transfusion in which most leukocytes, platelets, and plasma have been removed, making transfusion primarily red blood cells, 158  
**Palatine tonsils** (*PAL-ah-tyne*), tonsils located in lateral wall of pharynx close to mouth, 177, 402  
**Pallor** (*PAL-or*), paleness of skin as compared to person's normal complexion color, 67  
**Palmar** (*PAHL-mer*), pertaining to palm area of hand  
 Palmar region, 44  
 Palsy, 325  
*pan-*, 12  
**Pancreas** (*PAN-kree-as*), organ in digestive system producing digestive enzymes; also gland in endocrine system that produces two hormones, insulin and glucagon; plural is *pancreata*, 224, 233, 343, 348  
**Pancreata** (*pan-kre-AY-tah*), plural of *pancreas*  
**Pancreatectomy** (*pan-kree-ah-TEK-toh-mee*), surgical removal of pancreas  
**Pancreatic** (*pan-kree-AT-ik*), pertaining to pancreas  
**Pancreatic islets** (*pan-kree-AT-ik/EYE-lets*), collections of endocrine gland cells located in pancreas; secrete glucagon and insulin; also called *islets of Langerhans*, 348  
**Pancreatitis** (*pan-kree-ah-TYE-tis*), inflammation of pancreas  
*pancreat/o*, 233, 348  
**Pancreatotomy** (*pan-kree-ah-TOT-oh-mee*), cutting into pancreas  
**Pancytopenia** (*pan-sigh-toh-PEE-nee-ah*), too few of all types of blood cells  
**Pansinusitis** (*pan-sigh-nyoo-SIGH-tis*), inflammation of all sinuses  
**Papanicolaou** (Pap) **smear** (*pap-ah-NIK-oh-lao*), used for early detection of cancer of cervix; named after developer of test, George



Papanicolaou, a Greek physician; scraping of cells removed from cervix for examination under microscope, 302, 305

**Papule** (*PAP-yoo*), small, solid, circular raised spot on surface of skin, 67

-para, 30, 295

**Paracentesis** (*pair-ah-sen-TEE-sis*), process of inserting needle into abdominal cavity to withdraw excess fluid, such as in person with ascites; fluid can be tested for conditions such as cancer or infections; also called *abdomino-centesis*, 240

Paralysis condition, 323

**Paralysis** (*pah-RAL-ih-sis*), temporary or permanent loss of function or voluntary movement, 323, 327

**Paranasal sinuses** (*pair-ah-NAY-zal*), air-filled cavities within facial bones that open into nasal cavity; act as echo chamber during sound production, 403

**Paraplegia** (*pair-ah-PLÉE-jee-ah*), paralysis of lower extremities

**Parathyroidal** (*pair-ah-thigh-ROY-dal*), pertaining to parathyroid glands

**Parathyroidectomy** (*pair-ah-thigh-roy-DEK-toh-mee*), surgical removal of one or more of parathyroid glands

**Parathyroid gland** (*pair-ah-THIGH-royd*), one of four small glands located on back surface of thyroid gland; parathyroid hormone secreted by this gland regulates amount of calcium in blood; plural is *parathyroid glands*

**Parathyroid glands** (*pair-ah-THIGH-royd*), plural of *parathyroid gland*, 343, 349

**Parathyroid hormone** (PTH) (*pair-ah-THIGH-royd HOR-mohn*), secreted by parathyroid glands; the more hormone, the higher the calcium level in blood and the lower the level stored in bone, 349, 357

parathyroid/o, 349

-paresis, 323

**Parietal fluid** (*pah-RYE-eh-tal*), watery fluid in parietal cavity; acts to reduce friction between lungs and chest wall as lungs expand and contract during breathing, 199

**Parietal lobe** (*pah-RYE-eh-tal*), one of four cerebral hemisphere lobes; receives and interprets nerve impulses from sensory receptors, 319

**Parietal pleura** (*pah-RYE-eh-tal*), outer layer of serous membrane sac lining thoracic cavity, 199

**Parkinson's disease** (*PARK-in-son*), chronic disorder of nervous system with fine tremors, muscular weakness, rigidity, and shuffling gait, 2, 327

**Partial-thickness burn**, another name for *second-degree burn*, 63

-partum, 296

**Passive acquired immunity** (*im-YOO-nih-tee*), results from receiving protective substances from another source; for example, maternal antibodies crossing placenta, 172

**Patella** (*pah-TEL-ah*), lower extremity bone; commonly called *kneecap*

**Patellar** (*pah-TEL-ar*), pertaining to patella

Patellar region, 45

patell/o +-ar, 45

**Patent** (*PAY-tent*), general term meaning open, as in patent airways, 206

path/o, 175

**Pathogen** (*PATH-oh-jen*), microscopic organisms, such as bacteria, capable of causing disease, 170

**Pathogenic** (*path-oh-JEN-ik*), disease producing

Pathologic fracture, 101

**Pathologic fracture** (*path-oh-LOJ-ik*), break caused by diseased or weakened bone

**Pathologist** (*pah-THOL-ah-jist*), physician specializing in evaluating specimens removed from living or dead patients

**Pathology** (*pah-THOL-oh-jee*), branch of medicine specializing in studying how disease affects body

**Pedal pulse**, pulse taken at ankle, 133

**Pediculosis** (*peh-dik-yoo-LOH-sis*), lice infestation; eggs laid by lice are called *nits* and cling tightly to hair, 67

**Pelvic** (*PEL-vik*), pertaining to pelvis

Pelvic cavity, 47. *See also* Abdominopelvic cavity

**Pelvic cavity** (*PEL-vik*), inferior portion of abdominopelvic cavity

**Pelvic inflammatory disease** (PID) (*PEL-vik/in-FLAM-ah-tor-ee*), any inflammation of female reproductive organs, generally bacterial in nature, 300, 305

Pelvic region, 45

**Pelvic ultrasonography** (*PEL-vik/ul-tra-h-son-OG-rah-fee*), procedure using high-frequency sound waves to produce image of pelvic organs; commonly called *ultrasound* (US), image produced is *sonogram*, 302

Pelvis, 86

pelv/o +-ic, 45

**Penes** (*PEE-nee-z*), plural for *penis*

-penia, 153

**Penis** (*PEE-nis*), male sex organ; composed of erectile tissue that becomes erect during sexual stimulation, allowing it to be placed within female vagina for ejaculation of semen; larger, soft tip is referred to as *glans penis*; plural is *penes*, 254

-pepsia, 30, 233

**Peptic ulcer disease** (PUD) (*PEP-tik/UL-ser*), ulcer occurring in lower portion of esophagus, stomach, and duodenum and thought to be caused by acid of gastric juices, 238, 242

Percussion/cupping, 212

**Percutaneous** (*per-kyoo-TAY-nee-us*), pertaining to through the skin

**Percutaneous discectomy** (*per-kyoo-TAY-nee-us/dis-KEK-toh-mee*), thin catheter tube is inserted into intervertebral disk through skin and herniated or ruptured disk material is sucked out or laser is used to vaporize it, 104

Percutaneous transluminal cardiac angioplasty (PTCA), 8

**Percutaneous transluminal coronary angioplasty** (PTCA) (*per-kyoo-TAY-nee-us/trans-LOO-*

*mih-nal/KOR-ah-nair-ee/AN-jee-oh-plas-tee*), method for treating localized coronary artery narrowing; balloon catheter is inserted through skin into coronary artery and inflated to dilate narrow blood vessel, 136, 137

Perforated ulcer, 238

**Pericardial** (*pair-ih-KAR-dee-al*), pertaining to around heart

**Pericardial sac** (*pair-ih-KAR-dee-al*), protective membrane sac surrounding heart, 47

**Perineum** (*pair-ih-NEE-um*), area between vulva and anus in females; between scrotum and anus in males, 291

Peripheral, 131

**Peripheral nervous system** (PNS) (*per-IF-er-al*), portion of nervous system containing cranial nerves and spinal nerves; these nerves are mainly responsible for voluntary muscle movement, smell, taste, sight, and hearing, 316, 331

**Peripheral vascular disease** (PVD) (*per-IF-eh-ral/VAS-kyoo-lar*), any abnormal condition affecting blood vessels outside heart; symptoms may include pain, pallor, numbness, and loss of circulation and pulses, 131, 137

**Peritoneal dialysis** (*pair-ih-toh-NEE-al/dye-AL-ih-sis*), removal of toxic waste substances from body by placing warm chemically balanced solutions into peritoneal cavity, 273

**Peritoneum** (*pair-ih-toh-NEE-um*), membranous sac that lines abdominal cavity and encases abdominopelvic organs, 47

Pernicious, 156

**Pernicious anemia** (PA) (*per-NISH-us/ah-NEE-mee-ah*), anemia associated with insufficient absorption of vitamin B<sub>12</sub> by digestive system, 156, 159

Pertaining to, 87–89, 91

**Pertussis** (*per-TUH-sis*), contagious bacterial infection of larynx, trachea, and bronchi characterized by coughing attacks that end with whooping sound; also called *whooping cough*, 406

**Petechiae** (*peh-TEE-kee-ee*), flat, pinpoint, purplish spots from bleeding under skin, 67

**Petit mal seizure**, former name for *absence seizure*

phac/o, 376

**Phacoemulsification** (*fay-koh-ee-mull-sih-fih-KAY-shun*), use of high-frequency sound waves to emulsify (liquefy) lens with cataract, which is then aspirated (removed by suction) with needle, 384

**Phacolysis** (*fah-KALL-ih-sis*), destruction of lens

**Phacomalacia** (*fay-koh-mah-LAY-shee-ah*), softening of lens

**Phacosclerosis** (*fay-koh-skleh-roh-sis*), hardening of lens

-phagia, 30, 233

phag/o, 175

**Phagocyte** (*FAG-oh-sight*), white blood cells that have ability to ingest and destroy bacteria

**Phagocytic** (*fag-oh-SIT-ik*), pertaining to phagocytes

**Phalangeal** (*fah-LAN-jee-al*), pertaining to phalanges or finger and toe bones

**phalanges** (*fah-LAN-jeez*), finger bones in upper extremities and toe bones in lower extremities

**pharyngeal** (*fair-IN-jee-al*), pertaining to pharynx

**Pharyngeal tonsils** (*fair-IN-jee-al*), another term for *adenoids*; collection of lymphatic tissue found in nasopharynx to combat microorganisms entering body through nose, 172, 177, 397

**Pharynxes** (*fah-RIN-jeez*), plural of *pharynx*

**Pharyngitis** (*fair-in-JYE-tis*), inflammation of mucous membrane of pharynx, usually caused by viral or bacterial infection; commonly called *sore throat*

pharyng/o, 402

**Pharyngoplasty** (*fah-RING-oh-plas-tee*), surgical repair of pharynx

**Pharyngospasm** (*fah-RING-oh-spazm*), strong involuntary muscle contraction of throat

**Pharyngotomy** (*fair-in-GOT-oh-mee*), cutting into throat

**Pharynx** (*FAIR-inks*), medical term for throat; passageway that conducts air from nasal cavity to trachea and also carries food and drink from mouth to esophagus; commonly called *throat*; plural is *pharynges* or *pharynxes*, 224, 395, 402

**Pharynxes** (*FAIR-ink-sihs*), plural of *pharynx*

-phasia, 323

**Pheochromocytoma** (*fee-oh-kroh-moh-sigh-TOH-mah*), usually benign tumor of adrenal medulla that secretes epinephrine; symptoms include anxiety, heart palpitations, dyspnea, profuse sweating, headache, and nausea, 354

-phil, 154

**Phimosis** (*fyeh-MOH-sis*), narrowing of foreskin over glans penis resulting in difficulty with hygiene; can lead to infection or difficulty with urination; treated with circumcision, 269

**Phlebitis** (*fleh-BYE-tis*), inflammation of vein

phleb/o, 125

**Phleboscclerosis** (*fleh-boh-skleh-ROH-sis*), hardening of vein

**Phlebotomy** (*fleh-BOT-oh-mee*), creating opening into vein to withdraw blood, 157

**Phlegm** (*FLEM*), thick mucus secreted by membranes that line respiratory tract; when phlegm coughed through mouth, is called *sputum*, 206

-phonia, 403

**Photophobia** (*fah-toh-FOH-bee-ah*), strong sensitivity to bright light, 381

**Photorefractive keratectomy** (PRK) (*fah-toh-ree-FRAK-tiv/kair-ah-TEK-toh-mee*), use of laser to reshape cornea to correct errors of refraction, 384

**Pia mater** (*PEE-ah/MAH-ter*), term meaning "soft mother"; thin innermost meninges layer applied directly to surface of brain, 321

Pineal, 349

**Pineal body** (*PIN-ee-al*), another term for *pineal gland*, 349

**Pineal gland** (*PIN-ee-al*), part of endocrine system producing hormone melatonin; plural is *pineal glands*; also called *pineal body*, 343, 349

**Pineal glands** (*PIN-ee-al*), plural of *pineal gland*

pineal/o, 349

**Pinealectomy** (*pin-ee-ah-LEK-toh-mee*), surgical removal of pineal gland

**Pinealoma** (*pin-ee-ah-LOH-mah*), pineal gland tumor

**Pink eye**, common name for *conjunctivitis*

**Pinna** (auricle) (*PIN-ah*), external ear, functions to capture sound waves as they go past outer ear; also called *auricle*, 398

Pisse prophets, 263

pituitar/o, 350

**Pituitary gland** (*pih-TOO-ih-tair-ee*), small marble-shaped gland that hangs down from underside of brain; often referred to as *master gland* because some of its hormones regulate other endocrine glands; divided into anterior lobe and posterior lobe; anterior lobe secretes growth hormone (stimulates body to grow larger), thyroid-stimulating hormone (regulates activity of thyroid gland), adrenocorticotrophic hormone (regulates activity of adrenal cortex), prolactin (stimulates milk production by breast), melanocyte-stimulating hormone (stimulates melanocytes to produce more melanin), and follicle-stimulating hormone and luteinizing hormone (work together to regulate activity of ovary or testes); posterior lobe secretes antidiuretic hormone (regulates volume of water in body) and oxytocin (stimulates uterine contractions during labor and delivery), 343, 350

**Placenta** (*plah-SEN-tah*), organ present during pregnancy; attached to inner wall of uterus; fetus connected to it by umbilical cord; point at which oxygen and nutrients from mother are exchanged for carbon dioxide and wastes from baby, 289

**Placenta previa** (*plah-SEN-tah/PREE-vee-ah*), occurs when placenta is in lower portion of uterus and thus blocks birth canal, 300

Planes, body, 37

frontal (coronal), 37

sagittal, 37

transverse, 38

**Plantar** (*PLAN-tar*), pertaining to sole of foot

**Plantar flexion** (*PLAN-tar/FLEK-shun*), action of bending sole of foot

Plantar region, 45

**Plaque** (*PLAK*), (1) yellow, fatty deposit of lipids in artery; (2) area of nerve that has lost its myelin, leaving area of hardened tissue, 122, 327

**Plasma** (*PLAZ-mah*), liquid portion of blood containing 90% water; remaining 10% consists of plasma proteins (serum albumin, serum globulin, fibrinogen, and prothrombin), inorganic substances (calcium, potassium, and sodium), organic components (glucose, amino acids, cholesterol), and waste products (urea, uric acid, ammonia, and creatinine), 149

**Plasmapheresis** (*plaz-mah-fah-REE-sis*), method of removing harmful substances in plasma from body; blood is removed, formed elements and plasma are separated, and then formed ele-

ments are returned to body along with plasma transfusion, 158

**Plastic surgeon**, physician trained in surgical repair, reconstruction and improvement of body structures, 55

**Plastic surgery**, surgical specialty involved in repair, reconstruction, or improvement of body structures such as skin that are damaged, missing, or misshapen; physician is *plastic surgeon*, 55

-plasty, 12

**Platelet** (*PLAYT-let*), small plate-like fragments of larger cell that initiate blood clotting process; also called *thrombocytes*; plural is *platelets*

**Platelet count** (*PLAYT-let*), blood test to determine number of platelets in given volume of blood, 157

**Platelets** (*PLAYT-lets*), plural of *platelet*, 149

-plegia, 30, 323

**Pleura** (*PLOOR-ah*), protective double layer of serous membrane around lungs; parietal membrane is outer layer and visceral layer is inner membrane; secretes thin, watery fluid to reduce friction associated with lung movement; plural is *pleurae*

**Pleurae** (pleura) (*PLOOR-ee*), plural of *pleura*, 47, 193, 199

**Pleural** (*PLOOR-al*), pertaining to pleura

**Pleural cavity** (*PLOOR-al*), formed by serous membrane sac surrounding lungs, 47, 199

**Pleural effusion** (*PLOOR-al/eh-FYOO-zhun*), abnormal presence of fluid or gas in pleural cavity, 206

**Pleural friction rub** (*PLOOR-al*), crunching sound made when inflamed pleurae rub against each other; likened to sound of walking on fresh snow, 206

**Pleuralgia** (*pleor-AL-jee-ah*), pleural pain

**Pleurisy** (*PLOOR-ih-see*), inflammation of pleura, 206

**Pleuritis** (*pleo-RYE-tis*), inflammation of pleura

pleur/o, 199

**Pleurocentesis** (*pleor-oh-sen-TEE-sis*), puncture of pleura to withdraw fluid from thoracic cavity in order to diagnose disease

**Pleurodynia** (*pleor-oh-DIN-ee-ah*), pleural pain

Plug, 124

Plurals, rules for building, 6–7

-pnea, 30, 200

**Pneumatic** (*noo-MAT-ik*), pertaining to air

pneum/o, 200

**Pneumoconiosis** (*noo-moh-koh-nee-OH-sis*), condition resulting from inhaling environmental particles that become toxic, such as coal dust (*anthracosis*) or asbestos (*asbestosis*), 206

*Pneumocystis jiroveci*, 179

**Pneumocystis pneumonia** (PCP) (*noo-moh-SIS-tis/noo-MOH-nee-ah*), pneumonia with nonproductive cough, very little fever, and dyspnea; most often seen in persons with weakened immune systems, such as patients with AIDS, 179, 181

**Pneumogram** (*NOO-moh-gram*), hard copy record of movement of air in and out of lungs

- Pneumograph** (*NOO-moh-graf*), instrument for measuring air movement in and out of lungs
- Pneumography** (*noo-MOG-rah-fee*), process of recording movement of air in and out of lungs
- Pneumectomy** (*noo-moh-NEK-toh-mee*), surgical removal of lung
- Pneumonia** (*noo-MOH-nee-ah*), inflammatory condition of lung; can be caused by bacterial and viral infections, diseases, and chemicals, 207
- Pneumonic** (*noo-MON-ik*), pertaining to lung
- pneumon/o, 200
- Pneumonocentesis** (*noo-moh-noh-sen-TEE-sis*), puncture of lung to withdraw fluid
- Pneumonotomy** (*noo-moh-NOT-ah-mee*), cutting into lung
- Pneumothorax** (*noo-moh-THOR-aks*), collection of air or gas in pleural cavity; can result in collapse of lung, 207
- poiesis, 154
- poly, 351
- Polyangiitis** (*pol-ee-an-jee-EYE-tis*), inflammation of many blood vessels
- Polycystic kidney disease** (PKD) (*pol-ee-SIS-tik*), inherited kidney illness characterized by presence of multiple cysts throughout kidney tissue; eventually destroys kidneys and results in kidney failure, 269, 274
- Polycystic ovary syndrome** (PCOS) (*pol-ee-SIS-tik*), condition in which ovaries contain multiple fluid-filled cysts; usually caused by hormone imbalance; symptoms include lack of ovulation, irregular menstrual cycles, and infertility, 301
- Polycythemia vera** (*pol-ee-sigh-THEE-mee-ah/VEER-ah*), production of too many red blood cells in bone marrow, 156
- Polydipsia** (*pol-ee-DIP-see-ah*), condition of having excessive amount of thirst
- Polymorphonuclear neutrophil (PMN, polys), 159
- Polyneuropitis** (*pol-ee-noo-RYE-tis*), inflammation of many nerves
- Polyp** (*POL-ip*), small growth with pedicle or stem attachment; commonly found in organs such as nose, uterus, and rectum; plural is *polyps*
- Polypectomy** (*pol-ee-PEK-toh-mee*), surgical removal of polyps
- Polyphagia** (*pol-ee-FAY-jee-ah*), to eat excessively
- polyp/o, 233
- Polyposis** (*pol-ee-POH-sis*), small tumors that contain pedicle or footlike attachment in mucous membranes of large intestine (colon)
- Polyps** (*POL-ips*), plural of *polyp*, 233
- Polysomnography** (PSG) (*pol-ee-som-NOG-rah-fee*), process of recording several body functions while person sleeps; includes breathing pattern, brain waves, oxygen level, and heart rate; used to diagnose sleep apnea; also called *sleep apnea study*, 208
- Polyuria** (*pol-ee-YOO-ree-ah*), condition of having excessive urine production
- Pons** (*PONZ*), portion of brainstem forming bridge between cerebellum and cerebrum; plural is *pontes*, 323
- Pontes** (*PON-teez*), plural of *pons*
- Pontine** (*PON-teen*), pertaining to pons
- pont/o, 323
- Pontocerebellar** (*pon-toh-sair-eh-BELL-ar*), pertaining to pons and cerebellum
- Pontomedullary** (*pon-toh-MED-yoo-lair-ee*), pertaining to pons and medulla oblongata
- Popliteal** (*pop-LIT-ee-al*), pertaining to creased area behind knee
- Popliteal lymph nodes, 174
- Popliteal region, 45
- Positron emission tomography** (PET) (*POZ-ih-tron/ee-MISH-un/toh-MOG-rah-fee*), use of positive radionuclides to reconstruct brain sections; measurements can be taken of oxygen and glucose uptake, cerebral blood flow, and blood volume, 331
- Posterior** (*poss-TEER-ee-or*), directional term meaning near or on back or spinal cord side of body
- Posterior chamber**, large open cavity between lens and retina of eyeball, 377
- Posterior direction, 41
- Posterior lobe**, posterior portion of pituitary gland; secretes antidiuretic hormone and oxytocin, 350
- Posteroanterior (PA), 39
- Posteroanterior (PA) direction in radiology, 39
- poster/o + -ior, 41
- Postpartum** (*post-PAR-tum*), period immediately after delivery or childbirth
- Postural drainage** (*POS-choor-al*), draining secretions from bronchi by placing patient in position using gravity to promote drainage; used for treatment of cystic fibrosis and bronchiectasis, and before lobectomy surgery, 212
- Potassium (K<sup>+</sup>), 357
- Precocious puberty, 301
- Preeclampsia** (*pree-eh-KLAMP-see-ah*), metabolic condition of pregnancy; symptoms include hypertension, headaches, protein in urine, and edema; if untreated, may progress to eclampsia; also called *toxemia* or *pregnancy-induced hypertension* (PIH), 301
- Prefixes**, word part added in front of word root; frequently gives information about abnormal conditions, location of organ, number of parts, or time (frequency); not all medical terms have a prefix, 25–32
- in anatomical terms, 34
- in cardiology, 119
- defined, 3–4
- in dermatology, 56
- directions or body positions, indicating, 27
- diseases or abnormal conditions, indicating, 26
- in endocrinology, 344
- in gastroenterology, 225
- general, to build additional medical terms, 28
- in hematology, 150
- in immunology, 170
- in neurology, 317
- numbers or quantity measurements, indicating, 27–28
- in obstetrics and gynecology, 287
- in ophthalmology, 370
- in orthopedics, 84
- in otorhinolaryngology, 396
- in pulmonology, 194
- role of, in building medical terms, 26
- time, indicating, 28
- in urology and nephrology, 255
- Pregnancies**, plural of *pregnancy*
- Pregnancy** (*PREG-nan-see*), period of time from fertilization of ovum to birth of newborn; plural is *pregnancies*, 290, 292. *See also* Obstetrics and gynecology
- full term, 288
- Pregnancy-induced hypertension (PIH), 301, 305
- Premature birth**, infant born prior to thirty-seven weeks of gestation, 301
- Premature ventricular contraction (PVC), 137
- Premenstrual syndrome** (PMS) (*pree-MEN-stroo-al*), symptoms that develop just prior to onset of menstrual period, which can include irritability, headache, tender breasts, and anxiety, 301, 305
- Prenatal** (*pree-NAY-tal*), before birth
- Prepuce** (*PREE-pyoos*), protective covering over glans penis; removed during circumcision; commonly called *foreskin*, 257
- Pressure, 377
- Pressure cuff, 133
- Pressure-equalizing tube** (PE tube), small tube surgically placed in eardrum to assist in drainage of infection, 408
- Pressure injury**, another term for pressure ulcer, 67
- Pressure ulcer**, open sore caused by pressure over bony prominences obstructing blood flow; also called *pressure injury*; commonly called *bedsore*, 67
- Priapism** (*PRYE-ah-pizm*), persistent and painful erection due to pathological causes, not sexual arousal, 269
- Primigravida** (*prye-mih-GRAV-ih-dah*), person who has been pregnant once
- Primipara** (*prye-MIP-ah-rah*), person who has given birth once
- proct/o, 234
- Proctologist** (*prok-TALL-oh-jist*), specialist in rectum and anus
- Proctology** (*prok-TALL-oh-jee*), branch of medicine specializing in conditions of lower gastrointestinal system, especially rectum and anus
- Proctoptosis** (*prok-top-TOH-sis*), drooping rectum and anus
- Proctoscope** (*PROK-toh-skohp*), instrument to visually examine rectum and anus
- Proctoscopy** (*prok-TOSS-koh-pee*), process of visually examining rectum and anus
- Progesterone** (*proh-JESS-ter-ohn*), one of female sex hormones; works with estrogen to regulate menstrual cycle and prepare uterine lining for embryo, 286, 347
- Prolactin** (PRL) (*proh-LAK-tin*), hormone secreted by anterior pituitary; stimulates milk production, 350, 357
- Prolapse, 301



**Prolapsed uterus** (*pro-LAPST/YOO-ter-us*), fallen uterus that can cause cervix to protrude through vaginal opening; generally caused by weakened muscles from vaginal delivery or as result of pelvic tumors pressing down, 301

**Pronation** (*proh-NAY-shun*), action of turning wrist palm downward

**Prone** (*PROHN*), directional term meaning lying horizontally facing downward

Prone position, 41

Pronunciation of medical terminology, 7–8

**Prostatectomy** (*gross-tah-TEK-toh-mee*), surgical removal of prostate gland

**Prostate gland** (*PROSS-tayt*), gland in male reproductive system producing fluids that nourish sperm, 254, 261

**Prostate-specific antigen (PSA)** (*PROSS-tayt-spe-cific/AN-tih-jen*), blood test to screen for prostate cancer; elevated blood levels of PSA associated with prostate cancer, 271, 274

**Prostatic** (*gross-TAT-ik*), pertaining to prostate gland

**Prostatic cancer** (*gross-TAT-ik*), slow-growing cancer that affects large number of males after age 50, 269

**Prostatitis** (*gross-tah-TYE-tis*), inflammation of prostate gland

prostat/o, 261

**Prosthesis** (*gross-THEE-sis*), artificial device used as substitute for body part either congenitally missing or absent as result of accident or disease; for instance, artificial leg or hip prosthesis, 105

Prosthetic, 105

Prosthetist, 105

**Protease inhibitor drugs** (*PROH-tee-ays*), medication that interferes with protease, enzyme necessary for viruses to reproduce; treats HIV infections, 181

**Protection**, to preserve from injury or harm, 55, 172

**Prothrombin time** (pro-time, PT) (*proh-THROM-bin*), blood test that measures time it takes for sample of blood to coagulate, 157, 159

**Proton pump inhibitors**, medications to treat peptic ulcer disease and gastroesophageal reflux disease by blocking stomach's ability to secrete acid, 241

Protrusion, 318

**Proximal** (*PROK-sim-al*), directional term meaning located closest to point of attachment to body

Proximal direction, 41

proxim/o +-al, 41

**Pruritus** (*proo-RYE-tus*), severe itching, 67

**Pseudocyesis** (*soo-doh-sigh-EE-sis*), false pregnancy; body may display some signs of pregnancy, but no pregnancy exists

**Pseudohypertrophic muscular dystrophy** (MD) (*soo-doh-high-per-TROH-fik/MUS-kyoo-lar/DIS-troh-fee*), one of group of inherited progressive muscle wasting diseases; over time, healthy muscle tissue gradually replaced by fatty tissue, giving false appearance of healthy, strong muscle; also called *Duchenne muscular dystrophy* (DMD), 102

**Psoriasis** (*soh-RYE-ah-sis*), chronic inflammatory condition consisting of crusty papules forming patches with circular borders, 68

-ptysis, 201

**Puberty** (*PYOO-ber-tee*), period of time in which child becomes adult; development of adult body, production of eggs or sperm; person now capable of reproduction, 301

**Pubic** (*PYOO-bik*), pertaining to pubis; one of pelvic bones

**Pubis** (*PYOO-bis*), one of three bones that form pelvis

**Pulmonary** (*PULL-mon-air-ee*), pertaining to lung

**Pulmonary angiography** (*PULL-mon-air-ee/an-jee-OG-rah-fee*), injecting contrast medium into blood vessel for purpose of taking X-ray of arteries and veins of lungs, 208

**Pulmonary arteries** (*PULL-mon-air-ee*), large arteries receiving deoxygenated blood from pulmonary trunk and delivering to lungs, 123, 127

**Pulmonary edema** (*PULL-mon-air-ee/eh-DEE-mah*), condition in which lung tissue retains excessive amount of fluid; results in labored breathing, 207

**Pulmonary embolism (PE)** (*PULL-mon-air-ee/EM-boh-lizm*), blood clot or air bubble in pulmonary artery or one of its branches, 207, 212

**Pulmonary function test (PFT)** (*PULL-mon-air-ee*), group of diagnostic assessments providing information regarding airflow in and out of lungs, lung volumes, and gas exchange between lungs and bloodstream, 209, 212

**Pulmonary trunk** (*PULL-mon-air-ee*), receives deoxygenated blood from right ventricle and splits into right and left pulmonary arteries, 127

Pulmonary valve, 123, 126

**Pulmonary veins** (*PULL-mon-air-ee*), carry oxygenated blood from lungs back to left atrium, 123

**Pulmonic** (*pull-MON-ik*), pertaining to lung

pulmon/o, 201

**Pulmonologist** (*pull-moh-NALL-oh-jist*), physician specializing in treating diseases and disorders of respiratory system, 193

**Pulmonology** (*pull-moh-NALL-oh-jee*), branch of medicine specializing in conditions of respiratory system, 192–222

abbreviations, 212–213

case study, 213–214

combining forms, 193, 195–203

description of, 193

organs treated in, 194–195

prefixes, 194

suffixes, 193–194

vocabulary, 203–212

**Pulse (P)**, method of counting heartbeats using fingers to feel shockwave heart sends through arteries each time it contracts; one of *vital signs*; *radial pulse* taken at wrist; *pedal pulse* taken at ankle; *femoral pulse* taken at groin; *carotid pulse* taken at neck, 133, 137

**Pupil**, hole in center of iris; size of pupil is changed by iris dilating or constricting; plural is *pupils*

**Pupillary** (*PYOO-pih-lair-ee*), pertaining to pupil

pupill/o, 376

**Pupillometer** (*pyoo-pih-LOM-eh-ter*), instrument to measure size of pupil

**Pupils**, plural of *pupil*, 369, 372, 376

Pupils equal, round, reactive to light and accommodation (PERRLA), 384

Purified protein derivative (PPD), 212

**Purpura** (*PER-pyoo-rah*), hemorrhages into skin and mucous membranes, 68

**Purulent** (*PYOOOR-yoo-lent*), containing pus or infection that is producing pus, 208

**Pus**, semi-solid fluid consisting of dead bacteria, dead white blood cells, destroyed cells, and tissue fluid, 62

**Pustule** (*PUS-tyool*), raised spot on skin containing pus, 68

pyel/o, 261

**Pyelogram** (*PYE-eh-loh-gram*), X-ray record of renal pelvis after injection of radiopaque material

**Pyelography** (*pye-eh-LOG-rah-fee*), process of making X-ray record of renal pelvis after injection of radiopaque material

**Pyelonephritis** (*pye-eh-loh-neh-FRY-tis*), inflammation of renal pelvis and kidney

**Pyelostomy** (*pye-eh-LOSS-toh-mee*), creation of opening between renal pelvis and body wall

py/o, 62

**Pyoderma** (*pye-oh-DER-mah*), pus-producing skin infection

**Pyogenic** (*pye-oh-JEN-ik*), pusforming

**Pyorrhea** (*pye-oh-REE-ah*), discharge of pus

**Pyosalpinx** (*pye-oh-SAL-pinks*), pus in uterine tube

**Pyothorax** (*pye-oh-THOR-aks*), condition of having pus in chest cavity

**Pyuria** (*pye-YOO-ree-ah*), presence of pus in urine

## Q

**Quadriplegia** (*kwod-rih-PLEE-jee-ah*), paralysis of all four extremities

Quantity measurements, prefixes indicating, 27–28

## R

**Radial keratotomy (RK)** (*RAY-dee-al/kair-ah-TOT-oh-mee*), spoke-like incisions around cornea that result in it becoming flatter; surgical treatment for myopia, 384

**Radial** (*RAY-dee-al*), pertaining to radius; lower arm bone

**Radial pulse**, pulse taken at wrist, 133

**Radiculitis** (*rah-dik-yoo-LYE-tis*), inflammation of nerve root

radicul/o, 323

**Radiculopathy** (*rah-dik-yoo-LOP-ah-thee*), diseased condition of nerve root

**Radioactive iodine uptake (RAIU)**, test of thyroid function that measures how much radioactively tagged iodine removed from bloodstream by thyroid gland, 355

**Radiogram**, X-ray picture produced by *radiography*

**Radiography** (*ray-dee-OG-rah-fee*), making of X-ray pictures; X-ray picture produced is *radiogram*, 104

**Radioimmunoassay (RIA)** (*ray-dee-oh-im-yoo-noh-ASS-ay*), test used to measure levels of hormones in plasma of blood, 355

**Radius** (*RAY-dee-us*), one of forearm bones in upper extremity, 104

**Rales** (*RAWLS*), another term for *crackles*, 204  
Rapid eye movement (REM), 384

Ray (X-ray), 104

**Reconstructive surgery**, procedure to increase function and give more typical appearance to damaged or missing body structures, 55

**Rectal** (*REK-tal*), pertaining to rectum  
rect/o, 234

**Rectocele** (*REK-toh-seel*), protrusion or herniation of rectum into vagina, 301

Rectovaginal fistula, 300

**Rectum** (*REK-tum*), area at end of digestive tube for storage of feces that leads to anus, 224

**Red blood cell** (RBC), another name for *erythrocytes*, 149, 159

**Red blood cell count** (RBC), blood test to determine number of erythrocytes in volume of blood; decrease in red blood cells may indicate anemia; increase may indicate polycythemia, 157, 159

**Red bone marrow**, tissue that manufactures most of blood cells; found in bone cavities, 94  
red/blue, 30

**Reduction**, correcting fracture by realigning bone fragments; closed reduction does this without entering body; open reduction makes surgical incision at site of fracture to do reduction, often necessary when bony fragments need to be removed, 105

**Refractive error** (*ree-FRAK-tiv*), defect in eye's ability to bend light rays to focus image properly on fovea centralis (refraction); occurs in myopia and hyperopia, 381

**Regional ileitis** (*il-ee-EYE-tis*), another term for *Crohn disease*, 236

Registered respiratory therapist (RRT), 213

**Renal** (*REE-nal*), pertaining to kidney  
ren/al, 20

**Renal colic** (*REE-nal/KOL-ik*), pain associated with passing a stone; may be severe and generally requires medical treatment, 269

**Renal failure** (*REE-nal*), inability of kidneys to filter wastes from blood resulting in uremia; may be acute or chronic; major reason for patient being placed on dialysis, 269

**Renal pelvis** (*PEL-veez*), plural of *renal pelvis*

**Renal pelvis** (*REE-nal*), large collecting site for urine within kidney; urine leaves renal pelvis via ureter; plural is *renal pelvis* or *renal pelvises* (*REE-nal/PEL-vih-sez*), 259, 261

**Renal pelvises**, plural of *renal pelvis*

**Renal transplant**, surgical replacement with donor kidney, 273

ren/o, 262

**Renogram** (*REE-noh-gram*), X-ray record of kidney after injecting radiopaque material into bloodstream

**Renography** (*ree-NOG-rah-fee*), process of making X-ray record of kidney after injecting radiopaque material into bloodstream

**Repetitive motion disorder** (RMD), group of chronic disorders involving tendon, muscle, joint, and nerve damage, resulting from tissue subjected

to pressure, vibration, or repetitive movements for prolonged periods; also called *repetitive strain injury*, 102

**Repetitive strain injury**, another name for *repetitive motion disorder* (RMD), 102

Reproductive systems

female, 287. *See also* Obstetrics and gynecology

male, 256. *See also* Urology and nephrology

Resectoscope, 273

Respirations (R), 212

Respiratory disease (RD), 212

Respiratory distress syndrome (RDS), 212

**Respiratory distress syndrome of the newborn** (*RES-pih-rah-tor-ee*), another term for *infant respiratory distress syndrome* or *hyaline membrane disease*, 206

**Respiratory rate** (RR) (*RES-pih-rah-tor-ee*), number of breaths per minute, 213

**Respiratory system** (*RES-pih-rah-tor-ee*), brings oxygen into lungs and expels carbon dioxide; organs include nose, pharynx, larynx, trachea, bronchial tubes, and lungs, 193. *See also* Pulmonology

**Respiratory therapist** (RT or RRT) (*RES-pih-rah-tor-ee*), allied health professional whose duties include conducting pulmonary function tests, monitoring oxygen and carbon dioxide levels in blood, and administering breathing treatments, 193, 213

Respiratory therapy (RT), 213

**Retina** (*RET-ih-nal*), innermost layer of eye; contains visual receptors called *rods* and *cones* which receive light impulses and transmit them to brain via optic nerve; plural is *retinae* or *retinas*, 344, 374, 376

**Retinae** (*RET-ih-nee*), plural of *retina*

**Retinal detachment** (*RET-ih-nal*), occurs when retina becomes separated from choroid layer; separation seriously damages blood vessels and nerves, may result in blindness if not treated, 381

**Retinal** (*RET-ih-nal*), pertaining to retina

**Retinas** (*RET-ih-nuhz*), plural of *retina*

**Retinitis** (*ret-ih-NYE-tis*), inflammation of retina  
retin/o, 376

**Retinopathy** (*ret-ih-NOP-ah-thee*), retinal disease

**Retinopexy** (*ret-ih-noh-PEK-see*), surgical fixation of retina by using extreme cold

**Retrograde pyelogram** (RP) (*RET-roh-grayd/PYE-eh-loh-gram*), diagnostic X-ray in which contrast medium is inserted through urethra to outline bladder, ureters, and renal pelvis, 47, 271

**Retroperitoneal** (*ret-roh-pair-ih-toh-NEE-al*), located behind peritoneum; kidneys are found in this position, 47

**Reverse transcriptase inhibitor drugs** (*trans-KRIP-tays*), medication that interferes with reverse transcriptase, enzyme necessary for viruses to reproduce; treats HIV infections, 181

**Rh+ blood**, type of blood in Rh typing system; blood has Rh marker; makes no anti-Rh

antibodies; can receive either Rh+ or Rh– transfusion, 152

**Rh– blood**, type of blood in Rh typing system; does not have Rh marker; makes anti-Rh antibodies; can only receive Rh–transfusion, 152

Rh-negative (Rh–), 159

Rh-positive (Rh+), 159

**Rh typing system**, method of categorizing blood; blood is either *Rh+* or *Rh–*, 152

**Rheumatoid arthritis** (RA) (*ROO-mah-toyd/arthRY-tis*), chronic form of arthritis with inflammation of joints, swelling, stiffness, pain, and changes in cartilage that can result in crippling deformities, 102, 106

**Rhinitis** (*rye-NYE-tis*), inflammation of nose  
rhin/o, 403

**Rhinomycosis** (*rye-noh-my-KOH-sis*), condition of having fungal infection in nose

**Rhinoplasty** (*RYE-noh-plas-tee*), surgical repair of nose

**Rhinorrhagia** (*rye-noh-RAY-jee-ah*), another term for *epistaxis*, 405

**Rhinorrhea** (*rye-noh-REE-ah*), watery discharge from nose, especially with allergies or a cold; commonly called *runny nose*

**Rhinosinusitis** (*rye-noh-sigh-nyoo-SIGH-tis*), inflammation of nose and sinuses

**Rhonchi** (*RONG-kye*), another term for wheezing, 208

**Ribs**, 12 pairs of thin, flat, curved bones that form cage around heart and lungs

Right atrium, 123

**Right hypochondriac** (*high-poh-KON-dree-ak*), anatomical division of abdomen; right upper row

Right hypochondriac region, 48

**Right iliac region** (*IL-ee-ak*), one anatomical division of abdominopelvic cavity; refers to right lateral side of lower (or groin) region of trunk; also called *right inguinal*, 49

**Right inguinal** (*ING-gwih-nal*), anatomical division of abdomen; right side of lower row; also called *right iliac*

Right lower extremity (RLE), 106

Right lower lobe (RL), 212

**Right lower quadrant** (RLQ), clinical division of abdomen; contains portions of small and large intestines, right ovary and uterine tube, appendix, right ureter, 48

**Right lumbar** (*LUM-bar*), anatomical division of abdomen, right side of middle row

Right lumbar region, 48

Right middle lobe (RML), 213

Right primary bronchus, 195

**Right primary bronchus** (*BRONG-kus*), division of trachea carrying air to and from right lung

Right upper extremity (RUE), 106

Right upper lobe (RUL), 213

**Right upper quadrant** (RUQ), clinical division of abdomen; contains right lobe of liver, right kidney, gallbladder, portion of pancreas, and portions of small and large intestines, 48

Right ventricle, 123

**Ringworm**, common name for *tinea*, 69

**Rinne and Weber tuning-fork tests** (*RIN-eh and VAY-ber*), assess both function of auditory nerve and ability of ear structures to conduct sound waves to inner ear; physician holds tuning fork against or near bones on side of patient's head, 407

**Rods**, sensory receptors of retina active in dim light and do not perceive color, 376

**Rotator cuff**, elastic capsule around shoulder joint; reinforced by tendons of several shoulder muscles; because shoulder is so loose and flexible, at high risk for injury

**Rotator cuff injury**, tearing of rotator cuff; may be caused by overuse or trauma, 102

**Ruptured disk**, common name for *herniated nucleus pulposus* or *herniated disk*, 100

## S

Sac/bladder, 226

**Sacral** (*SAY-kral*), pertaining to sacrum

**Sacrum** (*SAY-krum*), five fused vertebrae that form large flat bone in upper buttock region

**Sagittal plane** (*SAJ-ih-tal*), vertical division separating body into left and right sections, 37

**Sagittal section** (*SAJ-ih-tal*), sectional view of body produced by cut along sagittal plane, 37, 38

**Salpingectomy** (*sal-pin-JEK-toh-mee*), surgical removal of uterine tubes

**Salpingitis** (*sal-pin-JYE-tis*), inflammation of uterine tube(s), or of eustachian tube  
salping/o, 296

**Salpingocystitis** (*sal-ping-goh-sigh-EE-sis*), pregnancy established in uterine tube, 298

**Salpingogram** (*sal-PING-goh-gram*), X-ray record of uterine tube after being injected with radiopaque dye

**Salpingography** (*sal-ping-GOG-rah-fee*), process of making X-ray record of uterine tube after being injected with radiopaque dye  
-salpinx, 296

**Sarcoidosis** (*sar-koy-DOH-sis*), inflammatory disease of lymph system in which lesions may appear in liver, skin, lungs, lymph nodes, spleen, eyes, and small bones of hands and feet, 179

**Scabies** (*SKAY-bees*), infestation by microscopic mite (other than those that normally live on skin surface) that burrows into dermis layer; causes inflammation, vesicles, and intense itching along mite's path, 68

Scapul, 12

**Scapula** (*SKAP-yoo-lah*), bone of pectoral girdle; commonly called *shoulder blade*

**Scapular** (*SKAP-yoo-lar*), pertaining to scapula, 30

Scapular region, 45

scapul/o +-ar, 45

**Sclera** (*SKLAIR-ah*), tough protective outer layer of eyeball; commonly referred to as *white of the eye*; plural is *sclerae* or *scleras*, 377

**Sclerae** (*SKLAIR-ee*), plural of *sclera*

**Scleral** (*SKLAIR-ah*), pertaining to sclera

**Scleras** (*SKLAIR-uhz*), plural of *sclera*

**Scleritis** (*skleh-RYE-tis*), inflammation of sclera  
scler/o, 377

**Scleroderma** (*sklair-ah-DER-mah*), disorder in which skin becomes taut, thick, and leather-like

**Scleromalacia** (*sklair-oh-mah-LAY-shee-ah*), softening of sclera

-sclerosis, 125

**Sclerotomy** (*skleh-ROT-oh-mee*), cutting into sclera

**Scoliosis** (*skoh-lee-OH-sis*), abnormal lateral curvature of spine

-scope, 12

**Scratch test**, form of allergy testing in which body is exposed to allergen through light scratch in skin, 180

**Scrotum** (*SKROH-tum*), sac containing testes suspending them outside body between legs and behind penis, 260

**Sebaceous glands** (*sih-BAY-shus*), glands that produce oily substance called *sebum* to lubricate skin surface; commonly called *oil glands*, 57

seb/o, 62

**Seborrhea** (*seb-oh-REE-ah*), excessive discharge of sebum

**Sebum** (*SEE-bum*), thick, oily substance secreted by sebaceous glands that lubricates skin to prevent drying out, 62

**Secondary bronchi** (*BRONG-kye*), in lungs, primary bronchi subdivide into more narrow secondary bronchi, 195

Second-degree burns, 63

Secrete, 346

Sections, body, 37

coronal (frontal), 37

cross-section, 38

longitudinal, 38

sagittal, 37–38

transverse, 37–38

Segmented neutrophils (segs), 159

**Seizure** (*SEE-zyoor*), sudden, uncontrollable onset of symptoms, such as in epileptic seizure, 327

**Semen** (*SEE-men*), contains sperm and fluids secreted by male reproductive system glands; leaves body through urethra, 262

**Semen analysis** (*SEE-men*), evaluation of semen for fertility; sperm in semen analyzed for number, swimming strength, and shape; procedure also used to determine if vasectomy has been successful, 271

**Semicircular canals**, portion of inner ear associated with balance and equilibrium, 398, 399

**Seminal** (*SEM-ih-nal*), pertaining to semen

**Seminal vesicle** (*SEM-ih-nal/VES-ih-kl*), one of two male reproductive system glands located at base of bladder; secretes fluid into vas deferens that nourishes sperm; fluid plus sperm constitutes much of semen; plural is *seminal vesicles*

**Seminal vesicles** (*SEM-ih-nal/VES-ih-kls*), plural of *seminal vesicle*, 254, 266

semin/i, 262

**Seminiferous tubules** (*sem-ih-NIF-er-us/TOO-byools*), network of coiled tubes that make up bulk of testes; sperm development takes place in walls of tubules and mature sperm are released into tubule to order to leave testes, 347

**Seminuria** (*see-mih-NYOO-ree-ah*), presence of semen in urine

**Sensation**, feeling, perception, or awareness; result of stimulation of sensory receptor, 55, 320

Sensation condition, 320

Sense of smell condition, 401

**Sensory nerves** (*SEN-soh-ree*), nerves that carry sensory information from sensory receptors to CNS; also called *afferent nerves*, 322

**Sensory receptors**, nerve fibers located directly under surface of skin; detect temperature, pain, touch, and pressure, 316

**Sepsis**, common name for *septicemia*, 156

**Septicemia** (*sep-tih-SEE-mee-ah*), having bacteria in bloodstream; commonly referred to as *sepsis* or *blood poisoning*, 156

**Septum** (*SEP-tum*), "wall" that divides area into two sections; examples are found in heart and nose, 123

**Serum** (*SEER-um*), clear, sticky fluid that remains after blood has clotted, 149

**Severe acute respiratory syndrome** (SARS) (*RES-pih-rah-tor-ee*), acute viral respiratory infection that begins like flu but quickly progresses to severe dyspnea; high fatality rate in persons over age 65; first appeared in China in 2003, 208, 213

**Severe combined immunodeficiency** (SCID) (*im-yoo-noh-dih-FIH-shen-see*), disease seen in children born with nonfunctioning immune system; often forced to live in sealed sterile rooms, 179

**Sexually transmitted disease** (STD), illness usually acquired as result of sexual intercourse; also called *sexually transmitted infection* (STI); formerly referred to as *venereal disease*, 269, 274

**Sexually transmitted infection**, another term for *sexually transmitted disease*, 269, 274

**Shin bone**, common name for *tibia*

**Shingles** (*SHING-lz*), infection of nerve root by varicella zoster virus (VZV), same virus that causes chickenpox; causes appearance of very painful skin blisters along path of nerve; also called *herpes zoster*, 68, 328

Shortness of breath (SOB), 137, 213

**Shoulder blade**, common name for *scapula*

Sickle cell anemia, 156

**Sickle cell disease**, severe, chronic, incurable disorder resulting in *sickle cell anemia* and causes joint pain, chronic weakness, and infections; more common in people of African heritage; actual blood cell is crescent shaped, 156

**Sigmoid colon** (*SIG-moyd*), final section of colon follows S-shaped path and terminates in rectum, 228, 234

sigmoid/o, 234

**Sigmoidoscope** (*sig-MOYD-oh-skohp*), instrument to view inside sigmoid colon

**Sigmoidoscopy** (*sig-moy-DOSS-koh-pee*), using flexible sigmoidoscope to visually examine sigmoid colon

**Simple fracture**, another name for *closed fracture*, 98

Sinoatrial (SA, S-A), 137

**Sinus** (*SIGH-nus*), hollow cavity within bone; plural is *sinuses*

**Sinuses**, plural of *sinus*, 12, 403

**Sinusitis** (*sigh-nyoo-SIGH-tis*), inflammation of sinuses

sinus/o, 403

**Skeletal muscle**, voluntary muscle attached to bones by tendon; also called *striated muscle*, 83, 93

**Skeleton**, bones forming framework for body; site for skeletal muscle attachments, 74, 83, 85

**Skin**, major organ of integumentary system; forms barrier between external and internal environments; consists of outer epidermis and inner dermis layers; subcutaneous layer of fat underlies skin, 55, 59

functions of, 55

layers of, 58

structures of, 55

Skin condition, 59

Skin graft (SG), 71

**Skull**, another term for *cranium*, 86, 90

**Sleep apnea** (*AP-nee-ah*), condition in which person stops breathing for more than 10 seconds while sleeping; results in drop in blood oxygen level; may be treated with CPAP machine, 208

**Sleep apnea study** (*AP-nee-ah*), another term for *polysomnography*, 208

**Slipped disk**, common name for *herniated nucleus pulposus* or *herniated disk*, 100

**Slit lamp microscope** (*my-KROSS-skohp*), in ophthalmology, instrument used to examine conjunctiva, cornea, iris, and lens, 382

**Small intestine**, consists of duodenum, jejunum, and ileum; receives chyme from stomach; delivers remainder of digested food to large intestine, 224, 230

**Smell**, one of special senses, perception of odor

**Smooth muscle**, involuntary muscle found in internal organs such as digestive organs or blood vessels; also called *visceral muscle*, 83, 93, 122

**Snellen chart** (*SNEL-en*), used for testing visual acuity; contains letters of varying size and is given from distance of 20 feet; person who can read at 20 feet what average person can read at this distance is said to have 20/20 vision, 382

Snoring, 208

Sodium (Na+), 357

Sonogram, 302

**Sore throat**, common term for *pharyngitis*

**Spasm** (*SPAZM*), sudden, involuntary, strong muscle contraction, 102

**Spastic colon**, another term for *irritable bowel syndrome* or *functional bowel syndrome*, 238

**Spasticity** (*SPAS-tis-ih-tee*), condition of abnormally strong and long-lasting muscle

spasms; caused by brain, spinal cord, or nerve damage; symptom of cerebral palsy or multiple sclerosis, 328

**Speech**, use of voice to communicate, 323

Speech condition, 323

**Sperm**, male sex cell; one sperm fuses with ovum to produce new being; plural is also *sperm*; also called *spermatozoon*; plural is *spermatozoa*, 254, 262

**Spermatic** (*sper-MAT-ik*), pertaining to sperm

**Spermatoicide** (*sper-MAH-toh-side*), cream or ointment containing substances that can kill sperm; used for birth control, 273

**Spermatoocyte** (*sper-MAT-oh-sight*), sperm cell

**Spermatogenesis** (*sper-mat-oh-JEN-eh-sis*), formation of sperm

**Spermatolysis** (*sper-mah-TALL-ih-sis*), to destroy sperm

**Spermatozoa** (*SPER-mah-toh-zoh-ah*), plural for *spermatozoon*, 262

**Spermatozoon** (*SPER-mah-toh-zoh-on*), another term for *sperm*, 262

sperm/o, 262

**Sphygmomanometer** (*sfig-moh-mah-NOM-eh-ter*), instrument for measuring blood pressure; also referred to as *blood pressure cuff*, 133

**Spina bifida** (*SPY-nah/BIF-ih-dah*), congenital defect in walls of spinal canal in which laminae of vertebra do not meet or close; may result in meninges or spinal cord being pushed through opening, 102, 328

**Spinal** (*SPY-nal*), pertaining to spine

**Spinal cavity** (*SPY-nal*), located in dorsal side of body within spinal canal that contains spinal cord, 46

**Spinal cord** (*SPY-nal*), provides pathway for impulses traveling to and from brain; column of nerve fibers extending from medulla oblongata of brain down to level of second lumbar vertebra; plural is *spinal cords*, 94, 316, 321

**Spinal cord injury** (SCI) (*SPY-nal*), bruising or severing of spinal cord from blow to vertebral column resulting in muscle paralysis and sensory impairment below injury level, 328, 331

**Spinal cords**, plural of *spinal cord*

**Spinal nerves** (*SPY-nal*), 31 pairs of nerves arising from spinal cord, 321, 322

**Spinal puncture** (*SPY-nal*), another term for *lumbar puncture*, 330

**Spinal tap** (*SPY-nal*), another term for *lumbar puncture*, 330

**Spiral fracture**, fracture line spirals around shaft of bone; can be caused by twisting injury, 102

spir/o, 201

**Spirogram** (*SPY-roh-gram*), record of lung's air capacity

**Spirometer** (*spy-ROM-eh-ter*), instrument consisting of container into which patient can exhale for purpose of measuring air capacity of lungs

**Spirometry** (*spy-ROM-eh-tree*), using device to measure air capacity of lungs

Spitting, 201

**Spleen**, organ in lymphatic system that filters microorganisms and old red blood cells from blood, 170, 176

**Splenectomy** (*spleh-NEK-toh-mee*), surgical removal of spleen

**Splenic** (*SPLEN-ik*), pertaining to spleen

**Splenitis** (*splee-NYE-tis*), inflammation of spleen

splen/o, 176

**Splenomalacia** (*splee-noh-mah-LAY-shee-ah*), softening of spleen

**Splenoma** (*splee-NOH-mah*), spleen tumor

**Splenomegaly** (*spleh-noh-MEG-ah-lee*), enlargement of spleen

**Splenopexy** (*SPLÉE-noh-pek-see*), surgical fixation of spleen

**Splenorrhaphy** (*splee-NOR-ah-fee*), surgical procedure to repair ruptured spleen

Split-thickness skin graft (STSG), 71

**Spondylitis** (*spon-dih-LYE-tis*), inflammation of vertebra

spondyl/o, 97

**Spondylosis** (*spon-dih-LOH-sis*), abnormal condition involving vertebral column

**Spongy bone**, bony tissue found inside bone; has numerous, small spaces within that house red bone marrow; also called *cancellous bone*, 95

**Spontaneous abortion** (miscarriage), unplanned abortion due to death of embryo, 303

**Sprain**, pain and disability caused by trauma to joint; ligament may be torn in severe sprains, 91

**Sputum** (*SPYOO-tum*), mucus or phlegm coughed up from lining of respiratory tract and out of mouth, 206, 208

**Sputum culture and sensitivity** (C&S) (*SPYOO-tum*), testing sputum by placing it on culture medium and observing any bacterial growth; specimen is tested to determine antibiotic effectiveness, 209, 212

**Sputum cytology** (*SPYOO-tum/sigh-TALL-oh-jee*), testing for malignant cells in sputum, 209

**Squamous cell carcinoma** (SCC) (*SKWAY-mus/sell/kar-sih-NOH-mah*), skin cancer that may go into deeper tissue but does not generally metastasize, 69, 71

**Stapedectomy** (*stay-peh-DEK-toh-mee*), surgical treatment for otosclerosis; stapes bone removed and replaced by tiny prosthetic stapes, 408

**Stapes** (*STAY-pee-z*), one of three ossicles of middle ear; attached to oval window leading to inner ear; commonly called *stirrup*, 398

*Staphylococcus aureus*, 179

**Stent**, stainless steel tube placed within blood vessel or duct to widen lumen, 136

**Sterility**, inability to produce children, 269

**Sternal** (*STER-nal*), pertaining to sternum

Sternal region, 42

stern/o +-al, 45

**Sternum** (*STER-num*), bone of axial skeleton and anterior attachment for ribs; commonly called *breast bone*



steth/o, 125

**Stethoscope** (*STETH-oh-skohp*), instrument for listening to body sounds, such as chest, heart, or intestines, 131

**Stethoscopy** (*steh-THOS-koh-pee*), process of viewing (listening to) chest

**Stillbirth** (SB), viable-aged fetus dies before or at time of delivery, 301, 305

**Stirrup**, common name for *stapes*

**Stoma** (*STOH-mah*), mouth-like opening; example is opening created when colon is attached to body wall in colostomy, 242, 263

**Stomach** (*STUM-ak*), J-shaped muscular organ of digestive system; contains hydrochloric acid; begins digestive process by mixing food received from esophagus with acid; watery mixture, called *chyme*, leaves stomach and enters duodenum, 43, 224, 231

**Stomach stapling** (*STUM-ak*), common name for *gastric bypass*, 241

-stomy, 263

**Stone**, common name for *calculus*, 259

**Stool guaiac** (*GWY-ak*), another term for *fecal occult blood test* or *hemocult*

Stool guaiac test, 239

**Strabismus** (*strah-BIZ-mus*), eye muscle weakness resulting in each eye looking in different direction at same time; may be corrected with glasses, eye exercises, and/or surgery; commonly called *crossed eyes*, 381

**Strabotomy** (*strah-BOT-oh-mee*), cutting into eye muscles to correct strabismus, 384

Straight, 198

**Strain**, trauma to muscle from excessive stretching or pulling, 103

Strangulated, 237

Streptokinase (SK), 137

**Stress fracture**, slight break caused by repetitive low-impact forces, like running, rather than single forceful impact, 103

**Stress test**, method for evaluating cardiovascular fitness; patient placed on treadmill or bicycle and subjected to steadily increasing levels of work; EKG and oxygen levels are taken while patient exercises; test is stopped if abnormalities occur on EKG; *exercise stress test* performed while patient exercises; *chemical stress test* performed after taking medication to dilate blood vessels and increase heart rate and blood pressure, 133

**Striated muscle** (*STRY-ay-ted*), another name for *skeletal muscle*

**Stroke**, common name for *cerebrovascular accident*, 326

Structures

in cardiology, 119–120

in dermatology, 193–194

in neurology, 317–318

in obstetrics and gynecology, 287–288

in ophthalmology, 317–318

in orthopedics, 343–344

in otorhinolaryngology, 396–397

in pulmonology, 180–181

**Stye** (*STIGH*), small purulent infection of sebaceous gland of eye, treated with hot compresses and surgical incision; also called *hordeolum*, 381

sub-, 12

**Subcutaneous** (SubQ, subcut) (*sub-kyoo-TAY-nee-us*), pertaining to beneath skin, 71

**Subcutaneous layer** (*sub-kyoo-TAY-nee-us*), continuous layer of fat underlying dermis; serves as protective padding, insulation, and energy store, 58

**Subdermal** (*sub-DER-mal*), pertaining to under the skin

**Subdural hematoma** (*sub-DOO-ral/hee-mah-TOH-mah*), mass of blood forming beneath dura mater of brain, 328

**Subiliac** (*sub-IL-ee-ak*), pertaining to under ilium

**Submandibular** (*sub-man-DIB-yoo-lar*), pertaining to under mandible

**Subscapular** (*sub-SKAP-yoo-lar*), pertaining to under scapula

**Substernal** (*sub-STER-nal*), pertaining to under sternum

**Subungual** (*sub-UNG-gwal*), pertaining to under nail

**Sudden infant death syndrome** (SIDS), sudden, unexplained death of infant in which postmortem examination fails to determine cause of death, 208, 213

**Suffixes**, word part attached to end of word; frequently indicates condition, disease, or procedure; almost all medical terms have a suffix, 14–24  
in anatomical terms, 34  
in cardiology, 118–119  
to convert word roots into adjectives, 17–18  
defined, 3  
in dermatology, 56  
diagnostic procedures, indicating, 16  
diseases or abnormal conditions, indicating, 14–15  
in endocrinology, 343  
in gastroenterology, 224–225  
general, to build additional medical terms, 16–17  
in hematology, 149  
in immunology, 170  
medical specialties or personnel, indicating, 17  
in neurology, 316  
in obstetrics and gynecology, 286–287  
in ophthalmology, 369–370  
in orthopedics, 84  
in otorhinolaryngology, 395–396  
in pulmonology, 118–119  
role of, in building medical terms, 14  
surgical procedures, indicating, 16  
in urology and nephrology, 255

**Suffocation**, common name for *asphyxiation*, 203

Sugar, 346

**Superficial**, directional term meaning nearer surface of body

**Superficial burn**, another name for *first-degree burn*, 63

Superficial position, 41

**Superior** (*soo-PEER-ee-or*), directional term meaning toward head, or above

Superior direction, 41

**Superior vena cava** (*VEE-nah/KAY-vah*), large vein carrying deoxygenated blood from upper body to right atrium, 123

super/o + -ior, 41

**Supination** (*soo-pih-NAY-shun*), action of turning wrist palm upward

**Supine** (*soo-PINE*), directional term meaning lying horizontally and facing upward

Supine position, 41

**Supramaxillary** (*soo-prah-MAK-sih-lair-ee*), pertaining to above maxilla

**Suprapubic** (*soo-prah-PYOO-bik*), pertaining to above pubic bone

Surgically create an opening, 263

Surgical procedures, suffixes indicating, 16

**Suspensory ligaments** (*sus-PEN-suh-ree/LIG-ah-ments*), tiny ligaments that attach lens to ciliary body, 373

Swallowing, 233

**Sweat**, fluid produced by sweat glands; evaporates to cool body

**Sweat duct**, canal that carries sweat from sweat gland to surface of skin, 60

**Sweat glands**, produce sweat, which assists body in maintaining its internal temperature by creating cooling effect when it evaporates, 57, 60

**Sweat test**, performed on sweat to determine level of salt; increase in skin salt may indicate cystic fibrosis, 209

**Swimmer's ear**, common name for *otomycosis* or *otitis externa*, 406

**Synapse** (*SIN-aps*), point at which axon of one neuron meets dendrite of next neuron, 316

**Synaptic cleft** (*sih-NAP-tik*), gap between two neurons, 316

**Syncope** (*SIN-koh-pee*), fainting, 328

Syndrome, 98, 353

**Synovial joint** (*sin-OH-vee-al*), freely moving joint lubricated by synovial fluid; examples are hip and elbow, 86, 88

**Syphilis** (*SIF-ih-lis*), infectious, chronic, venereal disease that can involve any organ, 269

**System**, comprises several organs working in a coordinated manner to perform complex body function(s)

**Systemic lupus erythematosus** (SLE) (*sis-TEM-ik/LOO-pus/air-ih-them-ah-TOH-sus*), chronic autoimmune disease of connective tissue that injures skin, joints, kidneys, nervous system, and mucous membranes, 179

**Systolic pressure** (*sis-TOL-ik*), pressure in blood vessels while heart contracting, 131

## T

**Tachycardia** (*tak-ee-KAR-dee-ah*), abnormally fast heart rate, over 100 bpm, 131

**Tachypnea** (*tak-ip-NEE-ah*), rapid breathing rate

**Tailbone**, common name for *coccyx*

**Target organs**, those which hormones act on to either increase or decrease organ's activity level, 343

**Tarsal** (*TAR-sal*), pertaining to tarsus

**Tarsus** (*TAR-sus*), ankle bones of lower extremity

**Tear**, drop of fluid that washes and lubricates anterior surface of eyeball; plural is *tears*

**Tears**, plural of *tear*, 373, 374  
 Temperature, pulse, and respiration (TPR), 213  
**Temperature regulation**, ability to use processes to cool body if too hot or to conserve heat if body too cool, 55  
**Temporal lobe** (*TEM-por-al*), one of four cerebral hemisphere lobes; controls hearing and smell, 319  
**Tenalgia** (*ten-AL-jee-ah*), tendon pain  
**Tendinitis** (*ten-dih-NYE-tis*), inflammation of tendon  
*tendin/o*, 97  
**Tendinoplasty** (*TEN-din-oh-plas-tee*), surgical repair of tendon  
**Tendinosis** (*ten-dih-NOH-sis*), abnormal condition affecting tendon  
**Tendinous** (*TEN-dih-nus*), pertaining to tendon  
**Tendon** (*TEN-dun*), strong connective tissue cord that attaches skeletal muscle to bone; plural is *tendons*  
**Tendons** (*TEN-dunz*), plural of *tendon*, 83, 98, 99  
*ten/o*, 97  
**Tenodesis** (*ten-oh-DEE-sis*), surgical fusion of tendon for purpose of stabilizing joint  
**Tenodynia** (*ten-oh-DIN-ee-ah*), pain in tendon  
**Tenorrhaphy** (*teh-NOR-ah-fee*), surgical procedure to repair torn tendon  
 Tension, 377  
**Tertiary bronchi** (*TER-shee-air-ee/BRONG-kye*), in lungs, secondary bronchi subdivide into more narrow tertiary bronchi, 195  
**Testes** (*TESS-teez*), plural of *testis*, 260, 262, 343, 347, 350  
**Testicle** (*TESS-tih-kl*), male sex gland; oval-shaped organ located in scrotum that produces sperm and male hormone, testosterone; plural is *testicles*; also called *testes*  
**Testicles** (*TESS-tih-klz*), plural of *testicle*, 260, 347  
**Testicular** (*tess-TIK-yoo-lar*), pertaining to testes  
**Testicular cancer** (*tess-TIK-yoo-lar*), cancer of one or both testicles, 269  
**Testicular torsion** (*tess-TIK-yoo-lar*), twisting of spermatic cords, 269  
*testicul/o*, 263, 351  
**Testis** (*TESS-tis*), male sex gland; two oval-shaped organs located in scrotum that produce sperm and male hormone, testosterone; also called *testicle*; plural is *testes*  
**Testosterone** (*tess-TAHS-ter-ohn*), male hormone produced in testes; responsible for growth and development of male reproductive organs, 254, 345, 347  
**Test tube baby**, common name for child born from *in vitro* fertilization, 304  
**Tetany** (*TET-ah-nee*), condition resulting from calcium deficiency in blood; characterized by muscle twitches, cramps, and spasms, 355  
**Thalami** (*THAL-ah-meye*), plural of *thalamus*  
**Thalamic** (*thah-LAM-ik*), pertaining to thalamus

thalam/o, 324  
**Thalamotomy** (*thal-ah-MOT-ah-mee*), cutting into thalamus  
**Thalamus** (*THAL-ah-mus*), portion of diencephalon; composed of gray matter and acts as center for relaying impulses from eyes, ears, and skin to cerebrum; pain perception also controlled by thalamus; plural is *thalami*, 319, 324  
**Thalassemia** (*thal-ah-SEE-mee-ah*), genetic disorder in which person is unable to make functioning hemoglobin; results in anemia, 156  
**Therapeutic abortion**, abortion necessary for maternal health, 303  
**Thigh bone**, common name for *femur*  
 Third-degree burns, 63–64  
**Thoracalgia** (*thor-ah-KAL-jee-ah*), thoracic pain  
**Thoracic** (*thoh-RASS-ik*), pertaining to chest  
**Thoracic cavity** (*thoh-RASS-ik*), located on ventral side of body in chest area that contains lungs and heart, 46, 194  
 Thoracic region, 46  
**Thoracic surgeon** (*thoh-RASS-ik*), physician specializing in treating conditions and diseases of respiratory system by surgical means, 193  
 Thoracic vertebra (T1, T2, etc.), 106  
*thorac/o*, 201  
**Thoracocentesis** (*thor-ah-koh-sen-TEE-sis*), puncture of thoracic cavity to withdraw fluid  
**Thoracodynia** (*thor-ah-koh-DIN-ee-ah*), chest pain  
*thorac/o + -ic*, 45  
**Thoracostomy** (*thor-ah-KOS-toh-mee*), insertion of tube into chest for purpose of draining off fluid or air  
**thoracotomy** (*thor-ah-KOT-oh-mee*), incision into chest  
 -thorax, 202  
**Throat**, common name for *pharynx*, 402. *See also* Otorhinolaryngology (ENT)  
**Thrombectomy** (*throm-BEK-toh-mee*), surgical removal of thrombus  
**Thrombi** (*THROM-bye*), plural of *thrombus*, 126, 154  
*thromb/o*, 126, 154  
**Thrombocytes** (*THROM-boh-sight*), another term for *platelet*, 149  
**Thrombocytopenia** (*throm-boh-sigh-toh-PEE-nee-ah*), too few clotting cells (platelets)  
**Thrombocytosis** (*throm-boh-sigh-TOH-sis*), too many clotting cells (platelets)  
**Thrombolysis** (*throm-BOL-ih-sis*), to destroy a clot  
**Thrombolytic therapy** (*throm-boh-LIT-ik*), drugs, such as streptokinase or tissue plasminogen activator, injected into blood vessel to dissolve clots and restore blood flow, 158  
**Thrombophlebitis** (*throm-boh-fleh-BYE-tis*), inflammation of vein that results in formation of blood clots within vein  
**Thrombopoiesis** (*throm-boh-poy-EE-sis*), formation of clotting cells (platelets)  
**Thrombosis** (*throm-BOH-sis*), abnormal condition of forming clots

**Thrombotic** (*throm-BOT-ik*), pertaining to clots  
**Thrombus** (*THROM-bus*), hard collection of fibrin, blood cells, and tissue debris that is end result of hemostasis or blood-clotting process; commonly called *blood clot*; plural is *thrombi*  
**Thymectomy** (*thigh-MEK-toh-mee*), surgical removal of thymus gland  
**Thymic** (*THIGH-mik*), pertaining to thymus gland  
**Thymitis** (*thigh-MY-tis*), inflammation of thymus gland  
*thym/o*, 176, 351  
**Thymoma** (*thigh-MOH-mah*), malignant tumor of thymus gland  
**Thymosin** (*THIGH-moh-sin*), hormone secreted by thymus gland; important hormone for development of immune system, 351  
**Thymus gland** (*THIGH-mus*), endocrine gland located in upper mediastinum that assists body with immune function; secretes hormone thymosin which is important for development of immune system, 170, 176, 343, 351  
*thyr/o*, 352  
**Thyroid function test** (TFT) (*THIGH-royd*), blood tests used to measure levels of T<sub>3</sub>, T<sub>4</sub>, and TSH in bloodstream to assist in determining thyroid function, 355  
**Thyroid gland** (*THIGH-royd*), located in neck; has two lobes on either side of trachea; secretes thyroxine and triiodothyronine which regulate body's metabolic rate; also secretes calcitonin to lower blood calcium levels; plural is *thyroid glands*, 343, 349, 353  
**Thyroid glands** (*THIGH-royd*), plural of *thyroid gland*  
**Thyroid scan** (*THIGH-royd*), test in which radioactive element is administered that localizes in thyroid gland, 355  
**Thyroid-stimulating hormone** (TSH) (*THIGH-royd*), secreted by anterior pituitary; regulates function of thyroid gland, 350, 355  
 Thyroid uptake, 355  
**Thyroidal** (*thigh-ROY-dal*), pertaining to thyroid gland  
**Thyroidectomy** (*thigh-roy-DEK-toh-mee*), surgical removal of thyroid gland  
**Thyroiditis** (*thigh-roy-DYE-tis*), inflammation of thyroid gland  
*thyroid/o*, 352  
**Thyromegaly** (*thigh-roh-MEG-ah-lee*), enlarged thyroid gland  
**Thyrotomy** (*thigh-ROT-oh-mee*), cutting into thyroid gland  
**Thyrotoxicosis** (*thigh-roh-tok-sih-KOH-sis*), condition resulting from excessive secretion of thyroid gland hormones; symptoms include rapid heart action, tremors, enlarged thyroid gland, exophthalmos, and weight loss, 355  
**Thyroxine** (T<sub>4</sub>) (*thigh-ROK-seen*), hormone produced by thyroid gland; regulates level of cell metabolism; greater the level of hormone in bloodstream, higher cell metabolism will be, 352, 355  
**Tibia** (*TIB-ee-ah*), lower extremity bone; commonly called *shin bone*  
**Tibial** (*TIB-ee-al*), pertaining to tibia

Time, prefixes indicating, 28

**Tinea** (*TIN-ee-ah*), fungal skin disease resulting in itching, scaling lesions; commonly called *ringworm*, 69

**Tinnitus** (*tin-EYE-tus*), ringing in ears, 405, 406

Tissue plasminogen activator (tPA), 137

**Tissues**, cells of same type grouped together to perform a specific activity

Tomia, 16

**Tonic-clonic seizure** (grand mal seizure), characterized by loss of consciousness and muscle convulsions; formerly called *grand mal seizure*, 327

ton/o, 377

**Tonometer** (*toh-NOM-eh-ter*), instrument to measure intraocular pressure of eye to check for glaucoma

**Tonometry** (*toh-NOM-eh-tree*), measurement of intraocular pressure of eye using tonometer to check for glaucoma

**Tonsil** (*TAHN-sull*), one of several collections of lymphatic tissue located in pharynx to combat micro-organisms entering body through nose or mouth; includes pharyngeal tonsils, palatine tonsils, and lingual tonsils; plural is *tonsils*

**Tonsillar** (*TAHN-sih-lar*), pertaining to tonsils

**Tonsillectomy** (*tahn-sih-LEK-toh-mee*), surgical removal of tonsils, 2

Tonsillectomy and adenoidectomy (T&A), 181, 409

**Tonsillitis** (*tahn-sill-EYE-tis*), inflammation of tonsils

tonsill/o, 177, 404

**Tonsils** (*TAHN-sulls*), plural of *tonsil*, 170, 176, 177, 397, 404

lingual, 177, 402

palatine, 177, 402

pharyngeal, 172, 177, 397

Too few, 153

**Torticollis** (*tor-tih-KALL-iss*), neck spasms severe enough to pull head to one side; commonly called *wryneck* or *crick in the neck*, 103

Total abdominal hysterectomy-bilateral salpingo-oophorectomy (TAH-BSO), 283

**Total hip arthroplasty** (THA) (*AR-throh-plas-tee*), surgical reconstruction of hip by implanting prosthetic or artificial hip joint; also called *total hip replacement* (THR), 105, 106

**Total hip replacement** (THR), another term for *total hip arthroplasty* (THA), 105, 106

**Total knee arthroplasty** (TKA) (*AR-throh-plas-tee*), surgical reconstruction of knee joint by implanting prosthetic knee joint; also called *total knee replacement* (TKR), 105, 106

**Total knee replacement** (TKR), another term for *total knee arthroplasty* (TKA), 105, 106

**Total parenteral nutrition** (TPN) (*pah-REN-ter-al*), providing 100% of patient's nutrition intravenously; used when patient is unable to eat, 242

Toxemia, 301

**Toxic shock syndrome** (TSS), rare and sometimes fatal bacterial infection that generally occurs in menstruating women; initial infection occurs in vagina and is associated with prolonged wearing of super-absorbent tampon; toxins secreted by bacteria enter bloodstream, 301

**Trachea** (*TRAY-kee-ah*), tube conducting air from larynx down to main bronchi in chest; commonly called *windpipe*; plural is *tracheae* or *tracheas*, 202, 395, 404

**Tracheae** (*TRAY-kee-ee*), plural of *trachea*

**Tracheal** (*TRAY-kee-al*), pertaining to trachea

**Tracheas** (*TRAY-kee-uhz*), plural of *trachea*

**Tracheitis** (*tray-kee-EYE-tis*), inflammation of trachea

trache/o, 202, 404

**Tracheomegaly** (*tray-kee-oh-MEG-ah-lee*), enlarged trachea

**Tracheoplasty** (*TRAY-kee-oh-plas-tee*), surgical repair of trachea

**Tracheostenosis** (*tray-kee-oh-steh-NOH-sis*), narrowing of trachea

**Tracheostomy** (*tray-kee-OSS-toh-mee*), surgical procedure used to make opening in trachea to create airway; tracheostomy tube can be inserted to keep opening patent

**Tracheotomy** (*tray-kee-OT-oh-mee*), cutting into trachea to provide airway

**Transdermal** (*tranz-DER-mal*), pertaining to across skin

**Transesophageal echocardiography** (TEE) (*tranz-eh-SOFF-ah-jee-al/ek-oh-kar-dee-OG-rah-fee*), specialized procedure in which patient swallows ultrasound head in order to better visualize internal cardiac structures, especially cardiac valves, 134, 137

**Transient ischemic attack** (TIA) (*TRAN-zee-ent/iss-KEEM-ik*), temporary interference with blood supply to brain, causing neurological symptoms such as dizziness, numbness, and hemiparesis; may lead eventually to full-blown stroke (CVA), 329

Transurethral resection (TUR), 272–274

**Transurethral resection of the prostate** (TURP) (*trans-yoo-REE-thral/ree-SEK-shun*), surgical removal of prostate gland by inserting device through urethra and removing prostate tissue; may also be referred to simply as transurethral resection (TUR), 273, 274

**Transvaginal** (*tranz-VAJ-ih-nal*), pertaining to across vagina

**Transvaginal ultrasonography** (*trans-VAJ-in-al/ul-trah-son-OG-rah-fee*), procedure in which ultrasound head is placed inside vagina instead of on abdominal surface; images produced are more detailed as sound waves do not pass through as much tissue, 303

**Transverse colon**, section of colon that crosses upper abdomen from right side of body to left, 228

**Transverse fracture**, complete break that is straight across bone at right angles to long axis of bone, 103

**Transverse plane**, horizontal division that separates body into upper (superior) and lower (inferior) sections; also called *axial plane*, 37

**Transverse section**, sectional view of body produced by cut along transverse plane; also called *axial section*, 38

**Traumatic brain injury** (TBI), damage to brain resulting from impact (such as car accident), blast waves (such as explosion), or penetrating

projectile (such as bullet); symptoms may be mild, moderate, or severe and may include loss of consciousness, coma, headache, vomiting, loss of motor coordination, and dizziness, 329

Tresis, 236, 297

trich/o, 62

**Trichomoniasis** (*trik-oh-moh-NYE-ah-sis*), protozoan sexually transmitted disease; causes inflammation of genitourinary tract in both men and women, 269

**Trichomycosis** (*trik-oh-my-KOH-sis*), fungal infection involving hair

**Trichophagia** (*trik-oh-FAY-jee-ah*), obsessively chewing (eating) hair

**Tricuspid valve** (*try-KUSS-pid*), located between right atrium and ventricle of heart; prevents blood from flowing backward into atrium, 123, 126

**Triiodothyronine** (T/T<sub>3</sub>) (*try-eye-oh-doh-THIGH-roh-noon*) hormone produced by thyroid gland known as T<sub>3</sub> that requires iodine for its production; regulates level of cell metabolism; greater level of hormone in bloodstream, means higher cell metabolism, 352

**Trisomy 21**, another term for *Down syndrome*, 298

-trophy, 30, 97

**Troponin** (*troh-POH-nin*), *cardiac biomarker*; protein released by heart muscle when damaged, 131

**Trunk**, torso region of body, excluding head and extremities

Trunk region, 45

**Tubal ligation** (*TOO-bal/lye-GAY-shun*), surgical tying off of uterine tubes to prevent conception from taking place; results in sterilization of female, 304

**Tuberculin skin tests** (TB test) (*too-BER-kyoolin*), applying chemical agent under surface of skin to determine if patient has been exposed to tuberculosis; also called *Mantoux test*, 209

**Tuberculosis** (TB) (*too-ber-kyoo-LOH-sis*), infectious disease caused by tubercle bacillus, *Mycobacterium tuberculosis*; most commonly affects respiratory system and causes inflammation and calcification in lungs, 209, 213

**Tympanic** (*tim-PAN-ik*), pertaining to eardrum, 400

**Tympanic membrane** (eardrum) (*tim-PAN-ik*), as sound moves along auditory canal, it strikes tympanic membrane causing it to vibrate; this conducts sound wave into middle ear; commonly called *eardrum*; plural is *tympanic membranes*, 398, 400, 405

**Tympanic membranes** (*tim-PAN-ik*), plural of *tympanic membrane*

tympan/o, 405

**Tympanogram** (*TIM-pah-noh-gram*), record of movement of eardrum *tympanic membrane*

**Tympanometer** (*tim-pah-NOM-eh-ter*), instrument to measure movement of eardrum

**Tympanometry** (*tim-pah-NOM-eh-tree*), measurement of movement of tympanic membrane; indicates presence of pressure in middle ear

**Tympanoplasty** (*TIM-pah-noh-plas-tee*), another term for *myringoplasty*

**Tympanorrhexis** (*tīm-pah-noh-REK-sis*), ruptured eardrum

**Tympanotomy** (*tīm-pah-NOT-oh-mee*), cutting into eardrum

**Type A blood**, type of blood in ABO typing system; has A marker; makes anti-B antibodies; agglutinates with type B and AB blood, 152

**Type AB blood**, type of blood in ABO typing system; has both A and B markers; makes no antibodies; does not agglutinate with any other blood type, 152

**Type and crossmatch** (T&C), two blood tests performed before donated blood is transfused into patient; blood type of both patient's and donor's blood is double checked first to be same; then crossmatch tests mix very small amounts of two bloods together and observed for adverse reactions, 157

**Type B blood**, type of blood in ABO typing system; has B marker; makes anti-A antibodies; agglutinates with type A and AB blood, 152

**Type O blood**, type of blood in ABO typing system; has no markers; makes anti-A and anti-B antibodies; agglutinates with all other blood types, 152

Type 1 diabetes, 353, 356

**Type 1 diabetes mellitus** (*dye-ah-BEE-teez/MEL-ih-tus*), another term for *insulin-dependent diabetes mellitus*, 353, 354

Type 2 diabetes, 353, 356

**Type 2 diabetes mellitus** (*dye-ah-BEE-teez/MEL-ih-tus*), another name for *non-insulin-dependent diabetes mellitus*, 353, 354

## U

**Ulcerative colitis** (*UL-ser-ah-tiv/koh-LYE-tis*), ulceration of unknown origin of mucous membranes of colon; also called *inflammatory bowel disease* (IBD), 238

**Ulcer** (*UL-ser*), open sore or lesion in skin or mucous membrane, 17, 18, 69

**Ulna** (*UL-nah*), one of forearm bones in upper extremity

**Ulnar** (*UL-nar*), pertaining to ulna

**Ultrasonogram** (*ul-trah-SON-oh-gram*), image produced by *Doppler ultrasonography*, 132

**Ultrasonography** (*ul-trah-son-OG-rah-fee*), procedure using high-frequency sound waves to produce image of pelvic organs; involves pressing small device (*sound head*) against surface of abdomen, computer generates image based on length of time it takes sound waves to bounce off pelvic organs and back to sound head; commonly called *ultrasound* (US)

**Ultrasound** (US), common name for any type of ultrasonography, 302

**Umbilical** (*um-BIL-ih-kal*), anatomical division of abdomen; middle section of middle row; region around naval

**Umbilical cord** (*um-BIL-ih-kal*), extends from baby's umbilicus (navel) to placenta; contains blood vessels that carry oxygen and nutrients from mother to baby and carbon dioxide and wastes from baby to mother, 289

Umbilical region, 45, 49

Umbilicus, 49

**Unconscious** (*un-KON-shus*), state of being unaware of surroundings and unable to respond to stimuli, 329

**Undescended testicle** (*TESS-tih-kl*), common name for *cryptorchidism*, 268

**Ungual** (*UNG-gwal*), pertaining to nail

ungu/o, 62

**Universal donor**, person with type O blood; whose erythrocytes have no markers to interact with recipient's blood, 152

**Universal receiver**, person with type AB blood; whose erythrocytes have both A and B markers; makes no antibodies to react to the donor's blood

Universal recipient, 152

**Upper extremity** (UE), refers to entire arm, 45, 106

**Upper gastrointestinal (UGI) series** (*gas-troh-in-TESS-tih-nal*), administering barium contrast material orally and then taking X-ray to visualize esophagus, stomach, and duodenum; also called *barium swallow*, 240, 242

**Upper respiratory infection** (URI), affects any or all organs of upper respiratory system, primarily nose, sinuses, and pharynx; may be bacterial or viral, 406, 409

**Uremia** (*yoo-REE-mee-ah*), excess of urea and other nitrogenous waste in blood

**Ureter** (*YOO-reh-ter*), one of two organs in urinary system that transport urine from kidney to bladder; plural is *ureters*, 254, 264

**Ureteral** (*yoo-REE-ter-al*), pertaining to ureter

**Ureteritis** (*yoo-ree-ter-EYE-tis*), inflammation of ureter

ureter/o, 264

**Ureterolithiasis** (*yoo-ree-ter-oh-lih-THIGH-ah-sis*), condition of having stones in ureter

**Ureterostenosis** (*yoo-ree-ter-oh-steh-NOH-sis*), narrowing of ureter

**Ureterostomy** (*yoo-ree-ter-OSS-toh-mee*), creation of opening from ureter to body wall to drain urine

**Ureters** (*YOO-reh-ters*), plural of *ureter*

**Urethra** (*yoo-REE-thrah*), tube leading from urinary bladder to outside of body; in male also used by reproductive system to release semen; plural is *urethrae* or *urethras*, 254, 264

**Urethrae** (*yoo-REE-three*), plural of *urethra*

**Urethralgia** (*yoo-ree-THRAL-jee-ah*), urethral pain

**Urethral** (*yoo-REE-thral*), pertaining to urethra

**Urethras** (*yoo-REE-thrahz*), plural of *urethra*

**Urethritis** (*yoo-ree-THRIGH-tis*), inflammation of urethra

urethr/o, 264

**Urethroplasty** (*yoo-ree-throh-PLAS-tee*), surgical repair of urethra

**Urethroscope** (*yoo-REE-throh-skohp*), instrument to view inside urethra

**Urethroscopy** (*yoo-ree-THROS-koh-pee*), process of visually examining urethra with urethroscope

**Urethrostenosis** (*yoo-ree-throh-steh-NOH-sis*), narrowing of urethra

**Urethrostomy** (*yoo-ree-THROS-toh-mee*), creation of opening between urethra and body wall to drain urine

**Urethrotomy** (*yoo-ree-THROT-oh-mee*), cutting into urethra

**Urgency** (*ER-jen-see*), feeling need to urinate immediately, 270

-uria, 30, 265

**Urinalysis** (U/A, UA) (*yoo-rih-NAL-ih-sis*), laboratory test consisting of physical, chemical, and microscopic examination of urine, 271, 274

**Urinary** (*YOO-rih-nair-ee*), pertaining to urine

**Urinary bladder** (*YOO-rih-nair-ee*), muscular bladder stores urine produced by kidneys; urine drains into bladder from ureters and exits bladder in urethra; plural is *urinary bladders*, 254, 257

**Urinary bladders**, plural of *urinary bladder*

**Urinary catheterization** (cath) (*YOO-rih-nair-ee/kath-eh-ter-ih-ZAY-shun*), insertion of flexible tube, catheter, into urinary bladder through urethra; used to withdraw urine or insert dye, 273

**Urinary incontinence** (*in-KON-tih-nens*), involuntary release of urine occurring after bladder control established; also called *enuresis*, 270

**Urinary retention** (*YOO-rih-nair-ee*), inability to fully empty bladder; typically caused by blockage of bladder exit into ureter called *bladder neck obstruction* (BNO), 270

**Urinary system** (*YOO-rih-nair-ee*), filters wastes from blood and excretes waste products in form of urine; organs include kidneys, ureters, urinary bladder, and urethra, 256. *See also* Urology and nephrology

**Urinary tract infection** (UTI) (*YOO-rih-nair-ee*), infection, usually from bacteria, of any organ of urinary system; most often begins with cystitis and may ascend into ureters and kidneys; most common in women because of shorter urethra, 270

**Urination**, release of urine from urinary bladder; also called *micturition* or *voiding*, 265

**Urine** (*YOO-rin*), fluid that remains in urinary system following three stages of urine production: filtration, reabsorption, and secretion, 254, 263, 265

Urine condition, 265

Urine culture (UC), 271

**Urine culture and sensitivity** (C&S) (*YOO-rin*), laboratory test of urine for bacterial infection; attempt to grow bacteria on culture medium in order to identify it and determine which antibiotics it is sensitive to, 271

urin/o, 265

**Urinometer** (*yoor-ih-NOM-eh-ter*), instrument to measure urine

ur/o, 263

**Urologist** (*yoo-RALL-oh-jist*), physician specializing in treating conditions and diseases of urinary system and male reproductive system, 254

**Urology** (*yoo-RALL-oh-jee*), branch of medicine specializing in conditions of urinary system and male reproductive system



Urology and nephrology, 285–314

abbreviations, 274

case study, 274–275

combining forms, 254–266

description of, 254

organs treated in, 256

prefixes, 255

suffixes, 255

vocabulary, 267–273

**Urticaria** (*er-tih-KAIR-ee-ah*), severe itching associated with hives, usually seen in allergic reactions to food, stress, or medications; also commonly called *hives*, 69, 179

**Uteri** (*YOO-ter-eye*), plural of *uterus*

**Uterine** (*YOO-ter-in*), pertaining to uterus

**Uterine tube** (*YOO-ter-in*), one of two structures that carry ovum from ovary to uterus; plural is *uterine tubes*; also called *fallopian tube* or *oviduct*

**Uterine tubes** (*YOO-ter-in*), plural of *uterine tube*, 286, 296

uter/o, 296

**Uteroplasty** (*YOO-ter-oh-plas-tee*), surgical repair of uterus

**Uterus** (*YOO-ter-us*), hollow, pear-shaped organ in lower pelvic cavity between urinary bladder and rectum; fundus is upper portion between where uterine tubes enter; body of uterus is largest central region; cervix is narrow lowest region that opens into vagina; endometrium is inner lining which thickens during month and is sloughed off during menstrual period; myometrium is thick muscular wall which contracts to push fetus through birth canal; plural is *uteri*, 286, 292, 294, 296

**Uvea** (*YOO-vee-ah*), refers to structures comprising middle layer of eyeball; includes choroid, ciliary body, and iris, 377

**Uveitis** (*yoo-vee-EYE-tis*), inflammation of uvea  
uve/o, 377

**Uveoscleritis** (*yoo-vee-oh-skleh-RIGH-tis*), inflammation of uvea and sclera

## V

**Vaccination** (*vak-sih-NAY-shun*), exposure to weakened pathogen to stimulate immune response and antibody production in order to give future protection against full-blown disease; also called *immunization*, 181

**Vagina** (*vah-JYE-nah*), organ in female reproductive system that receives penis and semen; plural is *vaginae* or *vaginas*; also called *birth canal*, 286, 290, 297

**Vaginae** (*vah-JIGH-nee*), plural of *vagina*

**Vaginal** (*VAJ-ih-nal*), pertaining to vagina

**Vaginas** (*vah-JIGH-nahz*), plural of *vagina*

**Vaginitis** (*vaj-ih-NYE-tis*), inflammation of vagina  
vagin/o, 297

**Valve**, tissue flap that opens or closes to regulate movement through organ; found in heart and veins; plural is *valves*

**Valves**, plural of *valve*, 123, 125, 126  
aortic, 123, 126

mitral, 123, 126

pulmonary, 123, 126

tricuspid, 123, 126

valv/o, 126

**Valvoplasty** (*VAL-voh-plas-tee*), surgical repair of valve

**Valvotomy** (*val-VOT-oh-mee*), cutting into valve

**Valvular** (*VAL-vyoo-lar*), pertaining to valve

**Valvulitis** (*val-vyoo-LYE-tis*), inflammation of valve  
valvul/o, 126

**Valvuloplasty** (*val-vyoo-loh-PLAS-tee*), to cut into surgical repair of valve

**Varicella** (*vair-ih-SELL-ah*), contagious viral skin infection; commonly called *chickenpox*, 69  
Varicella zoster virus (VZV), 331

varic/o, 126

**Varicocele** (*VAIR-ih-koh-seel*), enlargement of scrotal veins, 270

**Varicose** (*VAIR-ih-kohs*), pertaining to varicosity

**Varicose veins** (*VAIR-ih-kohs*), swollen and distended veins, usually in legs, 131

**Varicosis** (*vair-ih-KOH-sis*), abnormal condition of having dilated vein

Varix, 236

**Vas deferens** (*VAS/DEF-er-enz*), long, straight tube that carries sperm from epididymis up into pelvic cavity, where it continues around bladder and empties into urethra; plural is *vasa deferentia*, 254, 266

**Vasa deferentia** (*VAY-zah/def-eh-REN-shee-ah*), plural of *vas deferens*

**Vascular** (*VAS-kyoo-lar*), pertaining to vessels  
vascul/o, 127

**Vasectomy** (*vah-SEK-toh-mee*), removal of segment or all of vas deferens to prevent sperm from leaving male body; used for contraception purposes

vas/o, 127, 266

**Vasodilator** (*vay-zoh-DYE-lay-ter*), medication to relaxes smooth muscle in walls of arteries; lowers blood pressure, 136

**Vasopressor** (*vay-zoh-PRESS-or*), medication causing smooth muscle in walls of arteries to constrict; raises blood pressure, 136

**Vasospasm** (*VAY-zoh-spazm*), sudden, strong muscle contraction of blood vessels

**Vasotomy** (*vay-SOT-oh-mee*), cutting into vas deferens

**Vasovasostomy** (*vay-soh-vah-SOS-tah-mee*), creation of new opening between two sections of vas deferens; used to reverse vasectomy  
Vegetation, 128

**Vein**, blood vessels of cardiovascular system that carry blood toward heart; plural is *veins*

**Veins**, plural of *vein*, 118, 120, 125, 126

comparative structure of, 120

dilated, 126

pulmonary, 123

skin, 56

varicose, 131

**Venereal disease** (VD) (*vih-NEER-ee-al*), former name for *sexually transmitted disease* (STD) or *sexually transmitted infection* (STI), 269, 274

**Venipuncture** (*VEN-ih-punk-chur*), puncture into vein to withdraw blood or inject medication or fluids, 134, 157

ven/o, 127

**Venogram** (*VEE-noh-gram*), X-ray record of vein after inserting radiopaque material

**Venography** (*vee-NOG-rah-fee*), process of taking X-ray tracing of vein after inserting radiopaque material

**Venosclerosis** (*vee-noh-skleh-ROH-sis*), hardening of vein

**Venous** (*VEE-nus*), pertaining to vein

**Ventilation-perfusion scan** (*per-FYOO-zhun*), nuclear medicine image particularly useful in diagnosing pulmonary emboli; involves inhalation of radioactive tagged air to evaluate air movement (ventilation) and injection of radioactive tagged dye into bloodstream to evaluate blood flow (perfusion) to lungs, 209

**Ventilator** (*VEN-tih-lay-ter*), machine that provides artificial ventilation for patient unable to breathe on their own, 212

**Ventral** (*VEN-tral*), directional term meaning more toward front or belly side of body

Ventral cavity, 47

Ventral direction, 41

**Ventral roots** (*VEN-tral*), pathway for motor neurons exiting spinal cord carrying motor commands, 321

**Ventricle** (*VEN-trih-kul*), one of two lower chambers of heart that receives blood from atria and pumps it back out of heart; left ventricle pumps blood to body, and right ventricle pumps blood to lungs; or fluid-filled space within cerebrum containing cerebrospinal fluid, watery, clear fluid that provides protection from shock or sudden motion to brain; plural is *ventricles*

**Ventricles** (*VEN-trih-kulz*), plural of *ventricle*, 123, 127

left, 123

right, 123

**Ventricular** (*ven-TRIK-yoo-lar*), pertaining to ventricle

**Ventricular fibrillation** (VF, V-fib), fibrillation of ventricle, 130, 137

**Ventricular septal defect** (VSD) (*VEN-trih-kulz*), congenital hole in interventricular septum, 137

Ventricular tachycardia (VT, V-tach), 137

ventricul/o, 127

ventr/o +-al, 42

**Venular** (*VEN-yoo-lar*), pertaining to small vein

**Venule** (*VEN-yool*), smallest veins; receive deoxygenated blood leaving capillaries; plural is *venules*, 127

**Venules** (*VEN-yools*), plural of *venule*  
venul/o, 127

**Verruca**, raised skin growth caused by viral infection of the epidermis layer; commonly called *wart*, 70

**Vertebra** (*VER-teh-brah*), bones of spinal column; plural is *vertebrae*, 97

**Vertebrae** (*VER-teh-bree*), plural of *vertebra*

**Vertebral** (*VER-teh-bral*), pertaining to vertebrae or backbone

Vertebral region, 46  
vertebr/o +-al, 46  
**Vertigo** (*VER-tih-goh*), sensation of spinning or whirling around; incorrectly used to mean dizziness, 406  
**Vesicle** (*VES-ih-kl*), small, fluid-filled raised spot on skin, 70  
Vesicovaginal fistula, 300  
**Vesicular** (*veh-SIK-yoo-lar*), pertaining to seminal vesicle  
**Vesiculectomy** (*veh-sik-yoo-LEK-toh-mee*), surgical removal of seminal vesicle  
**Vesiculitis** (*veh-sik-yoo-LYE-tis*), inflammation of seminal vesicle  
vesicul/o, 266  
**Vessel**, tube-like structure of body that contains fluid such as blood or lymph; plural is *vessels*  
**Vessels**, plural of *vessel*  
blood, 122, 127  
lymph, 122, 174  
**Viscera** (*VISS-er-ah*), internal organs such as stomach, lungs, or liver, 46  
**Visceral muscle** (*VISS-er-al*), another name for *smooth muscle*, 93  
**Visceral pleura** (*VISS-er-al*), inner layer of serous membrane sac encasing thoracic viscera, 199  
**Vision**, one of the special senses, ability to see, 369, 376  
Vision condition, 375  
Visual acuity (VA), 382  
**Visual acuity (VA) test** (*VIZH-oo-al/ah-KYOO-ih-tee*), measurement of sharpness of vision; usually, Snellen chart used for this test and patient identifies letters from distance of 20 feet, 382  
Visual field (VF), 382  
**Vitiligo** (*vit-ill-EYE-goh*), skin condition characterized by disappearance of skin pigment; results in milky white areas, 70  
vitre/o, 377  
**Vitreous** (*VIT-ree-us*), pertaining to glassy  
**Vitreous humor** (*VIT-ree-us*), transparent jellylike substance inside eyeball, 377  
Vocabulary  
cardiology, 128–136  
dermatology, 63–71  
endocrinology, 352–357  
gastroenterology, 235–242  
hematology, 154–158  
immunology, 177–181  
neurology, 324–331  
obstetrics and gynecology, 297–304  
ophthalmology, 378–384  
orthopedics, 98–105  
otorhinolaryngology, 405–408  
pulmonology, 203–212  
urology and nephrology, 267–273  
**Vocal cords**, structures within larynx that vibrate to produce sound and speech, 399  
**Voice**, production of sound by vocal cords, 403  
**Voice box**, common name for *larynx*, 399  
Voice condition, 403  
**Voiding**, another term for *urination*, 265  
**Voiding cystourethrography** (VCUG) (*sis-toh-yoo-ree-THROG-rah-fee*), X-ray taken to visualize urethra while patient is voiding after contrast material placed in bladder, 271  
**Volvulus** (*VOL-vyoo-lus*), condition in which bowel twists upon itself and causes painful obstruction requiring immediate surgery, 239  
**Vomit**, ejection of stomach contents through mouth, 230, 240  
**Vomiting**, common word for *emesis*, 236  
**Vulva** (vulvae) (*VUL-vah*), general term meaning external female genitalia; consists of labia majora, labia minora, and clitoris; plural is *vulvae* or *vulvas*, 291  
**Vulvae** (*VUL-vee*), plural of *vulva*  
**Vulvas** (*VUL-vahz*), plural of *vulva*

## W

**Wart**, common name for *verruca*, 70  
**Waste disposal**, to rid body of unwanted substances, 55  
**Waste products**, substances produced during cell metabolism that body does not use, 149  
Water, 371  
**Wax emulsifiers** (*ee-MUL-sih-fye-ers*), medication to soften earwax and prevent buildup in outer ear canal, 408  
Weakness, 323

**Wheal** (*HWEEL*), small, round raised area on skin that may be accompanied by itching, 70  
**Wheeze** (*HWEEZ*), somewhat musical sound during expiration, often found in asthma or infection, and caused by spasms of bronchial tubes; also called *rhonchi*, 208  
**White blood cell count** (WBC), blood test to measure number of leukocytes in volume of blood, 158  
**White blood cell differential** (diff) (*dif-er-EN-shal*), blood test to determine number of each variety of leukocyte, 158  
**White blood cells** (WBCs), another term for *leukocytes*, 149, 158, 170  
**White matter**, nervous tissue that appears white because it is covered by myelin, 321  
**White of the eye**, common name for *sclera*, 377  
**Whooping cough**, common name for *pertussis*, 406  
**Windpipe**, common name for *trachea*, 202, 404  
Without correction or glasses (s.gl.), 384  
**Word root**, foundation of medical term that provides basic meaning of word; in general, word root indicates body system or part of body being discussed; a word may have more than one word root, 3  
converting to adjectives, 16  
Wryneck, 103

## X

**Xanthoderma** (*zan-thoh-DER-mah*), yellow skin  
**Xeroderma** (*zeer-oh-DER-mah*), dry skin  
**Xerophthalmia** (*zeer-off-THAL-mee-ah*), dry eyes  
X-ray, 104

## Y

**Yellow bone marrow**, adipose tissue located within hollow shaft of bones, 94