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Danielle LaFleur Brooks
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Exploring Medical Language

A STUDENT-DIRECTED APPROACH



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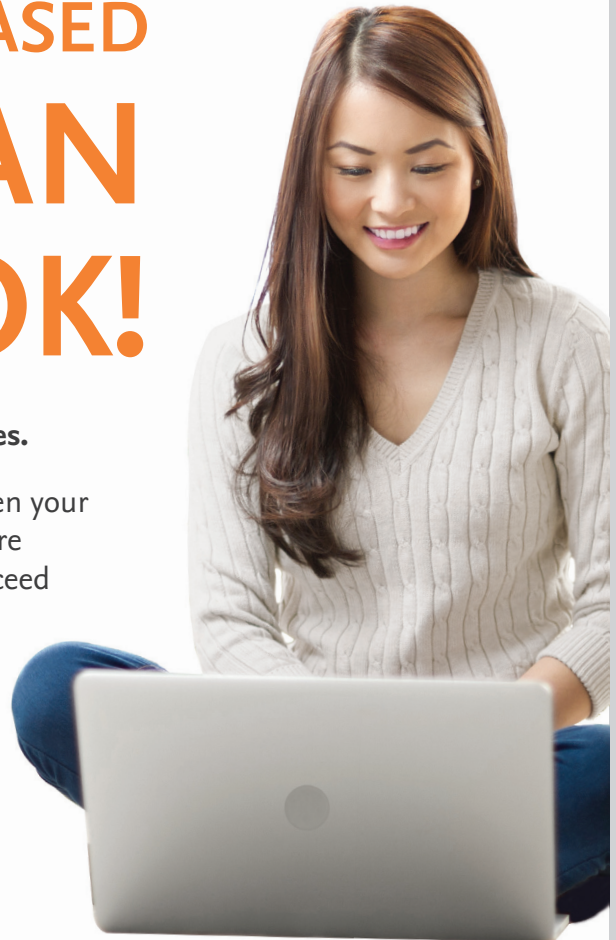
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Exploring Medical Language

A STUDENT-DIRECTED APPROACH



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*For our students,
who continue to inspire us with their dedication
to learning while balancing life's other demands.
Every page is for you.*

Contents

- PREFACE** Features, vi
Organization of the Textbook, xii
Anatomy of a Chapter, xiii
Online Student Resources, xiv
Online Instructor Resources, xv

PART 1 INTRODUCTION TO WORD PARTS AND HUMAN BODY STRUCTURE

- 1 Introduction to Medical Language, 1
- 2 Body Structure, Oncology, and Laboratory Tests, 16
- 3 Directional Terms, Positions, and Imaging, 60

PART 2 BODY SYSTEMS

- 4 Integumentary System, 94
- 5 Respiratory System, 134
- 6 Urinary System, 188
- 7 Male Reproductive System, 230
- 8 Female Reproductive System, 266
- 9 Obstetrics and Neonatology, 313
- 10 Cardiovascular, Lymphatic, Immune Systems and Blood, 357
- 11 Digestive System, 415
- 12 Eye, 465
- 13 Ear, 506
- 14 Musculoskeletal System, 533
- 15 Nervous System and Behavioral Health, 593
- 16 Endocrine System, 639

APPENDICES

- A Answer Key, 677
- B Combining Forms, Prefixes, and Suffixes Alphabetized by Word Part, 725
- C Combining Forms, Prefixes, and Suffixes Alphabetized by Definition, 733
- D Abbreviations, 741
- E Pharmacology Terms, 755

ONLINE APPENDICES

- F Additional Combining Forms, Prefixes, and Suffixes, Evolve Resources
- G Health Care Delivery Terms, Evolve Resources
- H Integrative Medicine Terms, Evolve Resources
- I Behavioral Health Terms, Evolve Resources
- J Clinical Research Terms, Evolve Resources
- K Nutrition Terms, Evolve Resources
- L Dental Terms, Evolve Resources
- M Health Information Technology (HIT) Terms, Evolve Resources

Preface

WELCOME TO THE TWELFTH EDITION OF *EXPLORING MEDICAL LANGUAGE*

We are excited to share the new edition of *Exploring Medical Language* with you! The twelfth edition reflects knowledge we have gained through clinical practice and working alongside medical terminology students and instructors. In addition to updating content to reflect current use, we have cross-referenced terms with ICD diagnosis and procedure codes to make sure terms studied are relevant. We have also continued to refine the learning system to more fully utilize learning styles and to support long-term memory. Here is an overview of new and sustaining features:

New Content

- Capstone exercise called **Scribe It** concludes the book; students draw on what they have learned from *Exploring Medical Language* to transcribe information from a patient encounter, Chapter 16
- Practical Application exercise called **Use Medical Terms in Clinical Statements**, Chapters 2-16
- Focus on **lab findings**, including a narrative explanation and identification of terms indicating lab findings, Chapters 5-16
- Addition of **phonetic spelling** for abbreviations spoken as whole words, Chapters 2-16
- Introduction of the **SOAP Note** format and associated abbreviations, Chapter 5
- Narrative introduction on **Behavioral Health**, Chapter 15
- More online **Gradable Student Resources** on Evolve

Instructional Strategies

- Word-part learning system used to analyze, define, and build terms
- Body-system organization of content
- Term lists categorized by Terms Built from Word Parts and Terms NOT Built from Word Parts
- Subcategories of terms grouped by topic: Disease and Disorder, Surgical, Diagnostic and Complementary Terms
- Inclusion of medical terms aligned with ICD diagnosis and procedure codes
- Online learning opportunities aligned with the chapter objectives and exercises



Cornerstone Features

- Paper flashcards
- Illustrations conveying medical concepts
- Historical and informational boxes placed close to corresponding word parts, terms, and abbreviations
- Comprehensive Word Parts Tables that include all word parts used to analyze terms within the chapter
- Label illustration exercises for word parts and terms
- Online Audio Glossary aligned with pronunciation exercises
- Application of terms in medical documents and online EHR Modules
- Chapter at a Glance content summaries

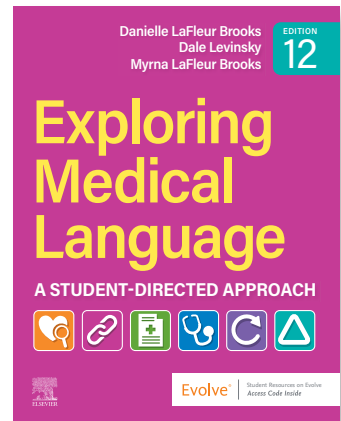
Exploring Medical Language provides an effective introduction to medical language for those entering health professions and related fields, including software development, computer applications and support, insurance, law, equipment supply, pharmaceutical sales, and medical writing. Its hybrid approach of print and electronic learning tools balances hands-on and virtual experiences. Learning activities provided in the textbook, instructor materials, and Evolve offer diverse ways for students to practice recall, make meaning of new information, and demonstrate learning. The learning system offered by *Exploring Medical Language* is designed to appeal to student learning preferences and to support a variety of course formats, including in-person, online, synchronous, and hybrid modalities.

We remain dedicated to supporting instructors and students and invite you to contact us at:

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You are also welcome to follow Myrna's educational blog at medicalterminologyblog.com.

Warm regards,
Danielle, Dale, and Myrna



FEATURES

Outline and Objectives

Chapter introductions list sections with page numbers and student learning objectives aligned with chapter content, exercises, and assessments.

5

PART 2 BODY SYSTEMS

Respiratory System

Objectives

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

- 1 Pronounce organs and anatomic structures of the respiratory system.
- 2 Define and spell word parts related to the respiratory system.
- 3 Define, pronounce, and spell disease and disorder terms related to the respiratory system.

Outline

🔗 **ANATOMY, 135**

Function, 135
Organs and Anatomic Structures of the Respiratory System, 135

🔗 **WORD PARTS, 138**

Respiratory System Combining Forms, 138
Combining Forms Used with Respiratory System Terms, 138

Anatomy

Organs and Anatomic Structures of the Respiratory System

TERM	DEFINITION
nose (nōz)	filtering structure that moistens and warms air entering the respiratory system; internal passages are lined with mucous membranes and fine hairs
nasal septum (NĀS-el) (SEP-tum)	partition separating the right and left nasal cavities
paranasal sinuses (par-a-NĀ-sel) (SI-nus-es)	air cavities within the cranial bones that open into the nasal cavities
pharynx	food and air passageway. Food enters the pharynx from the mouth and passes into the

Body-system chapters introduce related anatomy and physiology (A&P). **Pronunciation of organs and anatomical structures** can be practiced using phonetic spelling in the textbook and the Evolve Resources Audio Glossary.

PRONOUNCE ANATOMIC STRUCTURES

Practice saying aloud each of the organs and specific structures on the previous pages.

To hear the terms, go to Evolve Resources at www.evolve.elsevier.com and select: Student Resources > Audio Glossary > Chapter 5 > Anatomic Structures

Check the box when complete.

Word Parts

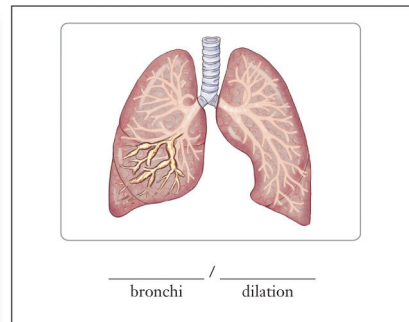
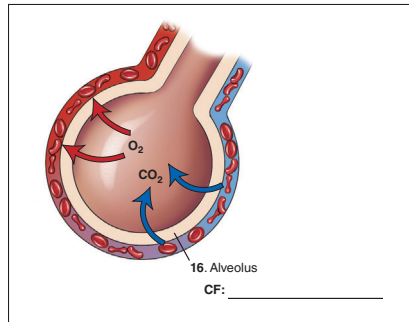
Word Part Tables present combining forms, suffixes, and prefixes related to chapter content. Textbook exercises, **paper** and **electronic flashcards**, and online activities reinforce learning.

1 ■ Respiratory System Combining Forms			
COMBINING FORM	DEFINITION	COMBINING FORM	DEFINITION
adenoid/o	adenoids	pleur/o	pleura
alveol/o	alveolus (s.), alveoli (pl.)	pneum/o	lung, air
bronch/o	bronchus (s.), bronchi (pl.)	pneumon/o	lung, air
bronchi/o	bronchus (s.), bronchi (pl.)	pulmon/o	lung
diaphragmat/o	diaphragm	rhin/o	nose
epiglott/o	epiglottis	sept/o	septum
laryng/o	larynx	📖 SEPTUM comes from the Latin word <i>saeptum</i> , meaning to fence or wall off, and refers to a structure dividing cavities or tissues. Sept/o can also describe septa in other areas of the body, including the heart and brain.	
lob/o	lobe(s)	sinus/o	sinus(es)
📖 LOBE literally means the part that hangs down, although it comes from the Greek <i>lobos</i> , meaning capsule or pod. Lob/o can also describe lobes in other areas of the body, including the ear, liver, and brain.			
mediastin/o	mediastinum	thorac/o	thorax, chest, chest cavity
nas/o	nose	tonsill/o	tonsil(s) (Note: <i>tonsil</i> has one l, and the combining form has two ls.)
pharyng/o	pharynx	trache/o	trachea
2 ■ Combining Forms Used with Respiratory System Terms			
COMBINING FORM	DEFINITION	COMBINING FORM	DEFINITION
atel/o	imperfect, incomplete	orth/o	straight
capn/o	carbon dioxide	ox/i	oxygen



Label Exercises

Interactive illustration exercises help students form connections between word parts and anatomic structures, apply the meaning of word parts, and recall term definitions.



Medical Terms Built from Word Parts

Students **analyze**, **define**, and **build** medical terms using the meaning of word parts. Learning may be extended through practice with Evolve Student Resources, including online exercises, practice quizzes, and games.

EXERCISE 6 ■ Analyze and Define

Analyze and define the following terms by drawing slashes between word parts, writing word part abbreviations above the term, underlining combining forms, and writing combining form abbreviations below the term.

EXAMPLE: WR CV S
 diaphragmat / o / cele
 CF
 hernia of the diaphragm

1. tracheitis

3. alveolitis



B Fill In

Build disease and disorder terms for the following definitions with the word parts you have learned.

EXAMPLE: inflammation of the tonsils $\frac{\text{tonsill}}{\text{WR}} / \frac{\text{itis}}{\text{S}}$

1. inflammation of the pharynx

_____ / _____

WR / S

2. cancerous tumor originating in a bronchus

_____ / _____ / _____

WR / CV / S / WR / S

Medical Terms NOT Built from Word Parts

Chapters present tables of Terms NOT Built from Word Parts followed by exercises designed to facilitate memorization. Label exercises match illustrations with terms to form connections between terms and medical concepts.

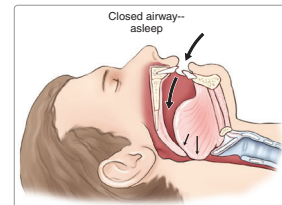
B Label

Write the medical terms pictured and defined.

1. _____
 matter foreign to the circulation, carried to the pulmonary artery and its branches, where it blocks circulation to the lungs



2. _____
 repetitive pharyngeal collapse during sleep, which leads to transient periods of apnea



Pronunciation and Spelling

Pronunciation and spelling exercises may be completed on paper or online. Students may hear terms pronounced and practice spelling online using Evolve Resources.



Clinical Categories and Appendices

Body-system chapters present term lists grouped by the categories of **Disease and Disorder**, **Surgical**, **Diagnostic**, and **Complementary**. Complementary Terms are categorized by topics, including Signs and Symptoms, Treatments, Equipment, Medical Specialties, and Descriptive Terms. With use of additional appendices in the textbook and online, students may increase their vocabulary in the areas of Pharmacology, Health Care Delivery, Integrative Medicine, Behavioral Health, Clinical Research, Nutrition, Dentistry, and Health Information Technology.

NEW—Identification of terms indicating lab findings.

Complementary Terms

Complementary terms complete the vocabulary presented in the chapter by specialists, and related words. A symptom is subjective information reflecting a sign is objective information detected in the physical examination and in laboratory tests. **Lab findings** are the results of laboratory tests that analyze specific laboratory tests will be noted in Complementary Term Tables as lab findings.

BUILT FROM WORD PARTS

The following terms can be translated using definitions of word parts. Further as needed.

SIGNS AND SYMPTOMS

TERM	DEFINITION	TERM	DEFINITION
1. acapnia (a-CAP-nē-a)	condition of absence (less than normal level) of carbon dioxide (in the blood); (lab finding)	10. hyperpnea (hī-perp-)	abnormally increased breathing
2. anoxia (a-NOK-sē-a)	condition of absence (deficiency) of oxygen; (lab finding)	11. hypocapnia (hī-pō-)	abnormally decreased breathing
ANOXIA literally means without oxygen or absence of oxygen . The term actually denotes an oxygen deficiency in the body tissues.		12. hypopnea (hī-POP-nē-a)	deficient breathing
3. aphonia (ā-FŌ-nē-a)	condition of absence of voice	13. hypoxemia (hī-pok-SĒ-mē-a)	deficient oxygen in the blood; (lab finding)
4. apnea (AP-nē-a)	absence of breathing	14. hypoxia (hī-POK-sē-a)	condition of deficient oxygen (to the tissues); (lab finding)
5. dysphonia (dis-FŌ-nē-a)	condition of difficult speaking (voice)	☀️ The "o" from the prefix hypo- is dropped in the terms hypoxemia and hypoxia because the following word part begins with a vowel.	
6. dyspnea (DISP-nē-a)	difficult breathing	15. orthopnea (or-THOP-nē-a)	breathing (more easily) in a straight (upright position) (indicates difficulty breathing in the supine position)
7. eupnea (ŪP-nē-a)	normal breathing		

Appendix

M

Health Information Technology (HIT) Terms

Health Information Technology (HIT) refers to information management in the healthcare industry and encompasses electronic health records (EHRs), personal health records (PHRs), electronic prescribing (E-prescribing), information privacy, and system security. Health Information Technologists address the technical aspects of health information management.

access levels	security feature that limits access of information to the minimum necessary amount needed to perform required duties
application server provider (ASP)	external company providing computer services over a network, such as an electronic health record system maintained on off-site servers (rather than locally hosted using an on-site server)
algorithm	set of instructions designed to accomplish a task. Algorithms usually take one or more inputs, run them systematically through a series of steps, and provide one or more outputs.
artificial intelligence (AI)	device or product that can imitate intelligent behavior or that mimics human learning and reasoning. Artificial intelligence includes machine learning, neural networks, and natural language processing. Some terms used to describe artificial intelligence include computer-aided detection/diagnosis, statistical learning, deep learning, and smart algorithms.
authentication	verification of the computer user or healthcare provider who is the author of the record, usually a written or electronic signature
bar code medication administration (BCMA)	hardware and software used to provide electronic verification that the "five rights" (right patient, right drug, right dose, right route, and right time) are achieved for the administration of medications; designed for patient safety and to decrease errors.

Historical Perspective and Current Use

Informational boxes anchor medical language in a **historical perspective** and provide details on the **current use of terms**.

ATELECTASIS is derived from the Greek **ateles**, meaning **not perfect**, and **ektasis**, meaning **expansion**. It denotes an incomplete expansion of the lungs.

REACTIVE AIRWAY DISEASE (RAD) is a general term and not a specific diagnosis. It is used to describe a history of wheezing, coughing, and shortness of breath. In some people RAD may lead to **asthma**.

Abbreviations



Tables introduce abbreviated medical terms related to chapter content. Textbook exercises, electronic flashcards, online exercises, and practice quizzes reinforce new learning. Students may supplement learning with additional abbreviations and error-prone abbreviations listed in Appendix D.

NEW—Phonetic spellings for abbreviations pronounced as whole words.

Abbreviations

DISEASE AND DISORDERS			
ABBREVIATION	TERM	ABBREVIATION	TERM
ARDS	acute respiratory distress syndrome	HAP	hospital-acquired pneumonia
CAP	community-acquired pneumonia	IPF	idiopathic pulmonary fibrosis
CF	cystic fibrosis	LTB	laryngotracheobronchitis
cocci	coccidioidomycosis; spoken as a whole word (KAHK-sē)	OSA	obstructive sleep apnea
COPD	chronic obstructive pulmonary disease	PE	pulmonary embolism
COVID-19	coronavirus disease; spoken as whole words (CŌ-vid) (NĪN-tēn)	PE	also abbreviates physical examination .
flu	influenza; spoken as a whole word (floo)	RSV	respiratory syncytial virus
		TB	tuberculosis
		URI	upper respiratory infection

SOAP Note Format

Medical Record Abbreviations

Documentation of a patient's medical history and health care received is stored in medical records. Medical records are the who, what, when, where, and how of patient care. A common format used to record information from patient encounters is the **SOAP note**. SOAP is an acronym formed from the first letters of the note's section titles, including subjective, objective, assessment, and plan (Table 5.2). In documentation of a visit with a primary care provider, the objective section will include the patient's **vital signs (VS)**, including **temperature (T)**, **blood pressure (BP)**, **pulse (P)** rate, and **respiration (R)** rate.

TABLE 5.2 SOAP Note Format

SECTION	ABBREVIATION	DESCRIPTION
Subjective	S	Patient's words describing their health and problems experienced (symptoms)
Objective	O	Physical exam findings and diagnostic test results (signs)
Assessment	A	Provider's interpretation of the patient's condition
Plan	P	Therapeutic treatment, further diagnostic procedures, patient education, follow-up

NEW—Introduction of the SOAP Note documentation style and corresponding abbreviations in Chapter 5

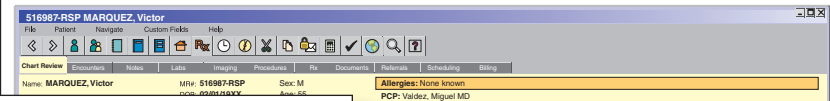
Practical Application

Students apply medical terms to case studies and medical records.

EXERCISE 34 ■ Interact with Medical Documents

A

Read the report and complete it by writing medical terms on answer lines within the document. Definitions of terms to be written appear after the document.



PRACTICAL APPLICATION

EXERCISE 33 ■ Case Study: Translate Between Everyday Language and Medical Language

CASE STUDY: Roberta Pawlaski



Roberta is experiencing difficulty breathing. She notices it gets worse when she tries to do chores around the house. This has been going on for about 4 days. She also has a cough and a runny nose. Today when she woke up, she noticed that her throat was very sore. She also thinks that she might have a fever because she feels hot all over. She tried taking some over-the-counter cough medicine, but this didn't seem to help. She notices when she coughs that a thick yellow mucus comes out. She hasn't had a cough like this since before she quit smoking about 10 years ago. She remembers that her grandson who stays with her after school has missed school because of a cold. She decides to call her doctor to schedule an appointment.

Now that you have worked through Chapter 5, on the respiratory system, consider the medical terms that might be used to describe Roberta's experience. See the Chapter at a Glance section at the end of the chapter for a list of terms that might apply.

presents with a cough for the past 9 weeks. Initially the cough was dry, but it _____. About 5 days ago he started experiencing 2. _____. _____ of coughing, along with fatigue and a 10-lb unintentional _____ is noncontributory. Family history is significant for a brother who died of _____.

P = 80, BP = 100/64

Electronic Health Records (EHR)



EHR Modules in Practice Student Resources on the Evolve website provide three related medical records for one patient. Students identify medical terms in context while gaining a familiarity with computer applications used in the field.

EXERCISE 35 ■ Use Medical Language in Online Electronic Health Records

Select the correct medical terms to complete three medical records in one patient's electronic file.

Access online resources at evolve.elsevier.com > Evolve Resources > Student Resources > Activities > Chapter 5 > Electronic Health Records

Topic: COPD

Record 1, Chart Review: Progress Note

Record 2, Imaging: Radiology Report

Record 3, Notes: Pulmonary Function Department Note

Check the box when complete.



Healthcare records are stored and used in an electronic system called **Electronic Health Records (EHR)**. Electronic health records contain a collection of health information of an individual patient; the digitally formatted record can be shared through computer networks with patients, physicians, and other healthcare providers.

Chapter Content Quiz

Designed as formative assessments, Chapter Content Quizzes allow students to test their knowledge by identifying medical terms and abbreviations used in context.



CHAPTER REVIEW

EXERCISE 38 ■ Chapter Content Quiz

Test your understanding of terms and abbreviations introduced in this chapter. Circle the letter for the medical term or abbreviation related to the words in *italics*.

- The patient was admitted to the emergency department with a *severe nosebleed*.
 - rhinomycosis
 - epistaxis
 - nasopharyngitis
- The accident caused damage to the *larynx*, necessitating a *surgical repair*.
 - laryngectomy
 - laryngostomy
 - laryngoplasty
- The physician informed the patient that her *coughing of blood* might be due to tuberculosis.
 - hemoptysis
 - pneumothorax
 - thoracentesis
- The patient reported dizziness brought on by *ventilation of the lungs beyond normal bodily needs*.
 - hyperventilation
 - hypoventilation
 - dysphonia

Review of Content

Review of Terms exercises appear throughout the chapter, providing pauses to reflect on new learning and to consider all of the terms from a section, such as Disease and Disorder.

EXERCISE 12 ■ Review of Disease and Disorder Terms

Can you define, pronounce, and spell the following terms?

acute respiratory distress syndrome (ARDS)	coccidioidomycosis (cocci)	laryngitis	pulmonary edema
adenoiditis	coronavirus disease (COVID-19)	laryngospasm	pulmonary embolism (PE)
alveolitis	croup	laryngotracheobronchitis (LTB)	pulmonary neoplasm
atelectasis	cystic fibrosis (CF)	lobar pneumonia	pyothorax
asphyxia	deviated septum	nasopharyngitis	rhinitis
asthma	diaphragmatocele	obstructive sleep apnea (OSA)	rhinomycosis
bronchiectasis	diphtheria	pertussis	rhinorrhagia
bronchitis	emphysema	pharyngitis	sinusitis
			tonsillitis

Chapter at a Glance provides a summary of word parts new to the chapter and terms presented.

CHAPTER AT A GLANCE		Word Parts New to this Chapter	
COMBINING FORMS		PREFIXES	SUFFIXES
adenoid/o	lob/o	a-	-ar
alveol/o	mediastin/o	an-	-ary
atel/o	muc/o	endo-	-cele
bronch/o	nas/o	eu-	-centesis
bronchi/o	orth/o		-pnea
capn/o	ox/i		-ptysis
coni/o	phary		-rrhagia
			-scope

CHAPTER AT A GLANCE		Respiratory System Terms Built from Word Parts	
DISEASE AND DISORDER		DIAGNOSTIC	
adenoiditis	rhinomycosis	bronchoscope	dysphonia
alveolitis	rhinorrhagia	bronchoscopy	dyspnea
atelectasis	sinusitis	capnometer	endotracheal
bronchiectasis	tonsillitis	endoscope	eupnea
bronchitis	tracheitis		hemoptysis
bronchogenic carcinoma			
bronchopneumonia			
bronchospasm			

CHAPTER AT A GLANCE		Respiratory System Terms NOT Built from Word Parts	
DISEASE AND DISORDER			
acute respiratory distress syndrome (ARDS)	influenza (flu)	chest computed tomography (CT) scan	bronchoconstrictor
asphyxia	obstructive sleep apnea (OSA)	chest radiograph (CXR)	bronchodilator
asthma	pertussis	lung ventilation/perfusion scan (V/Q scan)	crackles
chronic obstructive pulmonary disease (COPD)	pleural effusion	peak flow meter (PFM)	effusion
	pulmonary edema	percussion	hyperventilation
	pulmonary embolism (PE)		hypoventilation
			mucopurulent
			nebulizer

Capstone Exercise

CAPSTONE

EXERCISE 32 ■ Scribe It

Drawing on what you have learned from studying chapters 1–16, practice scribing notes from a patient encounter by completing medical documentation. *Note—the following abbreviations are used in the exercise: MD = medical doctor; Pt = patient.*

Setting: Triage room in the Emergency Department of an urban hospital
Patient Information: Adele Sun, 32-year-old female
Provider: Dr. Laja Sharma, Emergency Physician

MD: Hello, my name is Dr. Sharma, and this is my scribe, Connor. He will be taking notes. Can I please confirm your name and age?
Pt: Adele Sun. I am 32 years old.
MD: How would you like to be addressed?
Pt: Please call me Addy.

Pt: I can't catch my breath.
MD: I'm sorry to hear that. Can you walk me through from when this started until now?
Pt: About 5 days ago, I started having a dry cough. I also felt like I had a fever, but sometimes I felt very cold. For the last two days I have been coughing up

NEW—Scribe It, a capstone exercise appearing at the end of Chapter 16, allows students to demonstrate skills acquired during their study of all sixteen chapters of *Exploring Medical Language*.

Online Evolve Resources

Evolve Resources provide multiple ways to practice and assess learning.



Student Resources

- Audio Glossary
- Flashcards
- Practice Activities
- Spelling Exercises
- Practice Quizzes
- Electronic Health Records
- Games
- Videos

Instructor Resources

- TEACH Handouts
- TEACH Lesson Plans
- TEACH PowerPoints
- Test Bank
- Image Collection
- Sample Course Syllabus and Outline
- Gradable Assessments

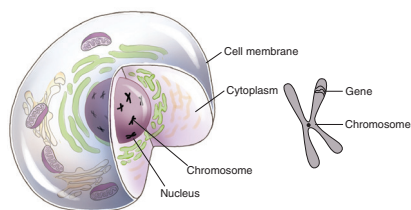
ORGANIZATION OF THE TEXTBOOK

Chapters 1 through 3 provide a foundation for building medical vocabulary. Chapters 4 through 16 organize content by body systems, presenting related word parts, terms, and abbreviations. The textbook concludes with a series of appendices designed to extend student learning as desired.

Introductory Chapters

Chapter 1... may be the most important chapter in the text, because you will apply the knowledge acquired here in the rest of the chapters to learn terms in an easy, quick fashion. The chapter introduces the two categories of terms—those built from word parts and those which are not; each category is accompanied by different types of exercises. Also introduced in this chapter are the **four word parts**—word root, suffix, prefix, and combining vowel, which are the basis of terms built from the word parts category.

EXAMPLE	INTRAVENOUS	
	WORD PART	MEANING
prefix	intra-	within
word root	ven	vein
suffix	-ous	pertaining to
term = p + wr + s	intra/ven/ous	pertaining to within a vein



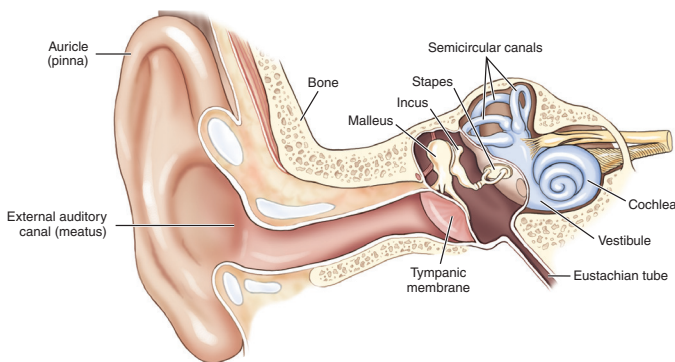
Chapter 2... introduces body structure, oncology, and laboratory tests, while providing immediate practice in recognizing the two categories of terms along with corresponding exercises for each. You will likely be surprised at how fast you learn the meaning and spelling of many medical terms.

Chapter 3... introduces directional terms, positioning, and diagnostic imaging, all of which are relevant to subsequent body systems chapters and their specific medical terms.



Body System Chapters

Chapters 4 through 16... introduce specific body systems with related word parts, terms, and abbreviations and follow a consistent format.



Appendices

Appendices A-E... appear in the textbook and provide an answer key for chapter exercises, comprehensive lists of word parts and abbreviations, a list of error-prone abbreviations, and pharmacology terms.

Appendices F-M... in Practice Student Resources on the Evolve website provide lists of additional word parts, Health Care Delivery Terms, Integrative Medicine Terms, Behavioral Health Terms, Nutrition Terms, Dental Terms, and Health Information Technology Terms.

Appendix
F

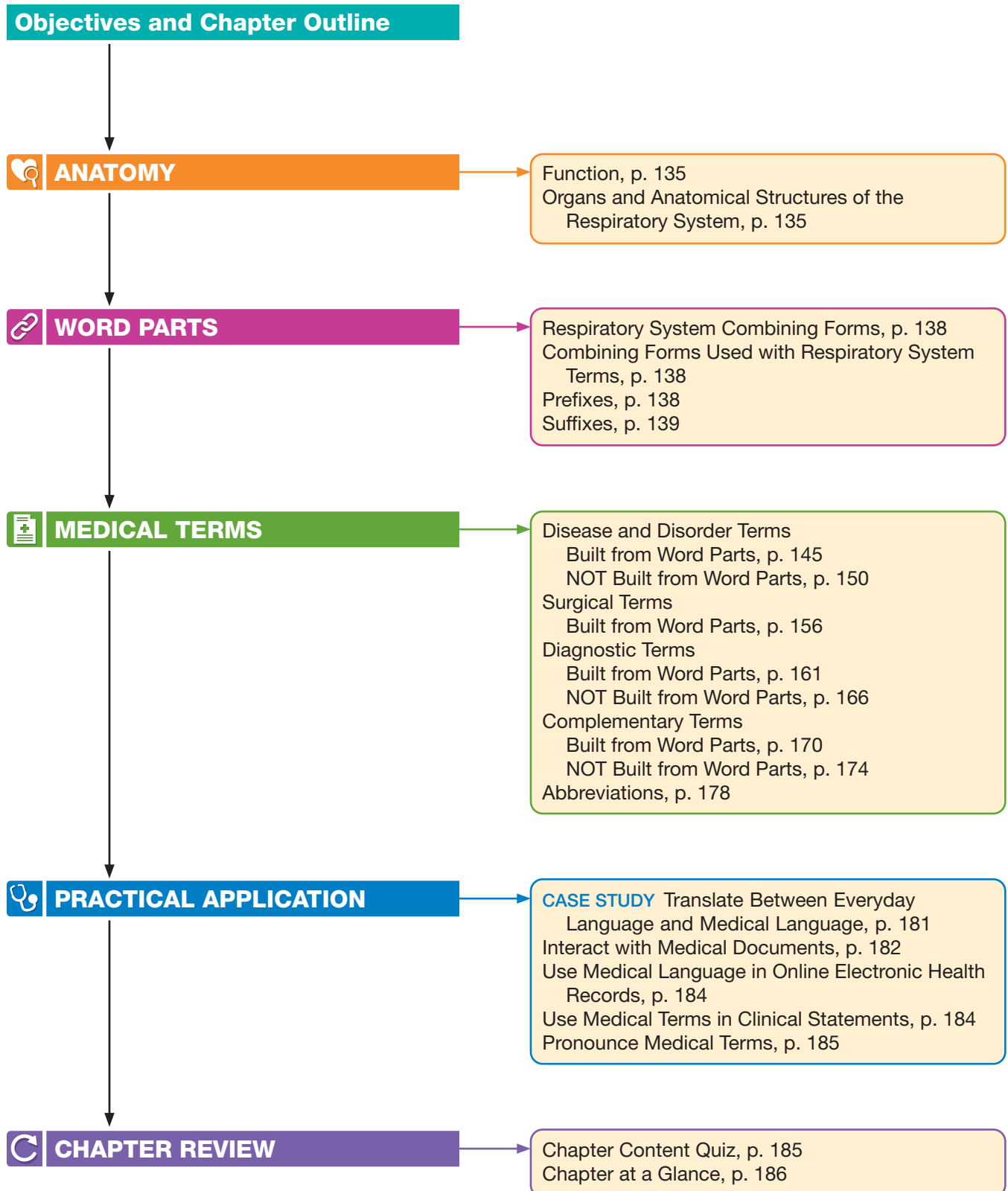
Additional Combining Forms, Prefixes, and Suffixes

The following word parts were not included in the text. They are listed here for your easy reference.

COMBINING FORM	DEFINITION	EXAMPLE	COMBINING FORM	DEFINITION	EXAMPLE
acanth/o	thorny, spiny	acanthocyte	dactyl/o	fingers or toes	brachydactyly
acetabul/o	acetabulum (hip socket)	acetabulum	dentr/i	tooth	interdental
acous/o	hearing	acoustic	dextr/o	right	ambidextrous
acromi/o	acromion	acromioclavicular	diaphor/o	sweat	diaphoretic
actin/o	ray, radius	actinic	dynam/o	power, strength	thermodynamics
adip/o	fat	adipose	ectop/o	located away from usual place	ectopic
aer/o	air, gas	anaerobic	embry/o	embryo	embryogenic
algesi/o	pain	analgesic	emmetr/o	a normal measure	emmetropia
ambly/o	dull, dim	amblyopia	faci/o	face	faciolingual

ANATOMY OF A CHAPTER

Let's take a look at the structure of a body system chapter, using Chapter 5 on the respiratory system as an example.



DEAR STUDENT

If you are reading this, you are most likely enrolled in a medical terminology course and preparing for your journey of learning medical language using this textbook. As you flip or scroll through the pages of *Exploring Medical Language*, you may be thinking, “There is so much to learn. How will I do it?” or “Why are there so many exercises?”

Let us assure you that you will acquire the language by completing chapter exercises. While it may seem daunting at first, we encourage you to be as active as possible as you read and work through each chapter.

The exercises approach the terms from all angles: pronunciation, writing, defining, spelling, and application. Chapter content flows from one chapter to the next in a repetitive manner, making the best use of your time. You may build a foundational medical vocabulary by using the textbook alone, or you may choose to extend



your learning by utilizing Evolve Resources, which provide supplemental materials online. To register for the *Exploring Medical Language* 12e Evolve Resources, please visit evolve.elsevier.com/LaFleur/exploring or call 1-800-222-9570.

We wish you the best as you embark on this journey. You will join a select group of students who have used *Exploring Medical Language* as a textbook for over 40 years. We would like to hear of your experience with *Exploring Medical Language*, including exercises that were most useful, suggestions for improvement, and so forth. Reach us by e-mail at the following addresses:

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We also invite you to visit Myrna’s educational blog at medicalterminologyblog.com. Follow the blog while you are a student and after you finish your course to help you build on your vocabulary in a fun and engaging way. Posts include quizzes, crosswords, videos, word scrambles, and introduction to emerging medical terms.

Sincerely,
 Danielle, Dale, and Myrna



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- Additional Appendices with Term Lists by Medical Specialty

Gradable Student Resources

- Exercises
- Quick Quizzes
- Practice Exams

Tournament of Terminology				
S1: Respiratory System and Introduction to Diagnostic Procedures and Tests				
Disease and Disorder Terms	Surgical Terms	Diagnostic Terms	Complementary Terms	Abbreviations
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

Round: 1 Score: 0



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DEAR INSTRUCTOR

Thank you for choosing *Exploring Medical Language*! We hope you find this learning system supportive of your teaching methods and effective for your students' learning styles. With the purchase of a new textbook, students receive paper flashcards for word parts and pincode access to Evolve Resources for students. You may find the flashcards and online resources, such as pronunciation for term lists and games, useful for class activities and exam preparation.



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We welcome your comments and questions by email. Danielle, who teaches medical terminology in the traditional classroom, online, and in hybrid formats, is also happy to share ideas and materials. Contact us at:

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We also invite you to visit Myrna's educational blog at medicalterminologyblog.com to keep up with trends in teaching medical terminology and emerging medical language.

Looking forward to hearing from you,
Danielle, Dale, and Myrna



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Students, who over the years have worn thin the pages of previous editions. Your pursuit of knowledge has been truly inspirational.

Each page of the twelfth edition is better because of your collective contributions.

Thank you.

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Introduction to Medical Language

Outline



INTRODUCTION TO MEDICAL TERMS AND MEDICAL LANGUAGE, 2

Origins of Medical Language, 2
Categories of Medical Terms and Learning Methods, 4



MEDICAL TERMS BUILT FROM WORD PARTS, 4

Four Word Parts, 4
Word Root, 5
Suffix, 5
Prefix, 5
Combining Vowel, 6
Combining Form, 7
Techniques for Learning Medical Terms Built from Word Parts, 9
Analyzing Medical Terms, 9
Defining Medical Terms, 9
Building Medical Terms, 11



MEDICAL TERMS NOT BUILT FROM WORD PARTS, 14

Types of Terms NOT Built from Word Parts, 14
Learning Terms NOT Built from Word Parts, 14



CHAPTER REVIEW, 15

Review of Categories of Medical Terms, 15
Review of Medical Terms Built from Word Parts, 15
Review of Medical Terms NOT Built from Word Parts, 15
Review of Objectives, 15

Answers to Chapter Exercises, Appendix A

Objectives

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

- 1** Describe the origins of medical language.
- 2** Define two categories of medical terms.
- 3** Identify and define the four word parts and the combining form.
- 4** Analyze and define medical terms using the meaning of word parts.
- 5** Build medical terms using the meaning of word parts.

TABLE 1.1 Categories of Medical Terms and Learning Methods, 4

TABLE 1.2 Guidelines for Using Combining Vowels, 7

TABLE 1.3 Word Parts and Combining Form, 8

TABLE 1.4 Word Parts List, 10

TABLE 1.5 Techniques to Learn Medical Terms Built from Word Parts, 12



INTRODUCTION TO MEDICAL TERMS AND MEDICAL LANGUAGE

Medical terms are words used to describe disease, as well as aspects of medicine and health care. Terms built from Greek and Latin word parts, eponyms, acronyms, and modern language are types of medical terms.

Medical language or terminology is the use of medical terms to attain a standardized means of communication within the practice of medicine and in the healthcare industry. The need for fluency in medical language cannot be exaggerated.

Why are many medical terms different from words we use in everyday life? Medical language allows for clear, concise and consistent communication locally, nationally, and internationally. It enables everyone involved in medicine and health care to perform more accurately and efficiently for the patient's benefit. For example, using the medical term **osteoarthritis** (Fig. 1.1), which means **inflammation of the bone and joint**, offers a clear and concise written or verbal communication using one word instead of six. No matter the national language used, the meaning of the medical term does not change.

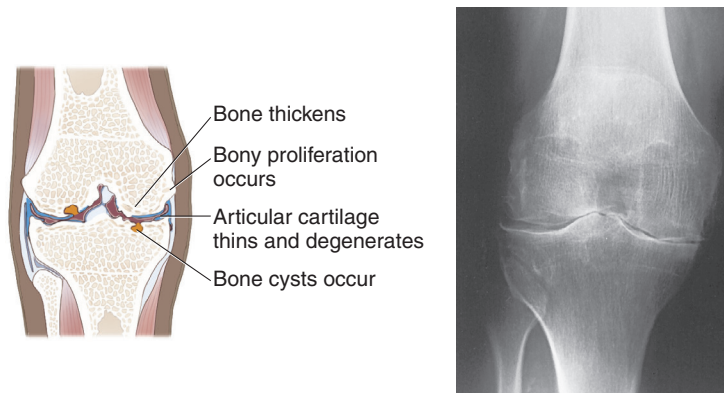
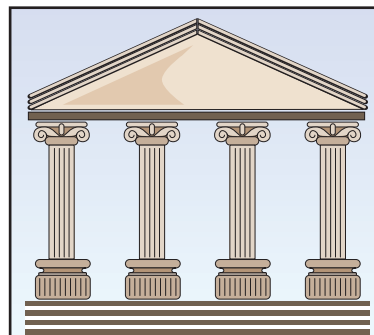


FIG. 1.1 Osteoarthritis of the knee joint, illustration and radiograph.

Origins of Medical Language

The vocabulary of medical language reflects its development over time, beginning with the ancient Greeks. More than 2,000 years ago, Hippocrates and Aristotle were among the first to study and write about medicine. The Romans continued the practice, adopting elements of the Greek language to use alongside Latin. The majority of terms in use today are **built from Greek and Latin word parts**. For learning purposes, these terms are categorized as **Terms Built from Word Parts** in this textbook.

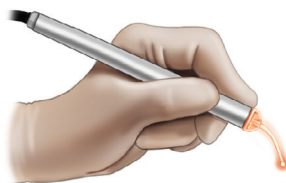


Terms Built from Word Parts, such as arthritis, are of Greek and Latin origin.

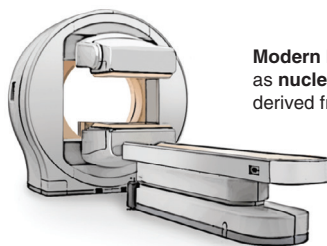
As scientific knowledge, medical technology, and medical practice evolved, so did the language of medicine, which now also includes **eponyms, acronyms, and terms from modern language**. Eponyms are terms derived from a name or place. Acronyms are terms formed from the first letters of a phrase. Modern language refers to terms from the English language, which are often descriptive of technology and procedures. For learning purposes, these terms are categorized as **Terms NOT Built from Word Parts** in this textbook.




Eponyms are terms derived from the name of a person or place. Examples include **Apgar score**, named after the person who developed it, and **West Nile virus**, named after the first geographical location the virus was identified.



Acronyms, such as **laser** (light amplification by stimulated emission of radiation), are terms formed from the first letters of words in a phrase. Acronyms usually contain a vowel and are spoken as a whole word.



Modern language terms, such as **nuclear medicine scanner**, are derived from the English language.

 **VIRGINIA APGAR**, an obstetric anesthesiologist born in New Jersey, developed the Apgar score in 1952 to measure the physical condition of the newborn.

EXERCISE 1 ■ Origins of Medical Language

Place the letter from the first column to identify the origin of the term in the second column. You may use an answer more than once. *To check your answers to the exercises in this chapter, go to Appendix A at the back of the textbook.*

- | | | |
|-------------------------------|-------|---|
| a. Greek and Latin word parts | _____ | 1. Middle Eastern respiratory syndrome |
| b. eponym | _____ | 2. hepatitis |
| c. acronym | _____ | 3. MRSA (methicillin-resistant <i>Staphylococcus aureus</i>) |
| d. modern language | _____ | 4. posttraumatic stress disorder |
| | _____ | 5. arthritis |
| | _____ | 6. cell saver (instrument used during surgery to recover blood lost from the patient) |
| | _____ | 7. AIDS (acquired immunodeficiency syndrome) |
| | _____ | 8. Alzheimer disease |

ALZHEIMER DISEASE VS. ALZHEIMER'S DISEASE The need for clarity and consistency in medical language has resulted in the **modern trend to eliminate the possessive form of eponyms and use instead the nonpossessive form**. The nonpossessive form is observed by the Association for Healthcare Documentation Integrity, the American Medical Association's Manual of Style, in most medical dictionaries, and is the style used throughout this textbook. With either use, the noun that follows is not capitalized.

Categories of Medical Terms and Learning Methods

For the purposes of our studies, medical terms are categorized as *Built from Word Parts* and *NOT Built from Word Parts*. Specific learning methods will be used for each category, as noted in [Table 1.1](#).

EXERCISE 2 ■ Categories of Medical Terms

Complete the following. *To check your answers, go to Appendix A.*

Medical terms _____ can be translated to find their meanings, whereas medical terms _____ cannot be easily translated to find their meanings.

TABLE 1.1 Categories of Medical Terms and Learning Methods

CATEGORY	TYPES OF TERMS	EXAMPLE	LEARNING METHODS
Terms Built from Word Parts (can be translated to find their meanings)	1. Word parts of Greek and Latin origin placed together to form terms that can be translated literally to find their meanings	1. arthr/itis	1. Analyzing terms 2. Defining terms 3. Building terms
Terms NOT Built from Word Parts (cannot be easily translated to find their meanings)	1. Eponyms, terms derived from the name of a person or place 2. Acronyms, terms formed from the first letters of a phrase that can be spoken as a whole word and usually contains a vowel 3. Modern language, terms derived from the English language 4. Terms with Greek and Latin word parts that cannot be easily translated to find their meanings	1. Alzheimer disease 2. MRSA (methicillin-resistant <i>Staphylococcus aureus</i>) 3. complete blood count with differential 4. orthopedics	1. Recalling terms 2. Matching terms 3. Defining terms



MEDICAL TERMS BUILT FROM WORD PARTS

Medical terms categorized as Built from Word Parts are composed of Greek and Latin **word roots**, **prefixes**, and **suffixes** and can be translated to find their meanings. A **combining vowel** is often added to ease pronunciation ([Table 1.2](#) and [Table 1.3](#)). Techniques to learn these terms are **analyzing**, **defining**, and **building** medical terms.

Four Word Parts

Most medical terms categorized as Built from Word Parts consist of some or all of the following components:

1. Word root
2. Suffix
3. Prefix
4. Combining vowel

WORD ROOT

The word root is the word part that is the core of the word. The word root contains the fundamental meaning of the word.

EXAMPLES

In the word	play/er, <i>play</i> is the word root.
In the medical term	arthr/itis, <i>arthr</i> (which means <i>joint</i>) is the word root.
In the medical term	hepat/itis, <i>hepat</i> (which means <i>liver</i>) is the word root.



The word root is the core of the word. All medical terms have at least one word root.

SUFFIX

The suffix is a word part attached to the end of the word root to modify its meaning.

EXAMPLES

In the word	play/er, <i>-er</i> is the suffix.
In the medical term	hepat/ic, <i>-ic</i> (which means <i>pertaining to</i>) is the suffix and <i>hepat</i> is the word root for <i>liver</i> ; therefore, <i>hepatic</i> means <i>pertaining to the liver</i> .
In the medical term	hepat/itis, <i>-itis</i> (which means <i>inflammation</i>) is the suffix. The medical term <i>hepatitis</i> means <i>inflammation of the liver</i> .



The suffix is used to modify the meaning of a word. Most medical terms have a suffix.

SUFFIXES frequently indicate:

- **procedures**, such as *-scopy*, meaning visual examination, or *-tomy*, meaning incision
- **conditions**, such as *-itis*, meaning inflammation
- **diseases**, such as *-oma*, meaning tumor

PREFIX

The prefix is a word part attached to the beginning of a word root to modify its meaning.

EXAMPLES

In the word	re/play, <i>re-</i> is the prefix.
In the medical term	sub/hepat/ic, <i>sub-</i> (which means <i>under</i>) is the prefix, <i>hepat</i> is the word root for <i>liver</i> , and <i>-ic</i> is the suffix for <i>pertaining to</i> . The medical term <i>subhepatic</i> means <i>pertaining to under the liver</i> .
In the medical term	intra/ven/ous, <i>intra-</i> (which means <i>within</i>) is the prefix, <i>ven</i> (which means <i>vein</i>) is the word root, and <i>-ous</i> (which means <i>pertaining to</i>) is the suffix. The medical term <i>intravenous</i> means <i>pertaining to within the vein</i> .



A prefix can be used to modify the meaning of a word. Many medical terms do not have a prefix.

PREFIXES often indicate:

- **number**, such as *bi-*, meaning two
- **position**, such as *sub-*, meaning under
- **direction**, such as *intra-*, meaning within
- **time**, such as *pre-*, meaning before
- **negation**, such as *a-*, meaning without

EXERCISE 3 ■ Define

Complete the following sentences. *To check your answers, go to Appendix A.*

1. The word root is _____.
2. The suffix is _____.
3. The prefix is _____.

COMBINING VOWEL

The combining vowel is a word part, usually an o, used to ease pronunciation.

The combining vowel is:

- Placed to connect two word roots
- Placed to connect a word root and a suffix
- **Not** placed to connect a prefix and a word root

EXAMPLES:

In the medical term oste/o/arthr/itis,
o is the combining vowel used between two word roots *oste* (which means *bone*) and *arthr* (which means *joint*).

In the medical term arthr/o/pathy,
o is the combining vowel used between the word root *arthr* and the suffix *-pathy* (which means *disease*).

In the medical term sub/hepat/ic,
the combining vowel is not used between the prefix *sub-* (which means *under*) and the word root *hepat* (which means *liver*).

VOWELS are speech sounds represented by the letters a, e, i, o, u, and sometimes y.



The combining vowel is used to ease pronunciation; therefore, not all medical terms have combining vowels. Medical terms introduced throughout the text that have combining vowels other than o are highlighted at their introduction.

Four Guidelines for Using Combining Vowels

Learning the four guidelines for using combining vowels will assist you in correctly spelling medical terms categorized as Built from Word Parts. Refer to [Table 1.2](#), as you build terms in the following chapters until the guidelines are second nature to you.

Guideline One

When connecting a word root and a suffix, a combining vowel is used if the suffix does not begin with a vowel.

EXAMPLE

In the medical term arthr/o/pathy,
the suffix *-pathy* does not begin with a vowel; therefore, a combining vowel is used.

Guideline Two

When connecting a word root and a suffix, a combining vowel is usually not used if the suffix begins with a vowel.

EXAMPLE

In the medical term hepat/ic,
the suffix *-ic* begins with the vowel *i*; therefore, a combining vowel is not used.

Guideline Three

When connecting two word roots, a combining vowel is usually used even if vowels are present at the junction.

EXAMPLE

In the medical term oste/o/arthr/itis,
o is the combining vowel used, even though the word root *oste* ends with the vowel *e*, and the word root *arthr* begins with the vowel *a*.

Guideline Four

When connecting a prefix and a word root, a combining vowel is not used.

EXAMPLE

In the medical term sub/hepat/ic,
the combining vowel is not used between the prefix *sub-* and the word root *hepat*.

TABLE 1.2 Guidelines for Using Combining Vowels

COMBINING VOWEL GUIDELINES	Example
1. When connecting a word root and a suffix, a combining vowel is used if the suffix does not begin with a vowel.	arthr/o/pathy
2. When connecting a word root and a suffix, a combining vowel is usually not used if the suffix begins with a vowel.	hepat/ic
3. When connecting two word roots, a combining vowel is usually used even if vowels are present at the junction.	oste/o/arthr/itis
4. When connecting a prefix and a word root, a combining vowel is not used .	sub/hepat/ic

EXERCISE 4 ■ Combining Vowel

Complete the following. *To check your answers, go to Appendix A.*

1. A combining vowel is _____.
2. When connecting a word root and a suffix, a combining vowel is _____ if the suffix does not begin with a vowel.
3. When connecting a word root and a suffix, a combining vowel is usually not used if the suffix begins with a _____.
4. When connecting two _____, a combining vowel is usually used, even if vowels are present at the junction.
5. When connecting a prefix and a word root, a combining vowel is _____ used.

Combining Form

A combining form is a word root with the combining vowel attached, separated by a slash. The combining form is not a word part per se; rather it is the word root and the combining vowel. *For learning purposes, word roots are presented with their combining vowels as **combining forms**.*

EXAMPLES

arthr/o
oste/o
ven/o



Word roots are presented as combining forms throughout the text.

EXERCISE 5 ■ Define

Complete the following. *To check your answers, go to Appendix A.*

A combining form is _____



EXERCISE 6 ■ Match

Match the phrases in the first column with the correct terms in the second column. *To check your answers, go to Appendix A.*

- | | |
|---|--------------------|
| _____ 1. attached to the beginning of a word root | a. combining vowel |
| _____ 2. usually an <i>o</i> | b. prefix |
| _____ 3. all medical terms built from word parts contain at least one | c. combining form |
| _____ 4. attached to the end of a word root | d. word root |
| _____ 5. word root with combining vowel attached | e. suffix |

EXERCISE 7 ■ True/False

Answer **T** for true and **F** for false. *To check your answers, go to Appendix A.*

- _____ 1. There are always prefixes at the beginning of medical terms.
- _____ 2. A combining vowel is always used when connecting a word root and a suffix that begins with the letter *o*.
- _____ 3. A prefix modifies the meaning of the word.
- _____ 4. A combining vowel is used to ease pronunciation.
- _____ 5. *I* is the most commonly used combining vowel.
- _____ 6. The word root is the core of a medical term.
- _____ 7. A combining vowel is used between a prefix and a word root.
- _____ 8. A combining form is a word part.
- _____ 9. A combining vowel is used when connecting a word root and a suffix if the suffix begins with the letter *g*.

TABLE 1.3 Word Parts and Combining Form

WORD PARTS, COMBINING FORM	DEFINITION	EXAMPLE
Word root	The core of the word	hepat /itis
Suffix	Attached to the end of a word root to modify its meaning	hepat/ itis
Prefix	Attached to the beginning of a word root to modify its meaning	sub /hepa/tic
Combining vowel	Usually an <i>o</i> used to ease pronunciation	hepat/ o /megaly
Combining form	Word root with a combining vowel attached, separated by a slash	hepat/o

- anatomy (*Continued*)
of integumentary system, 95–96
of large intestine, 417*f*
of male reproductive system, 231–232
of musculoskeletal system, 534–543
of nervous system, 594–597
of respiratory system, 135–137
of urinary system, 189–191
- andr/o, 233
- andropathy, 236
- anemia, 361, 393, 393*t*
- anesthesia, 619
- aneurysm, 376
abdominal aortic, 377*f*
cerebral, 608
- angina pectoris, 376
- angi/o, 364, 469, 598
- angiography, 371
cerebral, 614
computed tomography, 371*t*
coronary, 371*t*
digital subtraction, 371*t*, 381, 406
magnetic resonance, 371*t*
- angioma, 369
- angioplasty, 370
- angiосcopy, 371
- angiostenosis, 369
- anisocoria, 492
- anisometropia, 477
- ankyl/o, 545
- ankylosing spondylitis (rheumatoid spondylitis, Strümpell-Marie disease), 558
- ankylosis, 552
- an/o, 420
- anoplasty, 434
- anorchism, 236
- anorexia nervosa, 628
- anovulation, 299
- anoxia, 170
- ant (anterior), 66, 68*t*, 85
of muscles, 541*f*
of skeleton, 537*f*
- ante-, 316
- antepartum, 338
- anterior (ant), 66, 68*t*, 85
of muscles, 541*f*
of skeleton, 537*f*
- anterior and posterior colporrhaphy (A&P repair), 288, 303
- anterior lobe (adenohypophysis), of pituitary gland, 641
- anter/o, 61
- anteroposterior (AP), 66, 85
- antibiotic-associated colitis, 426
- antibody (immunoglobulin), 403
- anticoagulant, 395
- antidiuretic hormone (ADH), 641, 664
- antigen, 403
- antrectomy, 434
- antr/o, 420
- antrum, 418
- anuria, 214
- anus, 418
- anvil (incus), 508
- anxiety disorder, 628
- AOM (acute otitis media), 515*f*; 526
- aorta, 359–360
- aortic stenosis, 369
- aortic valve, 359–360
- aort/o, 364
- aortogram, 371
- AP (anteroposterior), 66, 85
- A&P repair (anterior and posterior colporrhaphy), 288, 303
- Apgar, Virginia, 3, 335
- Apgar score, 335, 335*f*
- aphagia, 449
- aphakia, 474
- aphasia, 619
- apheresis, 364
- aphonia, 170
- aplastic anemia, 361
- apnea, 170
- aponeurosis, 540
- appendages of the skin, 96
- appendectomy, 434
- appendicitis, 426
- appendic/o, 420
- appendix, 419
- append/o, 420
- APR (abdominoperineal resection), 439, 455
- aPTT (activated partial thromboplastin time), 394, 406
- aqueous humor, 466
- ar, 139, 364, 469, 510, 545
- arachnoid, 596, 596*f*
- ARDS (acute respiratory distress syndrome), 150, 178
- areola, 270
- ARF (acute renal failure), 201, 222
- Aristotle, 2
- arrhythmia, 377
- ART (assisted reproductive technology), 331, 332*f*
- arterial blood gases (ABGs), 166, 179
- arteries
CAD, 377, 405
PAD, 379, 405
pulmonary, 359–360
UAE, 289, 303
- arteri/o, 364
- arteriogram, 371
- arterioles, 359–360
- arteriosclerosis, 369
- arthralgia, 575
- arthritis, 552. *See also* osteoarthritis; rheumatoid arthritis
of knee, 553*f*
- arthr/o, 544
- arthrocentesis, 565
- arthrodesis (joint fusion), 565
- arthrography, 570
- arthroplasty, 565
hip resurfacing, 566*f*; 566*t*
shoulder, 566*f*; 566*t*
total hip, 566*f*; 566*t*, 584
total knee, 566*f*; 566*t*, 584
- arthroscopy, 570
- articulations (joints), 539
of knee, 540*f*
- artificial cardiac pacemaker, 380
- artificial insemination, 256
- ary, 139, 192, 469, 545
- ascites, 451
- ASD (autism spectrum disorders), 628, 630
- aspermia, 255
- asphyxia, 150
- aspirate, 175
- assisted reproductive technology (ART), 331, 332*f*
- Ast (astigmatism), 477, 478*f*; 497
- asthenia, 545
- asthma, 150
- astigmatism (Ast), 477, 478*f*; 497
- ataxia, 622
- atelectasis, 145–146
- atel/o, 138
- atherectomy, 370
- ather/o, 364
- atherosclerosis, 369
- athlete's foot (tinea pedis), 107*t*, 109
- atrial fibrillation (AFib), 378, 378*f*; 405
- atrial septum, 359
- atri/o, 364
- atrioventricular (AV), 372, 406
- atrioventricular valves, 359–360
- atrophy, 575
- attention deficit/hyperactivity disorder (ADHD), 628, 630
- AUB (abnormal uterine bleeding), 279, 303
- audi/o, 509
- audiogram, 521
- audiologist, 523
- audiology, 523
- audiometer, 521
- audiometry, 521
- auditory nerve, 509
- aural, 523
- aur/i, 509
- auricle (pinna), 508
- auscultation, 166
- autism, 628
- autism spectrum disorders (ASD), 628, 630
- aut/o, 21
- autoimmune disease, 402
- automatic implantable cardiac defibrillator (AICD), 380, 406
- autopsy, 41
- AV (atrioventricular), 372, 406
- ax, 52*t*
- axial, 74, 74*f*
- azoospermia, 256
- azotemia, 198, 214
- azot/o, 192
- B**
- bacteria, 49
- bacterial infection, 107*t*
- bacterial vaginosis (vaginosis), 276
- bacterium, 49
- bag of waters (amniotic sac), 314
- balance, inner ear for, 507
- balanitis, 236
- balan/o, 233
- balanoplasty, 243
- balanorrhoea, 255
- balloon angioplasty (percutaneous transluminal coronary angioplasty, PTCA), 380, 406
- bariatric surgery, 439
- barium enema (BE), 445, 446*f*; 455
- barium swallow, 441
- Barrett esophagus, 430
- Bartholin, Caspar, 270
- Bartholin glands, 270
- basal cell carcinoma (BCC), 105, 105*f*; 126
- basophils, 361*f*
- BC (birth control, contraception), 299, 303
- BCC (basal cell carcinoma), 105, 105*f*; 126
- BE (barium enema), 445, 446*f*; 455
- bedsore (pressure injury), 108, 108*f*
- behavioral health, 593–636
terms not from word parts, 628–629
word parts for, 626
- Bell palsy, 608
- benign, 36–37
- benign paroxysmal positional vertigo (BPPV), 515, 526
- benign prostatic hyperplasia (BPH), 236, 236*f*; 258
surgical treatments for, 250*t*
- benign prostatic hypertrophy, 236
- benign tumors, 31, 37*f*
- bi-, 62
- bilateral, 66
- bile ducts, 419
- bilevel positive airway pressure (BiPAP), 180

- biliary tract, 419
 bin-, 469
 binocular, 492
 bi/o, 21
 biochemical testing, 40*t*
 biological response modifiers (BRM), 36
 biological therapy, 36, 37
 biomarker, 382
 biopsy (bx), 53
 cone, 288
 definition of, 41
 of bone marrow, 394
 of breasts, 292, 293*f*
 sentinel lymph node, 292, 293*f*
 with transrectal ultrasound, 240*t*
 wire localization, 292
 biotherapy, 36
 BiPAP (bilevel positive airway pressure), 180
 bipolar disorder, 628
 birth control (BC, contraception), 299, 303
 birthmarks, 327
 bladder outlet obstruction (BOO), 258
 blast/o, 192, 469, 598
 bleeding disorder, 393
 bleeding profile, 394
 blepharitis, 474
 blephar/o, 468
 blepharoplasty, 483
 blepharoptosis (ptosis), 474
 blood, 360–361
 abbreviations for, 405–406
 cells of, 360–361
 combining forms for, 364
 composition of, 360*f*, 361
 diagnostic terms not from word parts for, 394
 disease and disorder terms from word parts for, 390
 disease and disorder terms not from word parts for, 393
 function of, 360
 laboratory tests for, 394–395
 medical terms for, 390–397
 surgical terms not from words parts for, 393
 blood chemistry studies, 40*t*
 blood coagulation, 394
 blood dyscrasia, 395
 blood pressure (BP), 381, 406
 blood urea nitrogen (BUN), 210, 222
 blood vessels, 359–360, 360*f*
 BMI (body mass index), 651
 BMT (bone marrow transplant), 395, 406
 body. *See also* direction
 anatomy of, 17–20
 cavities of, 19, 19*f*
 cells of, 17, 17*f*
 combining forms for, 20, 21
 complementary terms from word parts for, 45
 complementary terms not from word parts for, 36–37, 48–49
 medical terms for, 28–53
 of stomach, 418
 prefixes for, 21
 suffixes for, 21
 systems of, 17, 18*t*
 word parts for, 20–27, 28–31
 body mass index (BMI), 651
 body positions, 76–77
 boil (furuncle), 106
 bone densitometry, 570, 571*t*
 bone density test, 570
 bone markers, 572
 bone marrow, 535
 aspiration, 394
 biopsy of, 394
 bone marrow transplant (BMT), 395, 406
 bone scan, 571*f*
 bone structure, 534*f*, 534–535
 BOO (bladder outlet obstruction), 258
 Borrelia burgdorferi, 559
 botulism, 608
 BP (blood pressure), 381, 406
 BPH (benign prostatic hyperplasia), 236, 236*f*, 258
 surgical treatments for, 250*t*
 BPPV (benign paroxysmal positional vertigo), 515, 526
 brachytherapy, 37
 brady-, 364, 545
 bradycardia, 370
 bradykinesia, 575
 brain, 595*f*, 595–596
 brainstem, 596
 breast(s), 270, 270*f*
 biopsy of, 292, 293*f*
 cancer of, 279, 279*f*
 reconstruction of, 286*t*
 surgical reconstruction of, 285*f*
 breast conserving surgery (lumpectomy), 286*t*
 breathing (respiration), 135
 breach presentation, 339
 BRM (biological response modifiers), 36
 bronchial tree (bronchus), 135–136
 bronchiectasis, 145
 bronchi/o, 138
 bronchioles, 135–136
 bronchitis, 145
 bronch/o, 138
 bronchoalveolar, 171
 bronchoconstrictor, 174
 bronchodilator, 174
 bronchogenic carcinoma (lung cancer), 145, 146*f*
 bronchoplasty, 156
 bronchopneumonia, 145
 bronchoscope, 161, 162*f*
 bronchoscopy, 161, 162*f*
 bronchospasm, 145
 bronchus (bronchial tree), 135–136
 bruise (contusion), 105
 bruit, 382
 building, 4, 9
 bulimia nervosa, 628
 BUN (blood urea nitrogen), 210, 222
 bunion, 558
 bursa, 539
 bursectomy, 565
 bursitis, 552, 559
 burs/o, 544
 bx (biopsy), 53
 cone, 288
 definition of, 41
 of bone marrow, 394
 of breasts, 292, 293*f*
 sentinel lymph node, 292, 293*f*
 with transrectal ultrasound, 240*t*
 wire localization, 292
C
 CA-125 (cancer antigen-125 tumor marker), 294
 CA (carcinoma), 32, 37*f*, 53
 CABG (coronary artery bypass graft), 380, 406
 CAD (coronary artery disease), 377, 405
 calcaneus, 539
 calc/i, 643
 CA-MRSA (community-associated MRSA), 126
 cancellous (spongy) bone, 534
 cancer. *See also* oncology
 breast, 279, 279*f*
 cervical, 279
 endometrial, 279*f*, 280
 lung, 145, 146*f*
 ovarian, 280
 prostate, 240, 240*t*
 testicular, 240
 therapy for, 37
 TNM staging system of, 33
 cancer antigen-125 tumor marker (CA-125), 294
 cancer/o, 21
 cancerous, 45
Candida albicans, 105
 candidiasis (thrush), 104
 CAP (community-associated pneumonia), 178
 capillaries, 135, 359–360
 capn/o, 138
 capnometer, 162
 capsule endoscopy (camera endoscopy), 441, 441*f*
 carbon dioxide (CO₂), 135, 179
 carbuncle, 105
 carcin/o, 21, 138, 316
 carcinogen, 45
 carcinogenic, 45
 carcinoid, 45
 carcinoma (CA), 32, 37*f*, 53. *See also* oncology
 basal cell, 105, 126
 bronchogenic, 145, 146*f*
 squamous cell, 105*f*, 108, 126, 146*f*
 carcinoma in situ, 36, 37*f*
 cardia, 418
 cardiac arrest, 377
 cardiac catheterization, 371*t*, 381
 cardiac muscle, 540, 543*f*
 cardiac tamponade, 377
 cardi/o, 364
 cardiogenic, 372
 cardiologist, 372
 cardiology, 372
 cardiomegaly, 370
 cardiomyopathy, 370
 cardiopulmonary resuscitation (CPR), 383, 406
 cardiovascular system, 18*t*, 358*f*
 abbreviations for, 405–406
 anatomy of, 358
 combining forms for, 364
 diagnostic procedures and tests for, 371, 381
 diagnostic terms from word parts for, 372
 diagnostic terms not from word parts for, 381
 disease and disorder terms from word parts for, 369–371
 disease and disorder terms not from word parts for, 376–383
 function of, 358
 laboratory tests for, 382
 medical terms for, 369–389
 organs and anatomical structures of, 359–360
 prefixes for, 364
 suffixes for, 364–365
 surgical terms from word parts for, 370–371
 surgical terms not from words parts for, 380
 carotid endarterectomy, 370
 carpal, 575
 carpal bones, 536

- carpal tunnel syndrome (CTS), 558–559, 584
 carpectomy, 565
 carp/o, 544
 cartilage, 539
 castration, 243
 cataract, 477, 478f
 catheter ablation, 380, 380f
 catheter (cath), 218–219, 222
 caudal, 66, 68t
 caud/o, 61
 cauterization (cautery), 114
 cautery (cauterization), 114
 cavities
 abdominal, 19
 abdominopelvic, 19
 cranial, 19
 oral, 417f
 pelvic, 19
 spinal, 19
 thoracic, 19, 136–137
 CBC (complete blood count), 394
 CBC with diff (complete blood count with differential), 41, 53, 406
 C1–C7 (cervical vertebrae), 536, 584
 CCU (coronary care unit), 406
 cec/o, 420
 cecum, 418
 -cele, 139, 192, 271, 316, 421, 599
 celiac, 449
 celiac disease (gluten enteropathy), 430
 celi/o, 420
 celiotomy (laparotomy), 435
 cell(s). *See also* red blood cells; white blood cells
 growth progression for, 37f
 of blood, 361
 of body, 17, 17f
 cell membrane, 17
 cellulitis, 105
 -centesis, 139, 316, 364, 421, 545
 central nervous system (CNS), 594, 631
 central vision loss, 479f
 cephalgia (cephalgia), 619
 cephalic, 66, 68t
 cephalic presentation, 339
 cephal/o, 61, 316, 598
 cerebellitis, 603
 cerebell/o, 598
 cerebellum (hindbrain), 596
 cerebral aneurysm, 608
 cerebral angiography, 614
 cerebral embolism, 603
 cerebral palsy (CP), 608, 630
 cerebral thrombosis, 603
 cerebr/o, 598
 cerebrospinal fluid (CSF), 595–596, 631
 cerebrovascular accident (CVA), 609, 630
 cerebrum, 595
 cervical cancer, 279
 cervical cerclage, 331
 cervical vertebrae (C1–C7), 536, 584
 cervicectomy (trachelectomy), 285
 cervicitis, 275
 cervic/o, 270
 cervix (Cx), 268, 304
 cesarean section (CS, C-section), 331, 348
 CF (cystic fibrosis), 151, 178
 chalazion (meibomian cyst), 477
 cheilitis, 426
 cheil/o, 420
 cheiloplasty, 434
 chemical stress testing, 381
 chemistry panel, 41
 chemotherapy (chemo), 36, 53
 for prostate cancer, 240t
 chest physiotherapy (CPT), 180
 chest x-ray (chest radiograph), 166, 179
 CHF (congestive heart failure), 378
 chiropractic, 579
 chiropractor, 579
 chlamydia, 255
 chloasma, 315
 cholangi/o, 420
 cholangiogram, 441
 cholangiography, 441
 cholangioma, 426
 cholecystectomy, 434
 cholecystitis, 426
 choledoch/o, 420
 choledocholithiasis, 426
 choledocholithotomy, 434
 cholelithiasis (gallstones), 426
 cholesteatoma, 515
 cholesterol, 382t
 chondrectomy, 565
 chondr/o, 544
 chondromalacia, 552
 chondroplasty, 565
 chondros, 71
 chondrosarcoma, 552
 chori/o, 315
 chorioamnionitis, 320
 choriocarcinoma, 320
 chorion, 314
 chorionic villus sampling (CVS), 335, 336f, 348
 choroid, 466
 chromosomes, 17
 chronic, 49, 150
 chronic atrial fibrillation, 378
 chronic GERD (Barrett esophagus), 430
 chronic infection, 49
 chronic kidney disease (CKD), 201, 201t–202t, 222
 chronic leukemia, 393t
 chronic lymphocytic leukemia (CLL), 393t
 chronic myelogenous leukemia (CML), 393t
 chronic obstructive pulmonary disease (COPD), 150, 150f, 178
 chronic renal failure (CRF), 201, 222
 chronic traumatic encephalopathy (CTE), 608, 630
 chronic urinary retention (CUR), 222
 ciliary body, 466
 circumcision, 247
 cirrhosis, 430
 CKD (chronic kidney disease), 201, 201t–202t, 222
 clavicle, 536
 clavicular, 575
 clavicul/o, 544
 cleft lip or palate, 326, 327f
 -cleisis, 271
 clinical depression, 628
 CLL (chronic lymphocytic leukemia), 393t
Clostridium difficile, 426
 cluster headache, 619
 CML (chronic myelogenous leukemia), 393t
 CMV (cytomegalovirus), 348
 CNS (central nervous system), 594, 631
 CO₂ (carbon dioxide), 135, 179
 coagulation, 394
 coarctation of the aorta, 326
 -cocci, 97, 178
 coccidioidomycosis, 150–151, 178
 -coccus, 97
 coccyx, 536, 536f
 cochlea, 509
 cochlear, 523
 cochlear implant, 518
 cochlear nerve, 509
 cochle/o, 509
 cognitive, 623
 cognitive impairment, 623t
 cold (upper respiratory infection, URI), 152, 178
 colectomy, 434
 colitis, 426
 collection sample, 41
 col/o, 420
 colon, 418
 colon cancer, 442f
 colon polyp, 442f
 colon/o, 420
 colonography, 441
 colonoscope, 442
 for polypectomy, 435f
 colonoscopy, 442, 442f
 color, combining forms for, 21
 colorectal, 449
 colostomy, 434
 colostrum, 339
 colovaginal fistula, 281t
 colp/o, 270
 colpocleisis, 284
 colpoperineorrhaphy, 284
 colpoplasty, 284
 colporrhaphy, 284
 colposcope, 292
 colposcopy, 292
 coma, 622
 combining forms, 7, 8t
 for blood, 364
 for body, 20, 21
 for cardiovascular system, 364
 for color, 21
 for diagnostic imaging, 61
 for digestive system, 420
 for direction, 61
 for ear, 509
 for endocrine system, 643
 for eye, 468–469
 for female reproductive system, 270–271
 for integumentary system, 96–97
 for lymphatic system, 364
 for male reproductive system, 233
 for musculoskeletal system, 544–545
 for neonatology, 315–316
 for nervous system, 598
 for obstetrics, 315–316
 for respiratory system, 138
 for urinary system, 192
 combining vowels, 4, 6–7, 7t
 common bile duct, 419, 419f
 community-associated MRSA (CA-MRSA), 126
 community-associated pneumonia (CAP), 178
 compact bone, 534
 compartment syndrome, 558
 complementary terms from word parts
 for body, 45
 for digestive system, 449
 for ear, 523
 for endocrine system, 659–660
 for eye, 492–493
 for female reproductive system, 298–299
 for integumentary system, 116–117
 for male reproductive system, 255
 for musculoskeletal system, 575–576
 for neonatology, 344
 for nervous system, 619
 for obstetrics, 331, 334
 for respiratory system, 170–171
 for urinary system, 214–215
 complementary terms not from word parts
 for body, 36–37, 48–49
 for digestive system, 451–452

- complementary terms not from word parts
(*Continued*)
for eye, 492
for female reproductive system, 299–300
for male reproductive system, 256
for musculoskeletal system, 579–580
for neonatology, 344
for nervous system, 622–623
for obstetrics, 331
for respiratory system, 174–175
for urinary system, 218–219
complete blood count (CBC), 394
complete blood count with differential
(CBC with diff), 41, 53, 406
comprehensive metabolic panel, 41
compression fractures, from osteoporosis,
567*t*
computed tomography (CT), 80, 80*r*, 85
colonography, 441
definition of, 81
of chest, 166
of kidney, 209*f*
SPECT, 381, 406
computed tomography angiography (CTA),
371*t*
computed tomography (CT) myelography,
614
conception (fertilization), 314, 314*f*
concussion, 622
conditions, suffixes for, 5
condom, 256
cone biopsy (conization), 288
congenital anomaly, 344
congenital cytomegalovirus (CMV)
infection, 326
congenital dermal melanocytosis, 327
congenital heart disease, 326
congenital hypothyroidism, 650
congestive heart failure (CHF), 378
coni/o, 138
conization (cone biopsy), 288
conjunctiva, 466
conjunctivitis (pink eye), 474
conjunctiv/o, 468
connective tissue, 17
conscious, 623
contact dermatitis, 101*f*
continuous positive airway pressure (CPAP),
175*f*, 179
for OSA, 152*f*
contraception (birth control, BC), 299, 303
contusion (bruise), 105
convulsion, 622
COPD (chronic obstructive pulmonary
disease), 150, 150*f*, 178
cor pulmonale, 377
cornea, 466
corneal, 492
corneo/o, 468
cor/o, 468
coronal (frontal), 74, 74*f*
coronary, 377
coronary artery bypass graft (CABG), 380,
406
coronary artery disease (CAD), 377, 405
coronary care unit (CCU), 406
coronary stent, 380
coronavirus disease (COVID-19), 151, 178
corpus, 268
cortical, 660
cortic/o, 643
cortisol (hydrocortisone), 642
costectomy, 565
cost/o, 544
COVID-19 (coronavirus disease), 151, 178
CP (cerebral palsy), 608, 630
CPAP (continuous positive airway pressure),
175*f*, 179
for OSA, 152*f*
CPK (creatinine phosphokinase), 382, 406
CPR (cardiopulmonary resuscitation), 383,
406
CPT (chest physiotherapy), 180
crackles (rales), 174
cranial, 575
cranial cavity, 19
cranial nerves, 597*f*
crani/o, 544, 598
craniocerebral, 619
cranioplasty, 565
craniosthesis, 552
craniotomy, 565
C-reactive protein (CRP), 382, 406
creatinine phosphokinase (CPK), 382, 406
creatinine, 210
crepitation (crepitus), 579
crepitus (crepitation), 579
CRF (chronic renal failure), 201, 222
Crohn disease, 430
cross-eyed (strabismus), 479
croup (laryngotracheobronchitis), 145, 151,
178
CRP (C-reactive protein), 382, 406
cry/o, 469
cryoretinopexy, 483
cryosurgery, 114, 114*f*
cryotherapy, 240*t*
crypt/o, 21, 97, 233
cryptorchidism, 236, 236*f*
CS (cesarean section), 331, 348
C&S (culture and sensitivity), 40, 41, 53
C-section (cesarean section), 331, 348
CSF (cerebrospinal fluid), 595–596, 631
CT (computed tomography), 80, 80*r*, 85
colonography, 441
definition of, 81
of chest, 166
of kidney, 209*f*
single-photon emission, 381, 406
CT (computed tomography) myelography,
614
CTA (computed tomography angiography),
371*t*
CTE (chronic traumatic encephalopathy),
608, 630
CTS (carpal tunnel syndrome), 558–559,
584
culture and sensitivity (C&S), 40, 41, 53
CUR (chronic urinary retention), 222
Cushing, Harvey Williams, 651
Cushing syndrome, 651
cutane/o, 96
cutaneous, 117
CVA (cerebrovascular accident), 609, 630
CVS (chorionic villus sampling), 335, 336*f*,
348
Cx (cervix), 268, 304
CXR (chest radiograph), 166, 179
cyan/o, 21
cyanosis, 45
cyberchondria, 71
-cyesis, 316
cyst, 121, 122*t*
ganglion, 559
meibomian, 477
pilonidal, 106, 106*f*
cystectomy, 203
cystic duct, 419, 419*f*
cystic fibrosis (CF), 151, 178
cystitis, 197, 197*f*
cyst/o, 192, 233, 420, 469
cystocele, 197
cystogram, 209
cystography, 209
cystolith, 197
cystolithotomy, 203
cystoscope, 209
cystoscopy, 209
cystostomy, 203
-cyte, 21
cyt/o, 20, 364
cytogenetic, 28
cytology, 28
cytomegalovirus (CMV), 326, 348
cytopathology, 41
cytoplasm, 17
- D**
dacr/o, 469
dacry/o, 468, 469
dacryocystitis, 474
dacryocystorhinostomy, 483
date of birth (DOB), 349
D&C (dilation and curettage), 288, 289*f*,
303
DC (Doctor of Chiropractic), 584
debridement, 114
decubitus position (recumbent position), 76,
77*t*
decubitus ulcer (pressure injury), 108, 108*f*
deep tendon reflexes (DTR), 615, 631
deep vein thrombosis (DVT), 377, 394, 405
defibrillation, 383, 383*f*
defining, 9
delirium, 623*t*
dementia, 608, 609*t*
deoxyribonucleic acid (DNA), 17
derm (dermatology), 117, 126
dermabrasion, 114
dermatitis, 101
dermat/o, 96
dermatofibroma, 101
dermatologist, 117
dermatology (derm), 117, 126
dermatoplasty, 113
dermis, 96
derm/o, 96
-desis, 139, 545
deviated septum, 151
DEXA (dual-energy X-ray absorptiometry),
570, 571*t*, 584
DI (diabetes insipidus), 651, 664
dia-, 21
diabetes insipidus (DI), 651, 664
diabetes mellitus (DM), 651, 652*t*, 664
diabetic ketoacidosis (DKA), 664
diabetic retinopathy, 474
diagnosis (Dx), 45, 53
diagnostic imaging. *See also* specific imaging
modalities
combining forms, 61
for endocrine system, 657
for eye, 487–488
for female reproductive system, 291–292
for musculoskeletal system, 570, 571*t*
for nervous system, 614–615
for urinary system, 210
word parts for, 81, 161–162
diagnostic procedures and tests, 161–162.
See also laboratory tests
for cardiovascular system, 371, 381
for nervous system, 615
diagnostic terms from word parts
for cardiovascular system, 372
for digestive system, 441–442
for ear, 521
for eye, 487–488

- diagnostic terms from word parts
(*Continued*)
for female reproductive system, 291–292
for musculoskeletal system, 570
for nervous system, 614–615
for obstetrics, 331
for respiratory system, 161–162
for urinary system, 209
- diagnostic terms not from word parts
for blood, 394
for cardiovascular system, 381
for digestive system, 445–446
for endocrine system, 657
for male reproductive system, 253
for nervous system, 615
for pulmonary function, 166
for respiratory system, 166–167
for urinary system, 210
- diaphoresis, 121
diaphragm, 136–137
diaphragmatic, 171
diaphragmat/o, 138
diaphragmatocele, 145
diaphysis, 535
diarrhea, 451
diastole, 381
diastolic pressure, 381
differential count (Diff), 394, 406
digestion, 417, 418
digestive system, 18*t*, 415–461
abbreviations for, 454
anatomy of, 416–420
combining forms for, 420
complementary terms from word parts
for, 449
complementary terms not from word
parts for, 451–452
diagnostic terms from word parts for,
441–442
diagnostic terms not from word parts for,
445–446
disease and disorder terms from word
parts for, 426–427
disease and disorder terms not from word
parts for, 430–431
food pathway in, 419*f*
function of, 417
laboratory tests for, 446
medical terms for, 426–455
organs of, 416*f*–417*f*, 417–419
prefixes for, 421
suffixes for, 421
surgical terms from word parts for,
434–435
surgical terms not from words parts for,
439
word parts for, 420–426
- digital mammography (mammography), 292
digital rectal examination (DRE), 240*t*, 253,
259
digital subtraction angiography (DSA), 371*t*,
381, 406
dilation and curettage (D&C), 288, 289*f*, 303
diphtheria, 151
dipl/o, 469
diplopia, 474
dips/o, 643
direction
anatomic position and, 61, 61*f*
combining forms for, 61
medical terms for, 60–91
prefixes for, 5, 62
suffixes for, 62
- discectomy, 565
discitis, 552
disc/o, 544
- disease and disorder terms from word parts
for blood, 393
for cardiovascular system, 369–371
for digestive system, 426–427
for ear, 513
for endocrine system, 647–648
for eye, 474
for female reproductive system, 275–276
for lymphatic system, 398
for male reproductive system, 236–237
for musculoskeletal system, 552–554
for neonatology, 326
for nervous system, 603–604
for obstetrics, 320
for respiratory system, 145–147
for urinary system, 197–198
- disease and disorder terms not from word
parts
for blood, 393
for cardiovascular system, 376–383
for digestive system, 430–431
for ear, 515
for endocrine system, 650–651
for eye, 477–479
for female reproductive system, 279–280
for lymphatic disease, 399
for male reproductive system, 239–241
for neonatology, 326–327
for nervous system, 608–610
for obstetrics, 320–321
for respiratory system, 150–152
for urinary system, 201
- dislocation, 559
disorientation, 622
distal, 66
distended, 219
dist/o, 61
diuretic, 218
diurnal enuresis, 218
diverticula, of large intestine, 421*f*
diverticulectomy, 434
diverticulitis, 426
diverticul/o, 420
diverticulosis, 426, 442*f*
DKA (diabetic ketoacidosis), 664
DM (diabetes mellitus), 651, 652*t*, 664
DNA (deoxyribonucleic acid), 17
DO (osteopath), 579
DOB (date of birth), 349
Doctor of Chiropractic (DC), 584
doctor of optometry (OD), 493
Doppler ultrasound, 381
dorsal, 66, 68*t*
dorsal recumbent position (supine position),
77, 77*t*
dors/o, 61
doula, 339
Down syndrome (trisomy 21), 326, 327*f*
DPI (dry powder inhaler), 180
DRE (digital rectal examination), 240*t*, 253,
259
-drome, 644
drusen, 477
dry macular degeneration, 479*f*
dry powder inhaler (DPI), 180
DSA (digital subtraction angiography), 371*t*,
381, 406
DTR (deep tendon reflexes), 615, 631
dual X-ray absorptiometry (DXA), 570–571,
571*f*, 584
dual-energy X-ray absorptiometry (DEXA),
570, 584
duct(s)
common bile, 419, 419*f*
cystic, 419, 419*f*
hepatic, 419, 419*f*
- ductless glands, 640
ductus deferens (vas deferens), 232
duodenal, 449
duodenal ulcer, 431
duoden/o, 420
duodenum, 418
dura mater, 596, 596*f*
dურitis, 603
dur/o, 598
DVT (deep vein thrombosis), 377, 394,
405
Dx (diagnosis), 45, 53
DXA (dual X-ray absorptiometry), 571*f*,
571*t*, 584
dys-, 21, 138, 192, 271, 316, 421, 545, 598
dysarthria, 622
dyscrasia, 395
dysentery, 426
dysesthesia, 619
dyskinesia (movement disorders), 575
dysmenorrhea, 298
dyspareunia, 299
dyspepsia, 449
dysphagia, 449
dysphasia, 619
dysphonia, 170
dysplasia, 28, 37*f*
dyspnea, 170
dystocia, 320
dystrophy, 575
dysuria, 214
- E**
-e, 316
-eal, 139, 421, 469, 545
ear, 506–530
abbreviations for, 526
anatomy of, 507*f*, 507–509
combining forms for, 509
complementary terms from word parts
for, 523
diagnostic terms from word parts
for, 521
disease and disorder terms from word
parts for, 513
disease and disorder terms not from word
parts for, 515
function of, 507
medical terms for, 513–526
organs of, 508–509
sound perception by, 508*f*
suffixes for, 510
surgical terms from word parts for, 518
word parts for, 509–510
ear, nose, and throat (ENT), 523, 526
eardrum (tympanic membrane), 507–508
ecchymosis, 121, 123*f*
ECG (electrocardiogram), 372, 406
ech/o, 364
echocardiogram (ECHO), 372, 406
eclampsia, 321
-ectasis, 139
-ectomy, 97, 139, 192, 233, 271, 364, 421,
469, 510, 545, 599, 644
ectopic pregnancy, 321, 321*f*
eczema, 105
ED (erectile dysfunction), 239, 258
EDD (expected date of delivery), 349
edema, 121, 152
EEG (electroencephalogram), 615, 631
effusion, 174
EGD (esophagogastroduodenoscopy), 442,
455
ejaculation, 256
EKG (electrocardiogram), 372, 406

- electr/o, 364, 509, 545
 electrocardiogram (ECG, EKG), 372, 406
 electrocardiography, 372, 381
 electrocochleography, 521
 electroencephalogram (EEG), 615, 631
 electroencephalograph, 615
 electroencephalography, 615
 electrolytes, 219
 electromyogram (EMG), 570, 584
 electrophysiologist, 372
 elimination, 417
 ellipsis, 28
 Em (emmetropia), 492, 497
 embolectomy, 370
 embolism
 cerebral, 603
 pulmonary, 152, 152*f*, 178
 embol/o, 364, 598
 embryo, 314, 315*f*
 emesis, 451
 EMG (electromyogram), 570, 584
 -emia, 139, 192, 365, 644
 emmetropia (Em), 492, 497
 emphysema, 151
 encapsulated, 36
 encephalitis, 603
 encephal/o, 598
 encephalomalacia, 603
 encephalomyelorradiculitis, 603
 encephalopathy, 603
 endarterectomy, 370
 endo-, 138, 271, 364, 469
 endocarditis, 370
 endocervical, 299
 endocrine glands, 640–643
 endocrine system, 18*t*, 639–670, 640*f*
 abbreviations for, 664
 anatomy of, 640–643
 combining forms for, 643
 complementary terms from word parts
 for, 659–660
 diagnostic imaging for, 657
 diagnostic terms not from word parts for,
 657
 disease and disorder terms from word
 parts for, 647–648
 disease and disorder terms not from word
 parts for, 650–651
 function of, 640
 laboratory tests for, 657
 prefixes for, 643
 suffixes for, 644
 surgical terms from word parts for, 656
 word parts for, 643–644
 endocrin/o, 643
 endocrinologist, 660
 endocrinology, 660
 endocrinopathy, 647
 endograft, 377*f*
 endometrial ablation, 288, 289*f*
 endometrial cancer, 279*f*, 280
 endometri/o, 270
 endometriosis, 275, 276*f*
 endometritis, 275
 endometrium, 268
 endophthalmitis, 474
 endoscope, 162
 endoscopic, 162
 endoscopic retrograde
 cholangiopancreatography
 (ERCP), 445, 455
 endoscopic ultrasound (EUS), 445, 455
 endoscopy, 161–162
 capsule, 441, 441*f*
 endosteum, 534
 endotracheal, 171
 endovascular stenting, 377*f*
 end-stage kidney disease (ESKD), 222
 end-stage renal disease (ESRD), 201, 222
 ENT (ear, nose, and throat;
 otolaryngologist), 523, 526
 enteritis, 426
 enter/o, 420
 enteropathy, 426
 enterorrhaphy, 434
 enucleation, 247, 483
 enuresis, 218
 eosinophils, 361*f*
 EP studies (evoked potential studies), 615,
 631
 epi-, 97
 epicardium, 359
 epidermal, 117
 epidermis, 96
 epididymectomy, 243
 epididymis, 231
 epididymitis, 236
 epididym/o, 233
 epigastric region, 71
 epiglottis, 135–136
 epiglottitis, 145
 epiglott/o, 138
 epilepsy, 608
 epinephrine (adrenaline), 642
 epiphysis, 535
 episi/o, 270, 316
 episiorrhaphy, 284
 episiotomy (perineotomy), 331, 331*f*
 epispadias, 201
 epistaxis (rhinorrhagia), 147, 151
 epithelial, 28
 epithelial tissue, 17
 epitheli/o, 20
 epithelioma, 32
 eponyms, 3, 3*f*, 14
 Erasistratus, 596
 ERCP (endoscopic retrograde
 cholangiopancreatography), 445, 455
 erectile dysfunction (ED), 239, 258
 erythema, 48
 erythr/o, 21, 97, 364
 erythroblastosis fetalis, 326
 erythrocyte sedimentation rate (ESR), 402,
 406
 erythrocytes (red blood cells, RBCs), 28, 53,
 361, 406
 erythrocytopenia, 390
 erythrocytosis, 28
 erythroderma, 116
 -es, 52*t*
 ESKD (end-stage kidney disease), 222
 esophageal, 449
 esophageal atresia, 326
 esophageal candidiasis, with AIDS, 105
 esophagitis, 426
 esophag/o, 316, 420
 esophagogastroduodenoscopy (EGD), 442,
 455
 esophagogastroplasty, 435
 esophagogram, 441
 esophagoscopy, 442
 esophagus, 418
 ESR (erythrocyte sedimentation rate), 402,
 406
 ESRD (end-stage renal disease), 201, 222
 esthesi/o, 598
 ESWL (extracorporeal shock wave
 lithotripsy), 204, 222
 eti/o, 21
 etiology, 45
 eu-, 138, 643
 euglycemia, 659
 eupnea, 170
 EUS (endoscopic ultrasound), 445, 455
 eustachian tube, 508
 euthyroid, 660
 eversion, 580, 580*f*
 evoked potential studies (EP studies), 615,
 631
 exacerbation, 49
 excision, 114
 exercise stress test, 381
 exhalation (expiration), 135, 137*f*
 exocrine glands, 640
 exophthalmos, 660
 exostosis (spur), 559
 expected date of delivery (EDD), 349
 expiration (exhalation), 135, 137*f*
 extension, 580, 580*f*
 external auditory canal (external auditory
 meatus), 507–508
 external ear, 507–508
 external respiration, 135
 extracorporeal, 204
 extracorporeal shock wave lithotripsy
 (ESWL), 204, 222
 extravasation, 395
 extrinsic factors, 394
 eye, 465–502
 abbreviations for, 497–498
 anatomy of, 466–468, 467*f*
 combining forms for, 468–469
 complementary terms from word parts
 for, 492–493
 complementary terms not from word
 parts for, 492–493
 diagnostic imaging for, 487–488
 diagnostic terms from word parts for,
 487–488
 disease and disorder terms from word
 parts for, 474
 disease and disorder terms not from word
 parts for, 477–479
 function of, 466
 light pathway in, 468*f*
 medical terms for, 474–477
 ophthalmic evaluation of, 487–488
 organs of, 466
 prefixes for, 469
 suffixes for, 469
 surgical terms from word parts for, 483
 surgical terms not from words parts for,
 483
 word parts for, 468–473
 eyelids, 466
F
 FA (fluorescein angiography), 487, 497
 facelift (rhytidectomy), 113
 fallopian tubes (uterine tubes), 268
 Fallopius, Gabriele, 268
 familial polyposis, 427
 farsightedness (hyperopia), 478, 478*f*
 FAS (fetal alcohol syndrome), 326, 348
 fascia, 540
 fasciitis, 553
 fasci/o, 544
 fasciotomy, 565
 fasting blood sugar (FBS), 657, 664
 fatigue, 48
 FCC (fibrocystic breast changes), 280, 303
 febrile, 48
 fecal immunochemical test (FIT), 446, 447*f*,
 455
 fecal occult blood test (gFOBT), guaiac-
 based, 446, 455
 feces, 452

- female reproductive system, 266–309
 abbreviations for, 303–304
 anatomy of, 267f, 267–270
 combining forms for, 270–271
 complementary terms from word parts for, 298–299
 complementary terms not from word parts for, 299–300
 diagnostic imaging for, 291–292
 diagnostic terms from word parts for, 291–292
 disease and disorder terms from word parts for, 275–276
 disease and disorder terms not from word parts for, 279–280
 external structures of, 268
 function of, 267
 glands of, 270
 laboratory tests for, 294
 medical terms for, 275–304
 organs and anatomical structures of, 268–269
 prefixes for, 271
 suffixes for, 271
 surgical terms from word parts for, 284–285
 surgical terms not from words parts for, 288–289
 word parts for, 270–275
- female surgical sterilization (tubal ligation), 289, 289f
- female urinary system, 191f
- femoral, 575
- femor/o, 544
- femoropopliteal bypass, 380
- femur, 539
- fertilization (conception), 314, 314f
- fetal, 344
- fetal alcohol syndrome (FAS), 326, 348
- fet/o, 315
- fetus, 314, 314f
- fever, 363
- fibrillation, 378
- fibr/o, 20
- fibrocystic breast changes (FCC), 280, 303
- fibroma, 32
- fibromyalgia, 553
- fibrosarcoma, 32
- fibula, 539
- fibular, 575
- fibul/o, 544
- fimbria, 268
- fine needle aspiration (FNA), 657, 664
- fissure, 106
- fistula, 299
- FIT (fecal immunochemical test), 446, 447f, 455
- flap reconstruction mammoplasty, 284
- flatus, 451
- flexion, 580, 580f
- floating kidney (nephroptosis), 198
- flu (influenza), 151, 178
- fluorescein angiography (FA), 487, 497
- fluoroscopy, 80t, 81
- FNA (fine needle aspiration), 657, 664
- follicle-stimulating hormone (FSH), 641, 664
- food pathway, in digestive system, 419f
- formed elements, 361
- Fowler position, 76
- fracture (fx), 559, 584
- frontal (coronal), 74, 74f
- frontotemporal dementia (Pick disease), 609t
- FSH (follicle-stimulating hormone), 641, 664
- FTSG (full-thickness skin graft), 126
- fulguration, for urinary bladder, 204, 205f
- full-thickness skin graft (FTSG), 126
- fundoscopy, 488
- fundus, 268, 418
- fungal infections, 107t
- fungi, 49
- fungus, 49
- furuncle (boil), 106
- fx (fracture), 559, 584
- ## G
- gait, 623
- gallbladder, 419, 419f
- gallstones (cholelithiasis), 426
- gamete, 314
- gangliectomy (ganglionectomy), 612
- gangliitis, 603
- gangli/o, 598
- ganglion, 597
- ganglion cyst, 559
- ganglionectomy (gangliectomy), 612
- ganglion/o, 598
- gangrene, 106
- gastrectomy, 435
- gastric gavage, 344
- gastric ulcer, 431
- gastritis, 426
- gastr/o, 420
- gastroenteritis, 426
- gastroenterologist, 449
- gastroenterology, 449
- gastroesophageal reflux disease (GERD), 430, 455
- gastrointestinal (GI), 455. *See also* digestive system
- gastrojejunostomy, 435
- gastroplasty, 435
- gastroschisis, 326
- gastroscope, 442
- gastroscopy, 442
- gastrostomy, 435
- gavage, 344
- gen, 21, 316
- gene therapy, 18
- genes, 17
- genetic testing, 41
- genic, 21, 97, 139, 316, 365, 599
- genital herpes, 255
- genital warts, 255
- genitalia, 232
- genome, 18
- genomics, 18
- GERD (gastroesophageal reflux disease), 430, 455
- gestation period, 314
- gestation (pregnancy), 314
 medical terms for, 314–315
 skin in, 315
- gFOBT (guaiac-based fecal occult blood test), 446, 455
- GFR (glomerular filtration rate), 202, 210, 222
- GH (growth hormone), 641, 664
- GI (gastrointestinal), 455. *See also* digestive system
- gigantism, 651
- gingivectomy, 435
- gingivitis, 426
- gingiv/o, 420
- glands
 adrenal, 642
 Bartholin, 270
 ductless, 640
 endocrine, 640–643
- glands (*Continued*)
 meibomian, 466
 of female reproductive system, 270
 parathyroid, 642, 642f
 pineal, 642f
 pituitary. *See* pituitary gland
 prostate, 232
 salivary, 419
 sebaceous, 96
 sudoriferous glands, 96
 thymus, 362
 thyroid, 642, 642f
- glans penis, 232
- glaucoma, 478
- glia, 597
- gli/o, 598
- glioblastoma, 603
- glioma, 603
- glomerular filtration rate (GFR), 202, 210, 222
- glomerul/o, 192
- glomerulonephritis, 197
- glomerulus, 189
- glossitis, 426
- gloss/o, 420
- glossorrhaphy, 435
- gluten enteropathy (celiac disease), 430
- glycemia, 660
- glyc/o, 643
- glycos/o, 192
- glycosuria, 214
- glycosylated hemoglobin (HbA1C), 657, 664
- gno/o, 21
- goiter, 660
- gonadotropic hormones, 641
- gonads, 232
- gonorrhea, 255
- gout, 559
- Graaf, Reinier de, 268
- graafian follicles, 268
- gram, 62, 192, 271, 365, 421, 510, 545
- graph, 62
- graphy, 62, 192, 271, 316, 365, 421, 469, 510, 545, 599
- Graves disease, 651
- gravida, 338
- gravid/o, 315, 338t
- gravidopuerperal, 338
- gray matter, 595
- Greek, medical terms from, 2–3, 14
- growth hormone (GH), 641, 664
- guaiac-based fecal occult blood test (gFOBT), 446, 455
- GYN (gynecology), 299, 303
- gynec/o, 271
- gynecologic laparoscopy (pelviscopy), 292
- gynecologic surgery, 281
- gynecologist, 299
- gynecology (GYN), 299, 303
- ## H
- H. pylori* (*Helicobacter pylori*), 455
 antibodies test, 446
- hair, 96
- hairy cell leukemia (HCL), 393t
- hallux valgus, 558
- hammer (malleus), 508
- HA-MRSA (healthcare-associated MRSA), 126
- HAP (hospital-acquired pneumonia), 178
- hard of hearing (HOH), 526
- hard palate, 417
- Hashimoto thyroiditis, 651
- HbA1C (glycosylated hemoglobin), 657, 664

- HCL (hairy cell leukemia), 393t
Hct (hematocrit), 394, 406
HD (hemodialysis), 204, 218, 219f, 222
HDL (high-density lipoprotein), 382t
headaches, 619
healthcare-associated MRSA (HA-MRSA), 126
heart, 359–360
 congestive heart failure, 378
 hypertensive heart disease, 378, 405
 interior of, 360f
 myocardial infarction of, 378, 405
 rheumatic disease of, 379
heart attack (myocardial infarction), 370, 378, 405
heart failure (HF), 378, 405
heat/moisture exchanger (HME), 180
Helicobacter pylori (*H. pylori*), 455
 antibodies test, 446
hemangiomas, 327
hemarthrosis, 575
hematemesis, 452
hemat/o, 20, 271, 364, 598
hematochezia, 452
hematocrit (Hct), 394, 406
hematologist, 390
hematology, 41
hematology studies, 40t
hematoma, 390
 subdural, 604
hematopoiesis, 360
hematopoietic stem cells, 361
hematosalpinx, 275
hematuria, 214
hemi-, 421, 598
hemicolecotomy, 435
hemiparesis, 619
hemiplegia, 619
hem/o, 138, 192, 364, 545, 598
hemochromatosis, 430
hemodialysis (HD), 204, 218, 219f, 222
hemoglobin (Hgb), 395, 406
hemolysis, 390
hemolytic disease of the newborn, 326
hemophilia, 393, 394
hemoptysis, 170
hemorrhage, 390
hemorrhagic stroke, 609–610
hemorrhoidectomy, 439
hemorrhoids, 430
hemostasis, 390
hemothorax, 145
hepatic duct, 419, 419f
hepatitis, 426
hepat/o, 420
hepatoma, 426
hepatomegaly, 449
hernia, 139, 420, 421f
herniated disk (slipped disk, ruptured disk, herniated intervertebral disk), 559
herniated nucleus pulposus (HNP), 559, 584
herni/o, 420
herniorrhaphy, 435
herpes, 106, 255
herpes zoster (shingles), 107t, 609
 postherpetic neuralgia and, 609
HF (heart failure), 378, 405
Hgb (hemoglobin), 395, 406
HHD (hypertensive heart disease), 378, 405
hiatal hernia, 421f
hidradenitis, 101
hidr/o, 96
high-density lipoprotein (HDL), 382t
hilum, 189
hindbrain (cerebellum), 596
hip resurfacing arthroplasty (HRA), 566f, 566t
Hippocrates, 2, 27, 45, 608
hist/o, 20
histology, 28
histopathology, 41
HIV (human immunodeficiency virus), 255, 258
 dementia and, 609t
hives (urticaria), 109
HME (heat/moisture exchanger), 180
HNP (herniated nucleus pulposus), 559, 584
Hodgkin lymphoma, 398
HOH (hard of hearing), 526
holmium laser enucleation of the prostate gland (HoLEP), 247, 248f, 250t, 259
hordeolum (sty), 479
hormone(s), 640–643, 660
 adrenocorticotrophic, 641, 664
 antidiuretic, 641, 664
 follicle stimulating, 641, 664
 growth, 641, 664
 luteinizing, 641, 664
 parathyroid, 642, 664
 pituitary gland, 641f, 641–642
 thyroid-stimulating, 657, 664
hormone therapy, 240t, 299
hospice, 36
hospital-acquired pneumonia (HAP), 178
HPV (human papillomavirus)
 description of, 255, 258
 test, 294, 295t
 vaccine for, 279
HRA (hip resurfacing arthroplasty), 566f, 566t
HRT (hormone replacement therapy), 299, 303
HSG (hysterosalpingogram), 291, 303
HTN (hypertension), 383, 405
human immunodeficiency virus (HIV), 255, 258
 dementia and, 609t
human papillomavirus (HPV)
 description of, 255, 258
 test for, 294, 295t
 vaccine for, 279
humeral, 575
humer/o, 544
humerus, 536
humpback (kyphosis), 554
hunchback (kyphosis), 554
hyaline membrane disease, 327
hydramnios (polyhydramnios), 320
hydr/o, 192, 271, 316, 598
hydrocele, 239
hydrocelectomy, 247
hydrocephalus, 603
hydrocortisone (cortisol), 642
hydronephrosis, 197
hydrosalpinx, 275
hymen, 268
hymen/o, 271
hymenotomy, 284
hyper-, 21, 97, 138, 233, 545, 598, 643
hypercalcemia, 647
hypercapnia, 170
hypercholesterolemia, 383
hyperesthesia, 619
hyperglycemia, 647
hyperkalemia, 647
hyperkinesia, 575
hyperlipidemia, 383
hyperopia (farsightedness), 478, 478f
hyperparathyroidism, 647
hyperpituitarism, 647
hyperplasia, 28, 37f
hyperpnea, 170
hypersensitivity, 403
hypertension (HTN), 383, 405
hypertensive heart disease (HHD), 378, 405
hyperthyroidism, 647
hypertrichosis, 116
hypertriglyceridemia, 383
hypertrophy, 575
hyperventilation, 174
hyphema, 478
hyphemia, 478
hypo-, 21, 71, 97, 138, 643
hypocalcemia, 648
hypocapnia, 170
hypochondriac, 71
hypochondriac regions, 71
hypodermic, 117
hypodermis, 96
hypogastric region, 71
hypoglycemia, 648
hypokalemia, 648
hyponatremia, 648
hypophysis cerebri, 641
hypopituitarism, 648
hypoplasia, 28
hypopnea, 170
hypospadias, 201
hypotension, 383
hypothalamus, 642
hypoventilation, 174
hypoxemia, 170
hypoxia, 170
hysterectomy, 284, 285t
hyster/o, 271, 316
hysteropexy, 284
hysterorrhexis, 320
hysterosalpingogram (HSG), 291, 303
hysteroscope, 292
hysteroscopy, 292
hysterosonography (sonohysterography, SHG), 292, 303
- ## I
- i, 52t
-ia, 97, 139, 233, 365, 421, 469, 545, 599, 644
-iasis, 192, 421
-iatrist, 599
iatr/o, 21
iatrogenic, 45
-iatry, 599
IBS (irritable bowel syndrome), 431, 455
-ic, 21, 62, 97, 139, 233, 271, 316, 365, 421, 469, 545
-ices, 52t
-ictal, 599
icterus (jaundice), 121
ID (intra-dermal), 117, 126
I&D (incision and drainage), 114, 126
IDDM (insulin-dependent diabetes mellitus), 652t
idiopathic, 49
idiopathic pulmonary fibrosis (IPF), 151, 178
-ies, 52t
ile/o, 420
ileocecal, 449
ileostomy, 435
ileum, 418, 544
ileus, 430
iliac, 575
iliac regions, 71
ili/o, 544
ilium, 539, 544

- immune deficiency disorders. *See also*
 acquired immunodeficiency syndrome;
 human immunodeficiency virus
- immune system, 363, 363*f*
 abbreviations for, 405–406
 complementary terms not from word
 parts for, 402–403
 function of, 18*t*, 363
 medical terms for, 401–405
- immunity, 403
- immun/o, 364
- immunodeficiency, 402
- immunoglobulin (antibody), 403
- immunologist, 401
- immunology, 401
- immunosuppression, 403
- immunotherapy, 36, 240*t*
- impetigo, 106, 107*t*
- implant mammoplasty, 284
- implantation, 314, 314*f*
- impotence, 239
- in situ, 36
- in vitro, 339
- in vitro fertilization (IVF), 331, 332*f*, 348
- in vivo, 339
- incision, 114
- incision and drainage (I&D), 114, 126
- incoherent, 623
- incontinence, 218
- incretins, 660
- incus (anvil), 508
- induration, 121
- inf (inferior), 66, 68*t*, 85
- infection
 definition of, 49
 nosocomial, 175
 opportunistic, 402
 sexually transmitted, 258
 skin, 106, 107*t*
 types of, 107*t*
 upper respiratory, 152, 178
 urinary tract, 197*f*, 201, 222
- infectious mononucleosis, 399
- inferior (inf), 66, 68*t*, 85
- inferior vena cava, 359–360
- infer/o, 61
- infertility, 240
- inflammation, 48, 363
- influenza (flu), 151, 178
- ingestion, 417
- inguinal hernia, 421*f*
- inguinal regions, 71
- inhalation (inspiration), 135, 137*f*
- inherited immunity, 403
- inner ear, 507–508
 for balance, 507
- INR (international normalized ratio), 395
- insidious, 150
- inspiration (inhalation), 135, 137*f*
- insulin resistance syndrome (metabolic
 syndrome), 651
- insulin-dependent diabetes mellitus
 (IDDM), 652*t*
- integumentary system, 18*t*, 94–131.
See also skin
 abbreviations for, 126
 anatomy of, 95–96
 combining forms for, 96–97
 complementary terms from word parts
 for, 116–117
 medical terms for, 101–127
 medical terms not from word parts for,
 104–109
 prefixes for, 97
 suffixes for, 97
 surgical terms from word parts for, 113–116
- integumentary system (*Continued*)
 surgical terms not from word parts for,
 113–114
 word parts for, 96–101
- inter-, 545, 598
- intercostal, 575
- interferons, 37*t*, 363
- interictal, 619
- intermittent claudication, 378
- intermittent positive-pressure breathing
 (IPPB), 180
- international normalized ratio (INR), 395
- interventional radiologists, 81
- intervertebral, 575
- intervertebral disk, 539
- intra-, 97, 138, 192, 316, 364, 469,
 545, 598
- intracerebral hemorrhage, 603
- intracranial, 575
- intradermal (ID), 117
- intraocular, 492
- intraocular lens (IOL), 493
- intraocular pressure (IOP), 497
- intrapartum, 338
- intrapleural, 171
- intrauterine device (IUD), 300*f*, 303
- intrauterine system (IUS), 303
- intravenous (IV), 372, 406
- intravenous (IV) therapy, 372
- intravenous urogram (IVU), 210*f*
- intravesical, 215
- intrinsic factors, 394
- intussusception, 430
- inversion, 580, 580*f*
- IOL (intraocular lens), 493
- IOP (intraocular pressure), 497
- ior, 62
- IPF (idiopathic pulmonary fibrosis),
 151, 178
- IPPB (intermittent positive-pressure
 breathing), 180
- iridectomy, 483
- irid/o, 468
- iridoplegia, 474
- iridotomy, 483
- iris, 466
- iritis, 474
- ir/o, 468
- irritable bowel syndrome (IBS), 431, 455
- is, 52*t*, 545
- ischemia, 370
- ischemic stroke, 609
- ischial, 575
- ischi/o, 544
- ischium, 539
- isch/o, 364
- islets of Langerhans, 642, 643*f*
- ism, 233, 365, 599, 644
- is/o, 469
- isocoria, 492
- itis, 97, 139, 192, 233, 271, 316, 365, 421,
 469, 510, 545, 599, 644
- IUD (intrauterine device), 300*f*, 303
- IUS (intrauterine system), 303
- IV (intravenous), 372, 406
- IV (intravenous) therapy, 372
- IVF (in vitro fertilization), 331, 332*f*, 348
- IVU (intravenous urogram), 210*f*
- ix, 52*t*
- J**
- jaundice (icterus), 121
- jejun/o, 420
- jejunum, 418
- joint fusion (arthrodesis), 565
- joints (articulations)
 of knee, 540*f*
 of musculoskeletal system, 539–540
- K**
- kal/i, 643
- Kaposi sarcoma, 106
- keloid, 106
- keratin, 96
- keratitis, 474
- kerat/o, 96, 468
- keratoconus, 478
- keratogenic, 117
- keratomalacia, 474
- keratometer, 487
- keratoplasty, 483
- keratosis, 101
- ketoacidosis, 651
- kidney, 189
 chronic kidney disease, 201, 222
 computed tomography of, 209*f*
 polycystic kidney disease, 201
- kidney, ureter, and bladder (KUB), 210, 222
- kidney stones (nephrolithiasis), 197
- kidney transplant (renal transplant), 204,
 205*f*
- kinesi/o, 545
- knee
 arthritis of, 553*f*
 joint of, 540*f*
- KUB (kidney, ureter, and bladder), 210, 222
- kyph/o, 545
- kyphoplasty, 567*t*
- kyphosis (hunchback, humpback), 554
- L**
- laboratory tests
 for blood, 394–395
 for cardiovascular system, 382
 for digestive system, 446
 for endocrine system, 657
 for female reproductive system, 294
 from word parts, 41
 for male reproductive system, 253
 not from word parts, 41
 types of, 40*t*
 for urinary system, 210
- labyrinth, 508
- labyrinthectomy, 518
- labyrinthitis, 513
- labyrinth/o, 509
- laceration, 106
- lacrimal, 492
- lacrimal apparatus, 466, 467*f*
- lacrim/o, 468
- lactation, 339
- lact/o, 315
- lactogenic, 338
- lactorrhea, 338
- lamina, 536
- laminectomy, 565
- lamin/o, 544
- lapar/o, 420
- laparoscope, 442
- laparoscopic cholecystectomy, 434, 434*f*
- laparoscopic radical prostatectomy, 243*t*
- laparoscopically assisted vaginal
 hysterectomy (LAVH), 285*f*, 303
- laparoscopy, 442
 gynecologic, 292
- laparotomy (celiotomy), 435
- large cell carcinoma, of lung, 146*f*
- large intestine, 418
 anatomy of, 417*f*
 diverticula of, 421*f*

- laryngeal, 171
 laryngectomy, 156
 laryngitis, 145
 laryng/o, 138
 laryngomalacia, 326
 laryngoplasty, 156
 laryngoscope, 162
 laryngoscopy, 162
 laryngospasm, 145
 laryngostomy, 156
 laryngotracheobronchitis (LTB, croup), 145, 151, 178
 laryngotracheotomy, 156
 larynx (voice box), 135–136
 laser surgery, 114, 247
 laser-assisted in situ keratomileusis (LASIK), 483, 484*f*, 498
 last menstrual period (LMP), 349
 lateral (lat), 66, 85
 lateral position, 76
 lateral recumbent position, 76
 later/o, 61
 Latin, medical terms from, 2–3, 14
 LAVH (laparoscopically assisted vaginal hysterectomy), 285*f*, 303
 lazy eye (amblyopia), 477
 LDL (low-density lipoprotein), 382*t*
 LEEP (loop electrosurgical excision procedure), 303
 left atrium, 359–360
 left eye (OS), 498
 left lateral decubitus position, 77*t*
 left lateral recumbent position, 77*t*
 left lower lobe (LLL), 179
 left lower quadrant (LLQ), 85–86
 left semiprone position, 77*t*
 left upper lobe (LUL), 179
 left upper quadrant (LUQ), 85–86
 left ventricle, 359–360
 lei/o, 21
 leiomyoma, 32
 uterine fibroid as, 280
 leiomyosarcoma, 32
 lens, 466
 lesions, 121
 leukemia, 361, 393, 393*t*
 leuk/o, 21, 97, 271, 364, 469
 leukocoria, 492
 leukocytes (white blood cells, WBC), 28, 53, 361, 361*f*, 406
 leukocytopenia (leukopenia), 390
 leukocytosis, 28
 leukopenia (leukocytopenia), 390
 leukoplakia, 121
 leukorrhea, 299
 Lewy body dementia, 609*t*
 LH (luteinizing hormone), 641, 664
 ligament, 540
 light pathway, in eye, 468*f*
 linea nigra, 315
 lingu/o, 420
 lipid profile, 382, 382*t*
 lip/o, 20
 lipid, 28
 lipoma, 32
 liposarcoma, 32
 -lith, 192, 233, 421
 lith/o, 192, 233, 420
 lithotomy position, 76
 lithotripsy, 203
 liver, 419, 419*f*
 L1–L5 (lumbar vertebrae), 536, 584
 LLL (left lower lobe), 179
 LLQ (left lower quadrant), 85–86
 LMP (last menstrual period), 349
 lobar pneumonia, 145
 lobe, 138
 lobectomy, 157, 157*f*
 lob/o, 138
 lochia, 339
 -logist, 21, 27, 62, 97, 139, 192, 271, 316, 365, 421, 469, 510, 599, 644
 -logy, 21, 62, 97, 139, 192, 271, 316, 365, 421, 469, 510, 599, 644
 loop electrosurgical excision procedure (LEEP), 303
 lord/o, 545
 lordosis (swayback), 554
 Lou Gehrig disease (amyotrophic lateral sclerosis), 608, 630
 low sperm count, 255
 low-density lipoprotein (LDL), 382*t*
 lower GI series (barium enema), 446*f*
 lower respiratory infection, 153*f*
 lower urinary tract symptoms (LUTS), 258
 LP (lumbar puncture), 615, 631
 LTB (laryngotracheobronchitis), 145, 151, 178
 LUL (left upper lobe), 179
 lumbar, 575
 lumbar puncture (LP, spinal tap), 615, 631
 lumbar region, 71
 lumbar vertebrae (L1–L5), 536, 584
 lumb/o, 544
 lumpectomy (partial mastectomy, breast-conserving surgery), 286*t*
 lung(s), 135–137
 resection of, 157*f*
 lung cancer (bronchogenic carcinoma), 145, 146*f*
 lung ventilation/perfusion scan (V/Q scan), 166, 179
 LUQ (left upper quadrant), 85–86
 luteinizing hormone (LH), 641, 664
 LUTS (lower urinary tract symptoms), 258
 luxation, 559
 Lyme disease, 559
 lymph, 362
 lymph nodes, 362, 367
 lymphadenitis, 398
 lymphaden/o, 364, 367
 lymphadenopathy, 398
 lymphangiography, 398
 lymphangitis, 398
 lymphatic system, 361, 362*f*
 abbreviations for, 405–406
 combining forms for, 364
 disease and disorder terms from word parts for, 398
 disease and disorder terms not from word parts for, 399
 function of, 18*t*, 361
 medical terms for, 398–401
 organs and anatomical structures of, 362
 surgical terms from word parts for, 370–371
 lymphatic vessels, 362
 lymphedema, 399
 lymph/o, 364
 lymphocytes, 361*f*, 362, 401
 lymphocytic leukemia, 393*t*
 lymphocytosis, 390
 lymphoma, 361, 398
 -lysis, 192, 365, 599
- M**
 -ma, 52*t*
 macula, 466, 478
 macular degeneration, 478
 macule, 121, 122*t*
 magnetic resonance (MR), 85
 magnetic resonance angiography (MRA), 371*t*
 magnetic resonance imaging (MRI), 80*t*, 85, 240*t*
 definition of, 81
 multiparametric, 253
 for musculoskeletal system, 570, 571*f*, 571*t*
 magnetic resonance imaging–transrectal ultrasound (MRI-TRUS), 253
 major depression, 628
 malabsorption, 452
 -malacia, 97, 316, 469, 545, 599
 male reproductive system, 230–263
 abbreviations for, 258–259
 anatomy of, 231–232
 combining forms for, 233
 complementary terms from word parts for, 255
 complementary terms not from word parts for, 256
 diagnostic terms not from word parts for, 253
 disease and disorder terms from word parts for, 236–237
 disease and disorder terms not from word parts for, 239–241
 function of, 231
 medical terms for, 236–263
 organs and anatomical structures of, 231*f*, 231–232
 prefixes for, 233
 suffixes for, 233
 surgical terms from word parts for, 243
 surgical terms not from words parts for, 247–248
 word parts for, 233–235
 male urinary bladder, 191*f*
 male urinary system, 191*f*
 malignant, 36–37
 malignant tumors, 31, 37*f*
 breast, surgeries for, 286*t*
 connective tissue, 32
 malleus (hammer), 508
 mammary papilla, 270
 mamm/o, 271
 mammogram, 291
 mammography (digital mammography), 292
 mammo/o, 271
 mandible, 535
 mandibul/o, 544
 mastalgia, 299
 mastectomy, 285
 mastitis, 275
 mast/o, 271
 mastoid bone (mastoid process), 509
 mastoid process (mastoid bone), 509
 mastoidectomy, 518
 mastoiditis, 513
 mastoid/o, 509
 mastoidotomy, 518
 mastopexy, 285
 -mata, 52*t*
 maxilla, 535
 maxillectomy, 565
 maxill/o, 544
 MBS (modified barium swallow), 445, 455
 MCI (mild cognitive impairment), 623*t*
 MD (muscular dystrophy), 559, 584
 MDI (metered-dose inhaler), 180
 measles, 106
 meatal, 215
 meat/o, 192
 meatotomy, 203
 meatus, 189
 meconium, 344

- med (medial), 66, 85
 MED (microendoscopic discectomy), 565
 medial (med), 66, 85
 mediastinal, 171
 mediastin/o, 138
 mediastinoscopy, 162
 mediastinum, 136–137
 medical genomics, 18
 medical language, 2
 origins of, 2–3
 medical terms
 analyzing, 9, 12*t*
 for blood, 390–397
 for body, 28–53
 building, 9, 11, 12*t*
 for cardiovascular system, 369–389
 categories of, 4, 4*t*
 defining, 9–11, 12*t*
 for diagnostic procedures and tests, 161–162, 166
 for digestive system, 426–455
 for direction, 60–91
 for ear, 513–526
 for eye, 474–477
 for female reproductive system, 275–304
 from Greek and Latin, 2–3, 14
 from word parts, 4–13
 learning techniques for, 12*t*
 for immune system, 401–405
 for integumentary system, 101–127, 104–109
 for lymphatic system, 398–401
 for male reproductive system, 236–263
 for musculoskeletal system, 552–584
 for neonatology, 320–349
 for nervous system, 603–631
 not from word parts, 14
 for obstetrics, 320–349
 for oncology, 31–32
 plural endings for, 51, 52*t*
 for pregnancy, 314–315
 for pulmonary function, 166
 for respiratory system, 145–185
 suffixes for, 5
 for urinary system, 197–222
 medi/o, 61
 mediolateral, 66
 medulla oblongata, 596
 -megaly, 21, 192, 365, 421, 644
 meibomian cyst (chalazion), 477
 meibomian glands, 466
 melanin, 96
 melan/o, 21
 melanoma, 32, 105*f*
 melena, 452
 menarche, 300
 Ménière disease, 515
 meninges, 596, 596*f*
 meningi/o, 598
 meningioma, 603
 meningitis, 603
 mening/o, 598
 meningocele, 604
 meningocele (myelomeningocele), 327*f*, 604
 meniscectomy, 565
 meniscitis, 554
 menisc/o, 544
 meniscus, 539
 men/o, 271
 menometrorrhagia, 275
 menopause, 300
 menorrhagia, 275
 mental, 619
 ment/o, 598
 MET (metastasis), 32
 meta-, 21
 metabolic syndrome (syndrome X, insulin resistance syndrome), 651
 metabolism, 660
 metacarpus (metacarpal bones), 536
 metastases (METS), 53
 metastasis (MET), 32, 32*f*
 metatarsal bones, 539
 -meter, 139, 469, 510
 metered-dose inhaler (MDI), 180
 methicillin-resistant *Staphylococcus aureus* (MRSA), 106, 126
 metr/o, 271
 metrorrhagia, 275
 -metry, 139, 469, 510
 METS (metastases), 53
 MG (myasthenia gravis), 559, 584
 MI (myocardial infarction), 370, 378, 405
 micro-, 21, 316, 545
 microbiology, 41
 microbiology studies, 40*t*
 microcephalus, 326
 microdiscectomy, 565
 microendoscopic discectomy (MED), 565
 microorganism, 49
 microscopy, 40*t*
 midbrain, 596
 middle ear, 507*f*, 507–508
 midline, 74
 midsagittal, 74*f*, 74–75
 midwife, 339
 midwifery, 339
 migraine, 608, 619
 mild cognitive impairment (MCI), 623*t*
 minimally invasive surgical treatments (MISTs), 248, 249*f*, 250*t*, 259
 miotic, 493
 MISTs (minimally invasive surgical treatments), 248, 249*f*, 250*t*, 259
 mitral valve, 359–360
 stenosis, 378
 modern language, 3, 3*f*, 14
 modified barium swallow (MBS), 445, 455
 modified radical mastectomy, 286*t*
 modified Trendelenburg position, 77
 Mohs, Frederic E., 114
 Mohs surgery, 114
 mole (nevus), 121
 mon/o, 598
 monocytes, 361*f*, 362
 mononeuropathy, 604
 monoparesis, 619
 monoplegia, 619
 mood disorder, 628
 morcellation, 248
 mother, 345*t*
 mouth, 417
 movement disorders (dyskinesia), 575
 MR (magnetic resonance), 85
 MRA (magnetic resonance angiography), 371*t*
 MRI (magnetic resonance imaging), 80*t*, 85, 240*t*
 definition of, 81
 multiparametric, 253
 for musculoskeletal system, 570, 571*f*, 571*t*
 MRI ultrasound fusion biopsy, 253
 MRI-TRUS (magnetic resonance imaging-transrectal ultrasound), 253
 MRSA (methicillin-resistant *Staphylococcus aureus*), 106, 126
 MS (multiple sclerosis), 608, 630
 MSR (muscle stretch reflexes), 615
 muc/o, 138
 mucoïd, 171
 mucopurulent, 175
 mucous, 171
 mucus, 175
 mucus membranes, 135
 multi-, 316
 multigravida, 338
 multipara (multip), 338, 348
 multiparametric MRI, 253
 multiple infarct dementia, 609*t*
 multiple myeloma, 390
 thalidomide for, 37*t*
 multiple sclerosis (MS), 608, 630
 murmur, 383
 muscle
 anatomy of, 541*f*–543*f*
 cardiac, 540, 543*f*
 definition of, 540
 skeletal, 540, 543*f*
 smooth, 540, 543*f*
 muscle biopsy, 572
 muscle stretch reflexes (MSR), 615
 muscle tissue, 17
 muscular dystrophy (MD), 559, 584
 musculoskeletal system, 18*t*, 533–589
 abbreviations for, 584
 anatomy of, 534–543
 body movement types, 580, 580*f*
 bone structure, 534*f*, 534–535
 combining forms for, 544–545
 complementary terms from word parts for, 575–576
 complementary terms not from word parts for, 579–580
 diagnostic imaging for, 570, 571*t*
 diagnostic terms from word parts for, 570
 diagnostic terms not from word parts for, 570–571
 disease and disorder terms from word parts for, 552–554
 functions of, 534
 joints of, 539–540
 medical terms for, 552–584
 muscles of, 540, 541*f*–543*f*
 prefixes for, 545
 skeletal bones of, 535–539, 537*f*–538*f*
 suffixes for, 545
 surgical terms from word parts for, 565
 word parts for, 544–552
 myalgia, 575
 myasthenia, 575
 myasthenia gravis (MG), 559, 584
 myc/o, 97, 138, 469, 509
 mydriatic, 493
 myelitis, 604
 myel/o, 364, 598
 myelogenous leukemia, 393*t*
 myelography, CT, 614
 myeloma, 554
 myelomalacia, 604
 myelomeningocele (meningomyelocele), 327*f*, 604
 my/o, 20, 271, 364, 544
 myocardial infarction (MI, heart attack), 370, 378, 405
 myocardial ischemia, 370
 myocarditis, 370
 myocardium, 359–360, 540
 myoma, 32
 of uterus, 280
 myomectomy, 289
 myometritis, 276
 myometrium, 268
 myopathy, 28
 myopia (nearsightedness), 478, 478*f*
 myorrhaphy, 565

- myos/o, 544
 myringitis, 513
 myring/o, 509
 myringoplasty, 518
 myringotomy, 518
 myxedema, 651
- N**
- NAFLD (nonalcoholic fatty liver disease), 455
 nails, 96
 nasal polyp, 431*f*
 nasal septum, 135–136
 NASH (nonalcoholic steatohepatitis), 431, 455
 nas/o, 138, 420, 469
 nasogastric, 449
 nasolacrimal, 492
 nasopharyngeal, 171
 nasopharyngitis, 145
 natal, 344
 nat/o, 315
 natr/o, 643
 natural killer (NK) cells, 363
 nausea, 452
 nausea and vomiting (N&V), 455
 NB (newborn, neonate), 344, 345*t*, 348
 nearsightedness (myopia), 478, 478*f*
 nebulizer, 175
 nectr/o, 21, 545
 necrosis, 28
 negation, prefixes for, 5
 neo-, 21, 138, 316
 neoadjuvant therapy, 37*t*
 neonate (newborn, NB), 344, 345*t*, 348
 neonatologist, 344
 neonatology, 313–353
 abbreviations for, 348
 anatomy for, 314–315
 combining forms for, 315–316
 complementary terms from word parts for, 344
 complementary terms not from word parts for, 344
 disease and disorder terms from word parts for, 326
 disease and disorder terms not from word parts for, 326–327
 medical terms for, 320–349
 prefixes for, 316
 suffixes for, 316
 word parts for, 315–320, 344
 neoplasm, 32
 nephrectomy, 203
 nephritis, 197
 nephro/o, 192
 nephroblastoma (Wilms tumor), 197
 nephrolithiasis (kidney stones), 197
 nephrolithotomy, 204, 204*f*
 nephrolithotripsy, 204, 204*f*
 nephrologist, 215
 nephrology, 215
 nephrolysis, 204
 nephroma, 197
 nephromegaly, 198
 nephron, 189
 nephropexy, 204
 nephroptosis (floating kidney), 198
 nephroscopy, 209
 nephrosonography, 209
 nephrostomy, 204
 nerve(s), 597
 cranial, 597*f*
 optic, 466
 nerve tissue, 17
- nervous system, 18*t*, 593–636, 594*f*
 abbreviations for, 630–631
 anatomy of, 594–597
 combining forms for, 598
 complementary terms from word parts for, 619
 complementary terms not from word parts for, 622–623
 diagnostic imaging for, 614–615
 diagnostic procedures and tests for, 615
 diagnostic terms from word parts for, 614–615
 diagnostic terms not from word parts for, 615
 disease and disorder terms from word parts for, 603–604
 disease and disorder terms not from word parts for, 608–610
 function of, 594
 medical terms for, 603–631
 organs of, 595–597
 suffixes for, 599
 surgical terms from word parts for, 612
 neuralgia, 604
 neurectomy, 612
 neuritis, 604
 neur/o, 20, 598
 neuroblastoma, 651
 neuroglia, 597
 neurohypophysis, 641
 neurologist, 619
 neurology, 619
 neurolysis, 612
 neuroma, 32
 neuron, 597
 neuropathy, 28, 604
 neuroplasty, 612
 neurorrhaphy, 612
 neurotomy, 612
 neutrophils, 361*f*
 nevus flammeus (port-wine stain), 327
 nevus (mole), 121
 newborn (NB, neonate), 344, 345*t*, 348
 -nges, 52*t*
 NIDDM (noninsulin-dependent diabetes mellitus), 652*t*
 night blindness (nyctalopia), 478
 nipple-sparing mastectomy (subcutaneous mastectomy), 286*t*
 NIPPV (noninvasive positive-pressure ventilator), 180
 NK (natural killer) cells, 363
 NM (nuclear medicine), 85
 bone scan, 571*t*
 definition of, 81
 noct/i, 192
 nocturia, 214
 nocturnal enuresis, 218
 nodule, 122, 122*t*
 nonalcoholic fatty liver disease (NAFLD), 455
 nonalcoholic steatohepatitis (NASH), 431, 455
 non-Hodgkin lymphoma, 398
 noninsulin-dependent diabetes mellitus (NIDDM), 652*t*
 noninvasive positive-pressure ventilator (NIPPV), 180
 nonobstructive azoospermia, 256
 norepinephrine (noradrenaline), 642
 normal pressure hydrocephalus, 609*t*
 nose, 135–136
 nuchal translucency screening, 335
 nuclear medicine (NM), 85
 bone scan, 571*t*
 definition of, 81
- nuclear medicine scanning, 381
 nucleus, 17
 nulli-, 316
 nulligravida, 338
 nullipara, 338
 numbers, prefixes for, 5
 N&V (nausea and vomiting), 455
 -nx, 52*t*
 nyctalopia (night blindness), 478
 nystagmus, 478
- O**
- O₂ (oxygen), 135, 141, 179
 OA (osteoarthritis), 2, 554, 584
 of knee, 2*f*, 553*f*
 OAB (overactive bladder), 222
 OB (obstetrics), 313–353
 abbreviations for, 348
 anatomy for, 314–315
 combining forms for, 315–316
 complementary terms from word parts for, 334
 complementary terms not from word parts for, 339
 diagnostic terms from word parts for, 331
 disease and disorder terms from word parts for, 320
 disease and disorder terms not from word parts for, 320–321
 medical terms for, 320–349
 prefixes for, 316
 suffixes for, 316
 surgical terms from word parts for, 331
 word parts for, 315–320
 obesity, 651
 oblique, 74
 obsessive-compulsive disorder (OCD), 629–630
 obstetric ultrasonography (pelvic sonography), 334, 334*f*
 obstetrician, 339
 obstetrics (OB), 313–353
 abbreviations for, 348
 anatomy for, 314–315
 combining forms for, 315–316
 complementary terms from word parts for, 334
 complementary terms not from word parts for, 339
 diagnostic terms from word parts for, 331
 disease and disorder terms from word parts for, 320
 disease and disorder terms not from word parts for, 320–321
 medical terms for, 320–349
 prefixes for, 316
 suffixes for, 316
 surgical terms from word parts for, 331
 word parts for, 315–320
 obstructive azoospermia, 256
 obstructive sleep apnea (OSA), 151, 152*f*, 175*f*, 178
 occlusion, 383
 OCD (obsessive-compulsive disorder), 629–630
 OCT (optical coherence tomography), 488, 497
 ocul/o, 468
 oculomycosis, 474
 OD (doctor of optometry), 493
 OD (right eye), 498
 OE (otitis externa), 515, 526
 -oid, 21, 139
 olecranon process, 536
 olig/o, 192, 233, 271, 316

- oligohydramnios, 320
 oligomenorrhea, 299
 oligoovulation, 299
 oligospermia, 255
 oliguria, 214
 OM (otitis media), 515, 526
 -oma, 21, 97, 139, 193, 316, 365, 421, 469, 545, 599, 644
 omphalitis, 326
 omphal/o, 315
 omphalocele, 326
 -on, 52*t*
 onc/o, 21
 oncogenic, 45
 oncologist, 27, 45
 oncology. *see also* cancer
 abbreviations for, 53
 complementary terms from word parts for, 45
 definition of, 31, 45
 medical terms from word parts for, 32
 medical terms not from word parts for, 36–37
 onych/o, 96
 onychocryptosis, 101
 onychomalacia, 101
 onychomycosis, 101
 onychophagia, 101
 oophorectomy, 285
 oophoritis, 276
 oophor/o, 271
 Opth (ophthalmology), 492, 498
 ophthalmalgia, 474
 ophthalmic, 492
 ophthalm/o, 469
 ophthalmologist, 492
 ophthalmology (Opth), 492, 498
 ophthalmopathy, 474
 ophthalmoplegia, 474
 ophthalmoscope, 487
 ophthalmoscopy, 487
 of retina, 468*f*
 -opia, 469
 opportunistic infections, 402
 -opsy, 21
 optic, 492
 optic nerve, 466
 optical coherence tomography (OCT), 488, 497
 optician, 493
 opt/o, 469
 optometrist, 493
 optometry, 487
 oral, 449
 oral cancer screening, 460*f*
 oral cavity, 417*f*
 orbit, 466
 orchialgia, 255
 orchidectomy, 243
 orchiditis, 236
 orchid/o, 233
 orchidopexy, 243
 orchidotomy, 243
 orchietomy, 240*t*, 243
 orchiepididymitis, 236
 orch/o, 233
 orchiopexy, 243
 orchiopey, 243
 orchiotomy, 243
 orchitis, 236
 orch/o, 233
 organ/o, 20
 organomegaly, 28
 organs
 combining forms of, 420
 defined, 18
 organs (*Continued*)
 of cardiovascular system, 359–360
 of digestive system, 416*f*–417*f*, 417–419
 of ear, 508–509
 of eye, 466
 of female reproductive system, 268–269
 of lymphatic system, 362
 of male reproductive system, 231*f*, 231–232
 of nervous system, 595–597
 of respiratory system, 135–137, 136*f*
 of urinary system, 189
 orgasm, 256
 or/o, 420
 orth/o, 138
 orthopedics (ortho), 579, 584
 rheumatology and, 579
 orthopedist, 579
 orthopnea, 170
 orthopnea position (orthopneic position), 76
 orthotics, 579
 orthotist, 579
 OS (left eye), 498
 OSA (obstructive sleep apnea), 151, 152*f*, 175*f*, 178
 -osis, 21, 97, 139, 193, 271, 365, 421, 469, 510, 545, 599
 ossicles, 507–508
 osteitis, 554
 osteoarthritis (OA), 2, 554, 584
 of knee, 2*f*, 553*f*
 osteochondritis, 554
 osteochondroma, 554
 osteomalacia, 554
 osteomyelitis, 554
 osteonecrosis, 554
 osteopath (DO), 579
 osteopathy, 579
 osteopenia, 554
 osteopetrosis, 554
 osteoporosis, 559
 compression fractures from, 567*t*
 osteosarcoma, 32, 554
 osteotomy, 565
 otalgia, 513
 otitis externa (OE), 515, 526
 otitis media (OM), 515, 526
 ot/o, 509
 otolaryngologist (ear, nose, and throat; ENT), 523, 526
 otolaryngology, 523
 otomycosis, 513
 otoplasty, 518
 otopyorrhea, 513
 otorhinolaryngologist, 523
 otorhinolaryngology, 523
 otorrhea, 513
 otosclerosis, 513
 otoscope, 521
 otoscopy, 521
 ototoxicity, 515
 OU (both eyes), 498
 -ous, 21, 97, 139, 365
 oval window, 508
 ovarian cancer, 280
 ovaries, 268
 PCOS, 280, 303
 overactive bladder (OAB), 222
 overweight, 651
 ovulation, 314*f*
 ovum, 268
 ox/i, 138
 oximeter, 162
 oxygen (O₂), 135, 141, 179
 oxytocin, 641

P
 P (pulse), 381, 406
 PA (posteroanterior), 66, 85
 pachyderma, 101
 pachy/o, 97
 PAD (peripheral artery disease), 379, 405
 PAF (paroxysmal atrial fibrillation), 378
 palatal, 449
 palate, 417
 palat/o, 420
 palatoplasty, 435
 palliative, 36
 pallor, 122
 palpate, 452
 pan-, 364, 643
 pancreas, 419, 419*f*, 642*f*–643*f*
 pancreatectomy, 435
 pancreatic, 449
 pancreatitis, 427
 pancreat/o, 420
 pancytopenia, 390
 panhypopituitarism, 648
 panic attack, 629
 Pap smear (Papanicolaou test), 294, 295*t*
 Papanicolaou, George N., 294
 Papanicolaou test (Pap smear), 294, 295*t*
 papule, 122, 122*t*
 para-, 338
 para-, 97, 598
 par/a, 338*t*
 paracentesis (abdominocentesis), 434
 paranasal sinuses, 135–136
 paraplegia, 622
 parasagittal, 74–75
 parasite, 49
 parasitic infections, 107*t*
 parathyroid glands, 642, 642*f*
 parathyroid hormone (PTH), 642, 664
 parathyroidectomy, 656
 parathyroid/o, 643
 parathyroidoma, 648
 -paresis, 599
 paresthesia, 619
 Parkinson, James, 609
 Parkinson dementia, 609*t*
 Parkinson disease (PD), 609, 630
 parkinsonism, 609
 par/o, 315
 paronychia, 101
 paroxysm, 174
 paroxysmal atrial fibrillation (PAF), 378
 partial mastectomy (lumpectomy), 286*t*
 part/o, 315
 parturition, 339
 PAS (placenta accreta spectrum), 321, 322*f*
 patella, 539
 patellar, 575
 patell/o, 544
 patellofemoral, 575
 patent, 175
 path/o, 21
 pathogenic, 45
 pathologist, 45
 pathology, 45
 -pathy, 21, 27, 233, 365, 421, 469, 599, 644
 PBSCT (peripheral blood stem cell transplant), 395, 406
 PCI (percutaneous coronary intervention), 406
 PCOS (polycystic ovary syndrome), 280, 303
 PCR (polymerase chain reaction), 40*t*
 PD (Parkinson disease), 609, 630
 PE (pulmonary embolism), 152, 152*f*, 178
 peak flow meter (PFM), 166, 178

- pediculosis, 106
 PEG (percutaneous endoscopic gastrostomy), 455
 pelv/i, 271, 316, 544
 pelvic, 299
 pelvic bones, 539
 pelvic cavity, 19
 pelvic inflammatory disease (PID), 280, 280f, 303
 pelvic ultrasound (pelvic sonography), 334, 334f
 pelvis, 539
 pelviscopic, 292
 pelviscopy (gynecologic laparoscopy), 292
 -penia, 365, 545
 penis, 232
 PEP (positive expiratory pressure), 180
 -pepsia, 421
 peptic ulcer, 431, 431f
 per-, 97
 percussion, 166
 percutaneous, 117
 percutaneous coronary intervention (PCI), 406
 percutaneous endoscopic gastrostomy (PEG), 455
 percutaneous transluminal coronary angioplasty (PTCA, balloon angioplasty), 380, 406
 percutaneous vertebroplasty (PV), 567f, 567t
 perfusionist, 395
 peri-, 271, 364
 pericardiocentesis, 370
 pericarditis, 370, 371f
 pericardium, 359–360
 perimetritis, 276
 perimetrium, 268
 perine/o, 271
 perineorrhaphy, 285
 perineotomy (episiotomy), 331, 331f
 perineum, 269
 periosteum, 534
 peripheral artery disease (PAD), 379, 405
 peripheral blood stem cell transplant (PBSCT), 395, 406
 peripheral nervous system (PNS), 594, 631
 peripheral neuropathy, 604
 peripheral vascular disease (PVD), 379
 peristalsis, 418
 peritoneal, 449
 peritoneal dialysis, 204, 218, 219f
 peritone/o, 420
 peritoneum, 419
 peritonitis, 427
 pertussis (whooping cough), 151
 PET (positron emission tomography), 80t, 631
 for nervous system, 615
 petechia, 123, 123f
 petr/o, 545
 -pexy, 193, 233, 271, 469
 PFM (peak flow meter), 166, 178
 PFTs (pulmonary function tests), 166, 178
 phac/o, 469
 phacoemulsification (PHACO), 483, 498
 phacomalacia, 474
 phag/o, 97, 420
 phagocytosis, 363
 phak/o, 469
 phalangeal, 575
 phalangectomy, 565
 phalang/o, 544
 phalanx, 539
 pharyngeal tonsils (adenoids), 135–136
 pharyngitis, 145
 pharyng/o, 138, 420
 pharynx (throat), 135–136, 417
 phas/o, 598
 pheochromocytoma, 651
 phimosis, 240
 phlebectomy, 371
 phlebitis, 370
 phleb/o, 364
 phlebotomist, 395
 phlebotomy, 390
 phlegm, 175
 phobia, 629
 -phobia, 469
 phon/o, 138
 phoropter, 488
 phot/o, 469
 photophobia, 492
 photorefractive keratectomy (PRK), 483, 484f, 498
 photoselective vaporization of the prostate gland (PVP), 247, 250t, 259
 pia mater, 596, 596f
 pica, 629
 Pick disease (frontotemporal dementia), 609t
 PID (pelvic inflammatory disease), 280, 280f, 303
 pilonidal cyst, 106, 106f
 pineal glands, 642f
 pinguecula, 478
 pink eye (conjunctivitis), 474
 pinna (auricle), 508
 pituitar/o, 643
 pituitary gland, 642f
 hormones of, 641, 641f, 641–642
 PKD (polycystic kidney disease), 222
 placenta accreta, 322f
 placenta accreta spectrum (PAS), 321, 322f
 placenta (afterbirth), 314
 placenta increta, 322f
 placenta percreta, 322f
 placenta previa, 321, 321f
 placental abruption, 320
 plantar fasciitis, 559
 -plasia, 21, 233, 644
 -plasm, 21, 139
 plasma, 361
 plasmapheresis, 390
 plas/m/o, 364
 -plasty, 97, 139, 193, 233, 271, 365, 421, 469, 510, 545, 599
 platelets (thrombocytes), 361
 -plegia, 469, 599
 pleura, 136–137
 pleural effusion, 151
 pleurisy, 145
 pleuritis, 145
 pleur/o, 138
 pleurodesis, 157
 plural endings, for medical terms, 51, 52t
 PM (polymyositis), 554, 584
 PMS (premenstrual syndrome), 280, 303
 -pnea, 76, 139
 pneum/o, 138
 pneumoconiosis, 145
 pneumonectomy, 157, 157f
 pneumonia, 145
 community-acquired, 178
 hospital-acquired, 178
 pneumonitis, 145
 pneumon/o, 138
 pneumothorax, 147
 PNS (peripheral nervous system), 594, 631
 podiatrist, 579
 poli/o, 598
 poliomyelitis (polio), 604, 630
 poly-, 138, 192, 316, 364, 545, 598, 643
 polyarteritis, 370
 polycystic kidney disease (PKD), 201, 222
 polycystic ovary syndrome (PCOS), 280, 303
 polydipsia, 660
 polyhydramnios (hydramnios), 320
 polymerase chain reaction (PCR), 40t
 polymyositis (PM), 554, 584
 polyneuritis, 604
 polyneuropathy, 604
 polyp(s), 431, 431f, 442f
 polypectomy, 435
 colonoscope for, 435f
 polyp/o, 420
 polyposis, 427
 polysomnography (PSG), 152f, 162, 179
 polyuria, 214
 pons, 596
 port-wine stain (nevus flammeus), 327
 position. *See also specific positions*
 anatomic, 61, 61f
 of body, 76–77
 prefixes for, 5
 positive expiratory pressure (PEP), 180
 positron emission tomography (PET), 80t, 631
 for nervous system, 615
 post-, 316, 598
 posterior, 66, 68t
 of muscles, 542f
 of skeleton, 538f
 posterior capsulotomy, 483
 posterior lobe (neurohypophysis), of
 pituitary gland, 641
 poster/o, 61
 posteroanterior (PA), 66, 85
 postherpetic neuralgia, 609
 postictal, 619
 postnatal, 344
 postoperative cholangiography, 441
 postpartum, 338
 post-traumatic stress disorder (PTSD), 629, 630
 PPD (purified protein derivative skin test), 167
 pre-, 316, 598
 preeclampsia, 321
 prefixes
 for blood, 364
 for body, 21
 for cardiovascular system, 364
 defined, 5
 for digestive system, 421
 for direction, 5, 62
 for endocrine system, 643
 for eye, 469
 for female reproductive system, 271
 for immune system, 364
 for integumentary system, 97
 for lymphatic system, 364
 for male reproductive system, 233
 for musculoskeletal system, 545
 for negation, 5
 for neonatology, 316
 for numbers, 5
 for obstetrics, 316
 for position, 5
 for time, 5
 pregnancy (gestation), 314–315. *See also*
 obstetrics
 medical terms for, 314–315
 skin in, 315
 preictal, 619
 premature infant, 344
 premenstrual syndrome (PMS), 280, 303

- prenatal, 344
 prepuce, 232
 presbycusis, 515
 presbyopia, 478
 pressure injury (bedsore, decubitus ulcer), 108, 108*f*
 preterm infant, 344
 priapism, 240
 prim/i, 316
 primigravida, 338
 primipara (primip), 338, 348
 PRK (photorefractive keratectomy), 483, 484*f*, 498
 PRL (prolactin), 641, 664
 pro-, 21
 procedures. *See also* diagnostic procedures and tests
 suffixes for, 5
 proctitis, 427
 proct/o, 420
 proctoscope, 442
 proctoscopy, 442
 prognosis (Px), 45, 53
 prolactin (PRL), 641, 664
 prolapse, 218
 pronation, 580, 580*f*
 prone position (ventral recumbent position), 76, 77*t*
 prostate cancer, 240, 240*t*
 prostate gland, 232
 prostatectomy, 243, 243*t*, 250*t*
 prostate-specific antigen (PSA), 240*t*, 253, 259
 prostatic urethral lift (PUL), 248, 249*f*, 250*t*, 259
 prostatitis, 236
 prostat/o, 233
 prostatocystitis, 236
 prostatocystotomy, 243
 prostaticolith, 236
 prostaticolithotomy, 243
 prostaticorrhea, 237
 prostatovesiculectomy, 244
 prostatovesiculitis, 237
 prosthesis, 579
 prothrombin time (PT), 395, 406
 proximal, 66
 proxim/o, 61
 pruritus, 123
 PSA (prostate-specific antigen), 240*t*, 253, 259
 pseud/o, 316, 469
 pseudocystitis, 320
 pseudodementia, 623*t*
 pseudophakia, 492
 PSG (polysomnography), 152*f*, 162, 179
 psoriasis, 108
 psychiatrist, 626
 psychiatry, 626
 psych/o, 598
 psychogenic, 626
 psychologist, 27, 626
 psychology, 626
 psychopathy, 626
 psychosis, 626
 psychosomatic, 626
 PT (prothrombin time), 395, 406
 PTCA (percutaneous transluminal coronary angioplasty), 380, 406
 pterygium, 478
 PTH (parathyroid hormone), 642, 664
 -ptosis, 193, 218, 469
 ptosis (blepharoptosis), 474
 PTSD (post-traumatic stress disorder), 629, 630
 -ptysis, 139
 puberty, 256
 pubic, 575
 pubic symphysis, 539
 pubis, 539
 pub/o, 544
 puerperal, 338
 puerperium, 339
 puerper/o, 315
 PUL (prostatic urethral lift), 248, 249*f*, 250*t*, 259
 pulmonary, 171
 pulmonary artery, 359–360
 pulmonary edema, 151
 pulmonary embolism (PE), 152, 152*f*, 178
 pulmonary function
 diagnostic procedures and tests for, 166
 word parts for, 162
 pulmonary function tests (PFTs), 166, 179
 pulmonary neoplasm, 147
 pulmonary valve, 359–360
 pulmon/o, 138
 pulmonologist, 170
 pulmonology, 170
 pulse oximetry, 166
 pulse (P), 381, 406
 pupil, 466
 pupillary, 492
 pupill/o, 469
 pupillometer, 487
 pupilloscope, 488
 purified protein derivative skin test (PPD), 167
 purpura, 123, 123*f*
 pustule, 122*t*, 123
 PV (percutaneous vertebroplasty), 567*f*, 567*t*
 PVD (peripheral vascular disease), 379
 PVP (photoselective vaporization of the prostate gland), 247, 250*t*, 259
 Px (prognosis), 45, 53
 pyelitis, 198
 pyel/o, 192
 pyelolithotomy, 204
 pyelonephritis, 198, 198*f*
 pyeloplasty, 204
 pyelos, 192
 pyloric sphincter, 418
 pyloric stenosis, 326
 pylor/o, 316, 420
 pyloroplasty, 435
 pylorus, 316, 418
 py/o, 138, 271, 509
 pyosalpinx, 276
 pyothorax, 147
 pyuria, 214
- Q**
 quad screen, 335
 quadrantectomy (segmental mastectomy), 286*t*
 quadr/i, 598
 quadriplegia, 619
 quickening, 339
- R**
 RA (rheumatoid arthritis), 402, 559, 579, 584
 of knee, 553*f*
 rachi/o, 544
 rachiectomy, 565
 rachischisis (spina bifida), 327, 327*f*, 554
 RAD (reactive airway disease), 150
 radial, 575
 radial keratotomy (RK), 484*f*
 radiation oncology, 37
 radiation therapy (XRT), 37, 53
 for prostate cancer, 240*t*
 radical hysterectomy, 285*t*
 radical mastectomy, 286*t*
 radical prostatectomy (RP), 240*t*, 243*t*, 259
 radical retropubic prostatectomy, 243*t*
 radiculitis, 604
 radicul/o, 598
 radiculopathy, 604
 radi/o, 61, 544
 radioactive iodine uptake (RAIU), 657, 664
 radiograph, 80–81
 radiography (x-ray)
 chest, 166, 179
 definition of, 81
 discovery of, 80
 for musculoskeletal system, 571*t*
 radiologist, 81
 radiology, 80–81
 radiotherapy, 37
 radius, 536
 RAIU (radioactive iodine uptake), 657, 664
 rales (crackles), 174
 RALRP (robotic-assisted laparoscopic radical prostatectomy), 249*f*
 RARP (robot-assisted radical prostatectomy), 259
 RASP (robot-assisted simple prostatectomy), 259
 Raynaud, Maurice, 379
 Raynaud phenomenon, 379
 RBCs (red blood cells, erythrocytes), 28, 53, 361, 406
 RDS (respiratory distress syndrome), 327, 348
 reactive airway disease (RAD), 150
 rectal, 449
 rectal polyp, 431*f*
 rect/o, 420
 rectocele, 427
 rectovaginal fistula, 281*t*
 rectum, 418
 recumbent position (decubitus position), 76, 77*t*
 red blood cells (RBCs, erythrocytes), 28, 53, 361, 406
 red marrow, 535
 reflux, 198, 452
 regional enteritis, 430
 regional ileitis, 430
 remission, 37
 renal calculus, 201
 renal failure, 201
 renal function replacement therapies, 204
 renal hypertension, 201
 renal pelvis, 189
 renal scan, nephrogram (renogram), 209
 renal transplant (kidney transplant), 204, 205*f*
 ren/o, 192
 renogram (renal scan, nephrogram), 209
 repetitive strain injury (RSI), 559, 584
 reproductive system, 18*t*. *See also* female reproductive system; male reproductive system
 respiration (breathing, ventilation), 135
 respiratory distress syndrome (RDS), 327, 348
 respiratory syncytial virus (RSV), 178
 respiratory system, 18*t*, 134–185
 abbreviations for, 178–180
 anatomy of, 135–137
 combining forms for, 138
 complementary terms from word parts for, 170–171
 complementary terms not from word parts for, 174–175

- respiratory system (*Continued*)
 disease and disorder terms not from word parts for, 150–152
 diseases and disorders of, 145–147
 function of, 135
 medical terms for, 145–185
 organs of, 135–137, 136f
 prefixes for, 138
 suffixes for, 139
 surgical terms from word parts for, 156–157
 word parts for, 138–144
 respiratory therapist (RT), 180
 retina, 466
 ophthalmoscopy of, 468f
 retinal, 492
 retinal detachment, 478, 479f
 retinal photocoagulation, 483
 retinitis pigmentosa, 479
 retin/o, 469
 retinoblastoma, 474
 retinopathy, 474
 retinoscopy, 488
 retinosis pigmentosa (RP), 497
 retrograde urogram, 209
 reverse Trendelenburg position, 77
 rhabd/o, 21, 545
 rhabdomyolysis, 554
 rhabdomyoma, 32
 rhabdomyosarcoma, 32
 rheumatic fever, 379
 rheumatic heart disease, 379
 rheumatoid arthritis (RA), 402, 559, 579, 584
 of knee, 553f
 rheumatoid spondylitis (ankylosing spondylitis), 558
 rheumatologist, 579
 rheumatology, 579
 orthopedics and, 579
 rhinitis, 147
 rhin/o, 138, 469
 rhinomycosis, 147
 rhinoplasty, 157
 rhinorrhagia (epistaxis), 147, 151
 rhinorrhea, 170
 rhiz/o, 598
 rhizomeningomyelitis, 604
 rhizotomy, 612
 rhonchi, 174
 rhytidectomy (facelift), 113
 rhytid/o, 97
 right atrium, 359–360
 right eye (OD), 498
 right lateral decubitus position, 77t
 right lateral recumbent position, 77t
 right lower lobe (RLL), 179
 right lower quadrant (RLQ), 85–86
 right middle lobe (RML), 179
 right semiprone position, 77t
 right upper lobe (RUL), 179
 right upper quadrant (RUQ), 85–86
 right ventricle, 359–360
 ringworm (tinea), 107t, 109
 rituximab (Rituxan), 37t
 RK (radial keratotomy), 484f
 RLL (right lower lobe), 179
 RLQ (right lower quadrant), 85–86
 RML (right middle lobe), 179
 robot-assisted radical prostatectomy (RARP), 259
 robot-assisted simple prostatectomy (RASP), 259
 robotic surgery, 248, 249f
 robotic-assisted laparoscopic radical prostatectomy (RALRP), 249f
 rosacea, 108
 rotation, 580, 580f
 rotator cuff disease, 559
 RP (radical prostatectomy), 240t, 243t, 259
 RP (retinosis pigmentosa), 497
 -rraphy, 271
 -rrhage, 139, 365, 599
 -rrhagia, 139, 271, 365
 -rrhaphy, 365, 421, 545, 599
 -rrhea, 97, 139, 233, 271, 316, 421, 510
 -rrhexis, 316
 RSI (repetitive strain injury), 559, 584
 RSV (respiratory syncytial virus), 178
 RT (respiratory therapist), 180
 RUL (right upper lobe), 179
 ruptured disk (herniated disk), 559
 RUQ (right upper quadrant), 85–86
- S**
- sacral, 575
 sacr/o, 544
 sacrum, 536
 sagittal, 74–75
 SAH (subarachnoid hemorrhage), 610, 630
 salivary glands, 419
 salpingectomy, 285
 salpingitis, 276
 salping/o, 271
 salpingocele, 276
 salpingo-oophorectomy, 285
 salpingostomy, 285
 -salpinx, 271, 271f
 sarc/o, 20, 545
 sarcoidosis, 402
 sarcoma, 32
 -sarcoma, 21, 545
 sarcopenia, 554
 scabies, 107t, 108
 scan, 81
 scapula, 536
 scapular, 575
 scapul/o, 544
 -schisis, 545
 schizophrenia, 629
 sciatica, 609
 sclera, 466
 scleral buckling, 483
 scleritis, 474
 scler/o, 97, 469
 scleroderma, 101
 scleromalacia, 474
 -sclerosis, 365, 510
 sclerotomy, 483
 scoli/o, 545
 scoliosis, 554, 555f
 -scope, 139, 162t, 193, 271, 421, 469, 510
 -scopic, 139, 162t, 271
 -scopy, 139, 162t, 193, 271, 365, 421, 469, 510, 545
 scrotum, 231–232
 sebaceous glands, 96
 seb/o, 96
 seborrhea, 101
 seborrheic, 101
 sed rate, 402
 segmental mastectomy (quadrantectomy), 286t
 segmental resection, 157f
 seizure, 622
 semen, 232
 semen analysis, 253
 semicircular canals and vestibule, 509
 semilunar valves, 359–360
 seminal vesicles, 232
 seminiferous tubules, 231
 semiprone position, 77t
 semisitting position, 76
 sentinel lymph node biopsy, 292, 293f
 sepsis, 394
 septal, 171
 sept/o, 138
 septoplasty, 157
 septum, 138
 atrial, 359
 deviated, 151
 nasal, 135–136
 ventricular, 359
 serology tests, 40t
 serum, 361
 -ses, 52t
 sestamibi parathyroid scan, 657
 sestamibi test, 381
 sexually transmitted disease (STD), 255, 258
 sexually transmitted infection (STI), 255, 258
 SG (specific gravity), 210, 222
 SHG (sonohysterography, hysterosonography), 292, 303
 shingles (herpes zoster), 107t, 609
 postherpetic neuralgia and, 609
 shock wave lithotripsy (SWL), 204
 shortness of breath (SOB), 179
 shoulder arthroplasty, 566f, 566t
 shunt, 622
 SIADH (syndrome of inappropriate ADH), 664
 sial/o, 420
 sialolith, 427
 sickle cell disease, 394
 side-lying position, 76
 sigmoid/o, 420
 sigmoidoscopy, 442, 442f
 sign, 45
 sildenafil (Viagra), 239
 silent STD, 255
 simple mastectomy, 286t
 simple prostatectomy, 243t, 250t
 single-photon emission computed tomography (SPECT), 80t, 381, 406
 for musculoskeletal system, 571t
 sinus node, 380
 sinusitis, 147
 sinus/o, 138
 sinusotomy, 157
 -sis, 21, 52t
 sitting position, 77
 situ, 36
 skeletal bones, 535–539, 537f–538f
 skeletal muscle, 540, 543f
 skeletal system, 534. *See also* musculoskeletal system
 skin, 95
 function of, 95
 infections of, 107t
 in pregnancy, 315
 structure of, 95f
 vitamin D and, 95
 skin graft, 114, 126
 skin-sparing mastectomy, 286t
 SLE (systemic lupus erythematosus), 108, 126, 402
 slipped disk (herniated disk), 559
 slit lamp, 488
 small cell cancer, of lung, 146f
 small intestine, 418
 small-volume nebulizer (SVN), 180
 smooth muscle, 540, 543f
 SOB (shortness of breath), 179
 soft palate, 417
 somatic, 28
 somat/o, 21

- somatoform disorders, 629
 somatogenic, 28
 somn/o, 138
 son/o, 61, 192, 316
 sonogram, 81
 sonography (ultrasound), 80*t*, 81
 abdominal, 445, 445*f*, 445*t*
 Doppler, 381
 MRI ultrasound fusion biopsy, 253
 MRI-TRUS, 253
 nephrosonography, 209
 of thyroid, 657
 pelvic, 334, 334*f*
 TRUS, 240*t*, 253, 259
 TVS, 292, 293*f*, 303
 sonohysterography (SHG,
 hysterosonography), 292, 303
 sound perception, by ear, 508*f*
 -spasm, 139
 spasticity, 622
 specific gravity (SG), 210, 222
 specific immunity, 363
 SPECT (single-photon emission computed
 tomography), 80*t*, 381, 406
 speculum, 300
 sperm count, 253
 sperm (spermatozoa), 231
 origination and transportation of, 232*f*
 sperm test, 253
 spermatid, 232
 spermat/o, 233
 spermatocele, 240
 spermatozoa (sperm), 231
 origination and transportation of, 232*f*
 spermicide, 256
 sperm/o, 233
 sphygmomanometer, 381
 spina bifida (rachischisis), 327, 327*f*, 554
 spinal cavity, 19
 spinal cord, 595*f*, 596
 spinal fusion (spondylosyndesis), 565
 spinal stenosis, 559
 spinal tap (lumbar puncture), 615, 631
 spir/o, 138
 spirometer, 162
 spirometry, 162
 spit (sputum), 175
 spleen, 362
 splenectomy, 398
 splen/o, 364
 splenomegaly, 398
 splenorrhaphy, 398
 split-thickness skin graft (STSG), 126
 spondylarthritis (spondyloarthritis), 554
 spondyl/o, 544
 spondyloarthritis (spondylarthritis), 554
 spondylolisthesis, 560
 spondylosis, 554
 spondylosyndesis (spinal fusion), 565
 spongy bone (cancellous), 534
 sprain, 560
 spur (exostosis), 559
 sputum (spit), 175
 squamous cell carcinoma (SCC), 105*f*, 108,
 126, 146*f*
 of lung, 146*f*
 staining, 40*t*
 stapedectomy, 518, 518*f*
 staped/o, 509
 stapes (stirrup), 508, 513
 staph (staphylococcus), 117, 126
 staphyl/o, 97
 staphylococcus (staph), 117, 126
 -stasis, 21, 365
 STD (sexually transmitted disease), 255, 258
 steat/o, 420
 steatohepatitis, 427
 steatorrhea, 449
 steatosis, 449
 stem cells, 361
 stenosis
 mitral, 378
 pyloric, 326
 spinal, 559
 -stenosis, 139, 193, 365
 stent, 380
 stereotactic breast biopsy, 292, 293*f*
 sterilization, 248
 sternal, 575
 stern/o, 544
 sternum, 536
 stethoscope, 162*t*, 167
 STI (sexually transmitted infection), 255,
 258
 stillborn, 344
 stirrup (stapes), 508
 stoma, 434–435, 452
 stomach, 418
 stomatitis, 427
 stomat/o, 420
 -stomy, 139, 193, 233, 421, 469, 510
 strabismus (cross-eyed), 479
 strain, 560
 strep (streptococcus), 117, 126
 strept/o, 97
 streptococcus (strep), 117, 126
 striae gravidarum, 315
 striated muscles, 540
 stricture, 218
 stridor, 174
 stroke
 hemorrhagic, 609–610
 ischemic, 609
 Strümpell, Adolf von, 558
 Strümpell-Marie disease (ankylosing
 spondylitis), 558
 STSG (split-thickness skin graft), 126
 sty (hordeolum), 479
 sub-, 97, 545, 598
 subacute, 150
 subacute infection, 49
 subarachnoid hemorrhage (SAH), 610, 630
 subarachnoid space, 596
 subcutaneous layer, 96
 subcutaneous mastectomy (nipple-sparing
 mastectomy), 286*t*
 subcutaneous (subcut), 117, 126
 subdural hematoma, 604
 sublingual, 449
 subluxation, 560
 submandibular, 576
 submaxillary, 576
 substernal, 576
 subtotal hysterectomy (supracervical
 hysterectomy), 285*t*
 subungual, 117
 sudoriferous glands (sweat glands), 96
 suffixes
 for body, 21
 for conditions, 5
 defined, 5
 for digestive system, 421
 for direction, 62
 for diseases, 5
 for ear, 510
 for endocrine system, 644
 for eye, 469
 for female reproductive system, 271
 for integumentary system, 97
 for male reproductive system, 233
 for musculoskeletal system, 545
 for neonatology, 316
 for nervous system, 599
 for obstetrics, 316
 for procedures, 5
 for respiratory system, 139
 for urinary system, 192–193
 superior (sup), 66, 68*t*, 85
 superior vena cava, 359–360
 super/o, 61
 supination, 580, 580*f*
 supine position (dorsal recumbent position),
 77, 77*t*
 supra-, 545
 supracervical hysterectomy (subtotal
 hysterectomy), 285*t*
 supraclavicular, 576
 suprapatellar, 576
 surgical breast biopsy, 292
 surgical terms from word parts
 for cardiovascular system, 370–371
 for digestive system, 434–435
 for ear, 518
 for endocrine system, 656
 for eye, 483
 for female reproductive system, 284–285
 for integumentary system, 113–116
 for lymphatic system, 398
 for male reproductive system, 243
 for musculoskeletal system, 565
 for nervous system, 612
 for obstetrics, 331
 for respiratory system, 156–157
 for urinary system, 203–204
 surgical terms not from words parts
 for cardiovascular system, 380
 for digestive system, 439
 for eye, 483
 for female reproductive system, 288–289
 for integumentary system, 113–114
 for male reproductive system, 247–248
 for urinary system, 204
 suturing, 114, 114*f*
 SVN (small-volume nebulizer), 180
 swayback (lordosis), 554
 sweat glands (sudoriferous glands), 96
 SWL (shock wave lithotripsy), 204
 symptom, 45
 syn-, 545, 643
 syncope, 622
 syndrome, 660. *See also* specific syndromes
 syndrome of inappropriate ADH (SIADH),
 664
 syndrome X (metabolic syndrome), 651
 synovectomy, 565
 synovia, 539
 synovi/o, 544
 synoviosarcoma, 554
 syphilis, 256, 256*f*
 dementia and, 609*t*
 system(s). *See also specific systems*
 defined, 18
 of body, 18, 18*t*
 systemic, 28
 systemic infection, 49
 systemic lupus erythematosus (SLE), 108,
 126, 402
 system/o, 20
 systole, 381
 systolic pressure, 381

T

- T4 (thyroxine), 642, 664
 blood test for, 657
 T3 (triiodothyronine), 642
 tachy-, 138, 364

- tachycardia, 370
 tachypnea, 170
 TAH/BSO (total abdominal hysterectomy/bilateral salpingo-oophorectomy), 303
 tarsal, 576
 tarsal bones, 539
 tarsal glands, 466
 tarsal tunnel syndrome, 560
 tarsectomy, 565
 tars/o, 544
 TB (tuberculosis), 152, 178
 dementia and, 609*t*
 TBI (traumatic brain injury), 622, 630
 TD (transdermal), 117, 126
 T1DM (type 1 diabetes mellitus), 664
 T2DM (type 2 diabetes mellitus), 664
 TEE (transesophageal echocardiogram), 381, 406
 tendinitis (tendonitis), 554, 559
 tendin/o, 544
 tendon, 540
 tendonitis (tendonitis), 554, 559
 ten/o, 544
 tenomyoplasty, 565
 tenorrhaphy, 565
 tenosynovitis, 554, 559
 tension headache, 619
 terat/o, 316
 teratogen, 344
 teratogenic, 344
 teratology, 344
 testalgia, 255
 testicular cancer, 240
 testicular torsion, 241
 testis, 231
 testosterone, 231
 tetany, 660
 TGs (triglycerides), 382*t*
 THA (total hip arthroplasty), 566*f*, 566*t*, 584
 thalassemia, 394
 thalidomide, for multiple myeloma, 37*t*
 therapy
 biological, 37, 37*t*
 brachytherapy, 37*t*
 for cancer, 37*t*
 gene, 18
 hormone, for prostate cancer, 240*t*
 hormone replacement, 299, 303
 neoadjuvant, 37*t*
 radiation, 37, 53
 for prostate cancer, 240*t*
 thrombolytic, 380
 thoracentesis (thoracocentesis), 157
 thoracic, 171
 thoracic cavity, 19, 136–137
 thoracic vertebrae (T1–T12), 536, 584
 thorac/o, 138
 thoracocentesis (thoracocentesis), 157
 thoracoscope, 157*f*, 162
 thoracoscopy, 162
 thoracotomy, 157, 157*f*
 thorax, 136–137
 -thorax, 139
 throat (pharynx), 135–136, 417
 thromb/o, 364, 598
 thrombocytes (platelets), 361
 thrombocytopenia, 390
 thrombolysis, 390
 thrombolytic therapy, 380
 thrombophlebitis, 370
 thrombosis, 390
 cerebral, 603
 deep vein, 377, 394, 405
 thrombus, 390
 thrush (candidiasis), 105
 thulium laser enucleation of the prostate gland (ThuLEP), 250*t*
 hysterectomy, 398
 thym/o, 364
 thymoma, 398
 thymus gland, 362
 thyroid gland, 642, 642*f*
 thyroid sonography, 657
 thyroidectomy, 656
 thyroiditis, 648
 thyroid/o, 643
 thyroid-stimulating hormone (TSH), 641, 664
 blood test for, 657
 thyrotoxicosis, 651
 thyroxine (T4), 642, 664
 blood test for, 657
 TIA (transient ischemic attack), 610, 630
 tibia, 539
 tibial, 576
 tibi/o, 544
 time, prefixes for, 5
 tinea pedis (athlete's foot), 107*t*
 tinea (ringworm), 107*t*, 109
 tinnitus, 515
 tissue, 17
 TKA (total knee arthroplasty), 566*f*, 566*t*, 584
 TLH (total laparoscopic hysterectomy), 303
 TNM staging system of cancer, 33
 -tocia, 316
 tom/o, 61
 tomography, 81
 -tomy, 139, 193, 233, 271, 316, 421, 469, 510, 545, 599
 tongue, 417
 ton/o, 469
 tonometer, 488
 tonometry, 488
 tonsil(s), 135–136
 tonsillectomy, 157
 tonsillitis, 147
 tonsill/o, 138
 total abdominal hysterectomy/bilateral salpingo-oophorectomy (TAH/BSO), 303
 total cholesterol, 382*t*
 total hip arthroplasty (THA), 566*f*, 566*t*, 584
 total hysterectomy, 285*t*
 total knee arthroplasty (TKA), 566*f*, 566*t*, 584
 total laparoscopic hysterectomy (TLH), 303
 total mastectomy, 286*t*
 total testosterone, 253
 toxic shock syndrome (TSS), 280, 303
 trabelectomy, 483
 trachea (windpipe), 135–136
 tracheitis, 147
 trachelectomy (cervicectomy), 285
 trachel/o, 271
 trache/o, 138, 316
 tracheoesophageal fistula, 326
 tracheoplasty, 157
 tracheostenosis, 147
 tracheostomy, 157, 158*f*
 tracheotomy, 157, 158*f*
 trans-, 97, 192
 transdermal (TD), 117, 126
 transesophageal echocardiogram (TEE), 381, 406
 transient ischemic attack (TIA), 610, 630
 transplantation
 of bone marrow, 395
 of kidneys, 204, 205*f*
 transrectal ultrasound (TRUS), 240*t*, 253, 259
 transurethral, 215
 transurethral incision of the prostate gland (TUIP), 248, 249*t*, 259
 transurethral resection of the prostate gland (TURP), 248, 249*f*, 249*t*, 259
 transvaginal sonography (TVS), 292, 293*f*, 303
 traumatic brain injury (TBI), 622, 630
 Trendelenburg position, 77
 trich/o, 96
 trichomoniasis, 256
 tricuspid valve, 359–360
 triglycerides (TGs), 382*t*
 triiodothyronine (T3), 642
 -tripsy, 193
 trisomy 21 (Down syndrome), 326, 327*f*
 -troph, 545
 troponin, 382
 TRUS (transrectal ultrasound), 240*t*, 253, 259
 TSH (thyroid-stimulating hormone), 664
 blood test for, 657
 TSS (toxic shock syndrome), 280, 303
 T1–T12 (thoracic vertebrae), 536, 584
 T-tube cholangiography, 441
 tubal ligation (tubal sterilization, female surgical sterilization), 289, 289*f*
 tuberculosis (TB), 152, 178
 dementia and, 609*t*
 TUIP (transurethral incision of the prostate gland), 248, 249*t*, 259
 tumors
 benign, 31, 37*f*
 dementia and, 609*t*
 malignant, 31, 37*f*
 breast, 286*t*
 connective tissue, 32
 Wilms, 197
 TURP (transurethral resection of the prostate gland), 248, 249*f*, 249*t*, 259
 TVS (transvaginal sonography), 292, 293*f*, 303
 tympanic membrane (eardrum), 507–508
 tympan/o, 509
 tympanometer, 521
 tympanometry, 521
 tympanoplasty, 518
 tympanostomy, 518
 type 1 diabetes mellitus (T1DM), 664
 type 2 diabetes mellitus (T2DM), 664
U
 UA (urinalysis), 210, 222
 UAE (uterine artery embolization), 289, 303
 UC (ulcerative colitis), 431, 455
 UGI (upper gastrointestinal), 455
 ulcer, 123
 ulcerative colitis (UC), 431, 455
 ulna, 536
 ulnar, 576
 uln/o, 544
 ultrasound (ultrasonography, sonography), 85
 abdominal, 445, 445*f*, 445*t*
 Doppler, 381
 MRI ultrasound fusion biopsy, 253
 MRI–TRUS, 253
 nephrosonography, 209
 of thyroid, 657
 pelvic, 334, 334*f*
 TRUS, 240*t*, 253, 259
 TVS, 292, 293*f*, 303
 -um, 52*t*, 316

- umbilical hernia, 421*f*
 umbilical region, 71
 umbilicus, 71, 315
 umbo, 71
 unconsciousness, 622
 undescended testicle, 236
 ungual, 117
 ungu/o, 96
 uni-, 62
 unilateral, 66
 unstriated muscles, 540
 upper gastrointestinal (UGI), 455
 upper GI series, 446
 upper respiratory infection (URI, cold), 152, 153*f*, 178
 UPPP (uvulopalatopharyngoplasty), 152*f*, 435, 455
 uremia (azotemia), 198
 uremic syndrome, 198
 ureter(s), 189
 ureterectomy, 204
 ureteritis, 198
 ureter/o, 192
 ureterocele, 198
 ureterolithiasis, 198
 ureteroscopy, 209
 ureterostenosis, 198
 ureterostomy, 204
 urethra, 189
 urethritis, 198
 urethr/o, 192
 urethrocystitis, 198
 urethroplasty, 204
 URI (upper respiratory infection), 152, 153*f*, 178
 -uria, 193
 urinal, 219
 urinalysis (UA), 210, 222
 urinary, 215
 urinary bladder, 189, 191*f*
 fulguration for, 204, 205*f*
 urinary catheterization, 218
 urinary incontinence, 218
 urinary meatus, 189
 urinary retention, 201
 urinary system, 18*t*, 188–226, 190*f*
 abbreviations for, 222
 anatomy of, 189–191
 combining forms for, 192
 complementary terms from word parts for, 214–215
 complementary terms not from word parts for, 218–219
 diagnostic imaging for, 210
 diagnostic terms from word parts for, 209
 diagnostic terms not from word parts for, 210
 disease and disorder terms from word parts for, 197–198
 disease and disorder terms not from word parts for, 201
 female, 191*f*
 function of, 189
 laboratory tests for, 210
 male, 191*f*
 medical terms for, 197–222
 organs and structures of, 189
 prefixes for, 192
 suffixes for, 192–193
 surgical terms from word parts for, 203–204
 surgical terms not from words parts for, 204
 word parts for, 192–196
 urinary tract infection (UTI), 197*f*, 201, 222
 urine, 191*f*
 urine culture and sensitivity, 210
 urine studies, 40*t*
 urin/o, 192
 ur/o, 192
 urodynamics, 210
 urogram, 209
 urologist, 215
 urology, 215
 urostomy, 204
 urticaria (hives), 109
 -us, 52*t*, 316, 365, 599
 uterine artery embolization (UAE, uterine fibroid embolization), 289, 303
 uterine fibroid, 280
 uterine fibroid embolization (uterine artery embolization), 289, 303
 uterine tubes (fallopian tubes), 268
 uterovaginal prolapse, 280
 uterus, 268
 UTI (urinary tract infection), 197*f*, 201, 222
 uvea, 466
 uveitis, 474
 uveoscleritis, 474
 uvula, 417
 uvulectomy, 435
 uvulitis, 427
 uvul/o, 420
 uvulopalatopharyngoplasty (UPPP), 152*f*, 435, 455
- V**
 VA (visual acuity), 492, 497
 vaccine, 279, 403
 vagina, 268
 vaginal, 299
 vaginal birth after cesarean section (VBAC), 348
 vaginal fistula, 280, 281*t*
 vaginal hysterectomy (VH), 303
 vaginitis, 276
 vagin/o, 271
 vaginosis (bacterial vaginosis), 276
 vagotomy, 439
 valley fever, 150
 valvulitis, 370
 valvul/o, 364
 valvuloplasty, 371
 VAP (ventilator-associated pneumonia), 180
 varicocele, 241
 varicose veins, 379, 379*f*
 vas deferens (ductus deferens), 232
 vascular dementia, 609*t*
 vasectomy, 244
 vas/o, 233
 vasoconstrictor, 383
 vasodilator, 383
 vasovasostomy, 244
 VATS (video-assisted thoracic surgery), 157*f*
 VBAC (vaginal birth after cesarean section), 348
 VBG (venous blood gas), 179
 VCUG (voiding cystourethrography), 209, 210*f*, 222
 veins, 359–360
 deep vein thrombosis, 377, 394, 405
 varicose, 379, 379*f*
 venae cavae, 359–360
 venipuncture, 395
 ven/o, 364
 venogram, 371
 venous blood gas (VBG), 179
 ventilation (respiration), 135
 ventilator, 175, 175*f*
 ventilator-associated pneumonia (VAP), 180
 ventral, 66, 68*t*
 ventral recumbent position (prone position), 76, 77*t*
 ventricles, 595
 ventricular fibrillation (VF, VFib), 378, 405
 ventricular septum, 359
 ventricul/o, 364
 ventr/o, 61
 venules, 359–360
 vermiform appendix, 419
 verruca (wart), 123
 vertebral, 576
 vertebral column, 535*f*, 536
 vertebr/o, 544
 vertebroplasty, 565
 vertigo, 515
 very-low-density lipoprotein (VLDL), 382*t*
 vesicle (blister), 122*t*, 123
 vesic/o, 192
 vesicoureteral reflux (VUR), 198, 222
 vesicourethral suspension, 204
 vesicovaginal, 299
 vesicovaginal fistula, 281*t*
 vesiculectomy, 244
 vesicul/o, 233
 vestibular, 523
 vestibular nerve, 509
 vestibul/o, 509
 vestibulocochlear, 523
 vestibulocochlear nerves, 509
 VF (ventricular fibrillation), 378, 405
 VFib (ventricular fibrillation), 405
 VH (vaginal hysterectomy), 303
 Viagra (sildenafil), 239
 video-assisted thoracic surgery (VATS), 157*f*
 villi, 418
 viral infections, 107*t*
 Virchow, Rudolph, 597
 vir/o, 21
 virology, 41
 virtual colonoscopy, 441
 virus, 49
 viscera, 18
 visceral, 28
 viscer/o, 20
 visual acuity (VA), 492, 497
 vitamin D, 95
 vitiligo, 109
 vitrectomy, 483
 vitreous humor, 466
 VLDL (very-low-density lipoprotein), 382*t*
 voice box (larynx), 135–136
 void, 219
 voiding cystourethrography (VCUG), 209, 210*f*, 222
 volvulus, 431
 vowels, combining, 4, 6–7, 7*t*
 V/Q scan (lung ventilation/perfusion scan), 166, 179
 vulva, 269
 vulvectomy, 285
 vulv/o, 271
 vulvovaginal, 299
 vulvovaginitis, 276
 VUR (vesicoureteral reflux), 198, 222
- W**
 wart (verruca), 123
 water vapor thermal therapy (WVTT), 248, 250*f*, 250*t*, 259
 WBC (white blood cells, leukocytes), 53, 361, 361*f*, 406
 wedge resection, 157*f*
 Wernicke-Korsakoff syndrome, 609*t*
 wet macular degeneration, 479*f*
 wheal, 122*t*, 123

- wheeze, 174
white blood cells (WBC, leukocytes), 53,
361, 361*f*, 406
white matter, 595
white of the eye, 466
whooping cough (pertussis), 151
Wilms tumor (nephroblastoma), 197
windpipe (trachea), 135–136
wire localization biopsy, 292
word parts, 8*t*
for behavioral health, 626
for blood, 390
for body, 20–27
for cardiovascular system, 369–371,
376–383
for diagnostic imaging, 161–162
for digestive system, 420–426
for ear, 509–510
for endocrine system, 643–644
for eye, 468–473
for female reproductive system, 270–275
for immune system, 402–403
for integumentary system, 96–101
- word parts (*Continued*)
for laboratory tests, 41
list of, 10*t*
for lymphatic system, 398–399
for male reproductive system, 233–235
medical terms from, learning techniques
for, 12*t*
for musculoskeletal system, 544–552
for neonatology, 315–320, 344
for obstetrics, 315–320
for pulmonary function, 162
for respiratory system, 138–144
for urinary system, 192–196
Word root, 5
wrong-sided surgery, 72
WVTT (water vapor thermal therapy), 248,
250*f*, 250*t*, 259
- X**
xanth/o, 21, 97
xanthoderma, 116
xanthoma, 101
- xanthosis, 45
xer/o, 97, 469
xeroderma, 101
xerophthalmia, 474
xerosis, 116
xiphoid process, 536
x-ray (radiography)
x-ray (radiography)
CXR, 166, 179
definition of, 81
discovery of, 80
for musculoskeletal system, 571*t*
XRT (radiation therapy), 37, 53
for prostate cancer, 240*t*
- Y**
-y, 52*t*, 421
YAG laser capsulotomy, 483
yellow marrow, 535
- Z**
zygote, 314