

DAVI-ELLEN CHABNER

The Language of Medicine



10th
EDITION

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DAVI-ELLEN CHABNER, BA, MAT

The Language of Medicine

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**For Gus, Ben, Bebe, Louisa, Solomon, and Amari...
and of course, Owen & Greta.**

Here are the kids and canines whose affection and love relax and inspire me every day.

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SAUNDERS

3251 Riverport Lane
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PREFACE

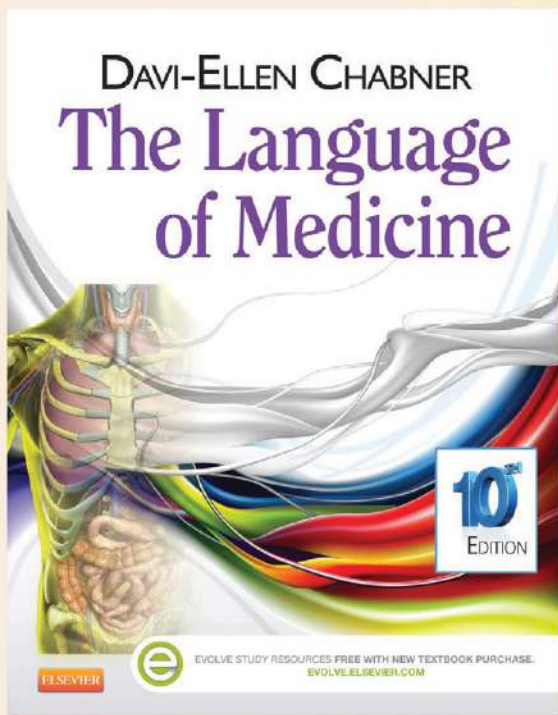
WELCOME TO THE 10TH EDITION OF THE LANGUAGE OF MEDICINE

The enhanced focus of this new edition is its relevance to real-life medical situations. Drawing on current technology, state-of-the-art medical practice, and the latest procedures and treatments, *The Language of Medicine* brings medical terminology to life. The dynamic images and compelling patient stories further illustrate medical terminology in action.

I am honored that this text continues to be the book instructors return to, year after year, because their students tell them that it works! As a student, you will find that *The Language of Medicine* speaks to you no matter what your background or level of education. It is written in simple, non-technical language that creates an exceptionally accessible pathway to learning. Since it is a workbook-text combination, you engage and interact on practically every page through writing and reviewing terms, labeling diagrams, and answering questions. Terminology is explained so that you understand medical terms in their proper context, which is the structure and function of the human body in health and disease.

Throughout the process of writing this text over its 10 editions, I have listened to hundreds of students and instructors and incorporated their insightful suggestions.

Expert medical reviewers have once again helped me to ensure that the terminology included reflects cutting edge clinical practice. New information and illustrations throughout are the result of recommendations from all those who have so generously provided feedback. My continuing goal in writing *The Language of Medicine* is to help you not only learn medical terminology but also to enjoy learning! You will find that medical terminology comes alive and stays with you when you use my interactive, logical, and easy-to-follow method. Undeniably, the study of this language requires commitment and hard work, but the benefits are great. Knowledge of medical terminology will give you a strong start in your career.



NEW TO THE 10TH EDITION

While the essential elements of *The Language of Medicine* remain in place, the new 10th edition is even more relevant to real-life medical situations.

The 10th edition includes 20 new, first-hand stories of medical conditions and procedures. These personal accounts make medical terminology more understandable.



IN PERSON

This first-person narrative was written by a woman living with Crohn disease ("Crohn's").



the flu yesterday, I was jealous. To
ving something acute always seems
s, take over-the-counter meds, sleep
y. I have Crohn disease, a chronic
is characterized by flare-ups and remission. During flare-ups, I've
and intestinal obstruction. Even in remission I am never "okay."
years after a third surgery to remove yet another portion of my
rather rare symptom of Crohn's, necessitated the surgery. I was
turned into bimonthly blood transfusions, as my hemoglobin
ay to live. After the surgery, the bleeding stopped, but I had bouts
was no way to live either, and unfortunately, as wonderful as my
address after-effects of small bowel surgery. After visiting several
of these symptoms under control with codeine, Lomotil, and
vitamin B₁₂, so I must inject it monthly for the rest of my life. In
aving less and less small bowel, I take medicine in the hopes of

ic medicine, Humira, but I must
e effects, the scariest of which is
ed to think of valuing my present
e.

ctor hadn't told my parents that
e caused by "nerves?" By the time
in pain after every meal. My dad
hat showed I had Crohn's and that
too late for even prednisone (then
to open up the inflamed passage,
ose times—as well as all the other
remember what it felt like. In my
tender gut.

ny mark on the world, but I spent
othing strains of "Make Believe
panied the pain. I lay with my
with two young children, I would
ot take part.

on of those around me: husband,
things get unbearable. It's not the
approximate those times of being
a night's sleep to get "better." You
that you will likely end up in the

in is a writer, editor, and food columnist.



IN PERSON

This first-person narrative was written by a kidney donor.

When my 64 year-old father-in-law announced to my wife and me that his kidney function was failing, it didn't really enter our minds that one of us might ultimately have a part to play in his survival. Five years later, dialysis was taking its toll on his organ systems, and there had been no success in obtaining a cadaveric kidney. Things had reached the point where he needed a kidney in short order, before his health deteriorated to the point where he would no longer be a candidate for transplantation.

My wife's blood type ruled out the possibility of her being a direct donor, so I volunteered. We were a match on 5 of the 7 kidney function—was able to be do provide a full liter of urine i

The results of those tests center at the University of A recipient—the entire proces RN) was assigned specificall to me, the donor. Similarly,

My visit involved some m enough for major surgery. M being a donor—the inherer recovery time, and the possil The discussions that afterne positively impact someone e

The events around the : Wednesday evening, with th night—I watched my favori in the morning. As you migh for all of us. We shed a lot beginning for my father-in-l so I was taken back first. A r is of one last hug for my wif

When I woke up in recove through which the surgeon which the kidney was remo the kidney had immediatel return home the next Frida

All told, I was out of work following a major surgery, i weekly blood tests to chart t at the 6 week mark. I was re capacity. Blood tests contin center's care six months aft



IN PERSON

This first-person narrative describes the symptoms and treatment of a 42-year-old woman with gallbladder stones.

Everyone enjoys a little dessert after dinner, but when the ice cream or a creamy tart leads to pain, most would avoid it. I loved sweets, and despite the revenge they took on my waistline, I still would not pass up an ice cream cone—until my gallbladder decided it had had enough. After several late nights spent doubled over in pain, I tried to steer clear of fatty foods but could not resist the temptation of frozen yogurt.

With one hand I pushed my cart through the supermarket; with the other hand I fed myself some delicious low-fat (not non-fat) frozen yogurt. I never dreamed that the attendant at the quick service window actually gave me soft-serve ice cream. Within 10 minutes of eating the questionable yogurt, I broke out into a sweat; a wave of nausea took me, over and a knifelike pain stabbed me in my right upper quadrant. It hurt even more when I pressed my hand on the area in an attempt to brace the pain.

Several months earlier, after a similar painful episode, I had undergone an ultrasound of my gallbladder, and the surgeon then recommended cholecystectomy. The U/S showed multiple stones in my gallbladder. Most of the stones were just the right size to lodge in the common bile duct and cause blockage of the outflow of bile that occurs after a fatty meal. When I heard the ultrasound results, I swore off all fatty foods.

I just did not imagine that ice cream masquerading as "low-fat yogurt" would be the straw that broke the camel's back! Soon enough, I abandoned my shopping cart and apologized to the manager of the store for vomiting all over aisle 4. The unrelenting pain did not cease when I vomited—it only intensified. I have no idea how I made it home and into bed, but my husband found me several hours later in a deep sweat. I managed to call my surgeon and arrange for "semiemergent" surgery the next morning.

Dr. Fernandez and his team performed a laparoscopic cholecystectomy and relayed to me as I came out of anesthesia that I no longer had a "bag of marbles" for a gallbladder. I had a gassy, distended feeling in my abdomen over the two weeks after surgery (carbon dioxide gas is injected into the abdomen before surgery to allow space between abdominal organs). I felt "tight as a drum" for the first few days and the day by day it went away. My four tiny incisions healed just fine, and in about 2 weeks I was feeling back to "normal". Now I can eat ice cream to my heart's content, only suffering the padding on my waistline, not the stabbing pain just above. Without missing a beat, my liver now delivers the bile into my small intestine right after I eat a fatty meal. The bile emulsifies (breaks down) the fat. I just don't have a storage bag to hold bile in reserve.

I've had an appendectomy, my wisdom teeth removed, and now I gave up my gallbladder! How many more "useless" body parts are there to go?

Elizabeth Chabner Thompson is the CEO/Founder of BFFL Co a company devoted to improving the patient experience. She is also a physician, ultra-marathoner, wife, and the proud mother of four children ages 9-15.



Molecularly Targeted Drugs

Examples are:

Gleevec (imatinib mesylate)—blocks bcr-abl tyrosine kinase in chronic myelogenous leukemia cells.

Tarceva (erlotinib)—blocks epidermal growth factor (EGFR) in lung cancer cells.

Zelboraf (vem

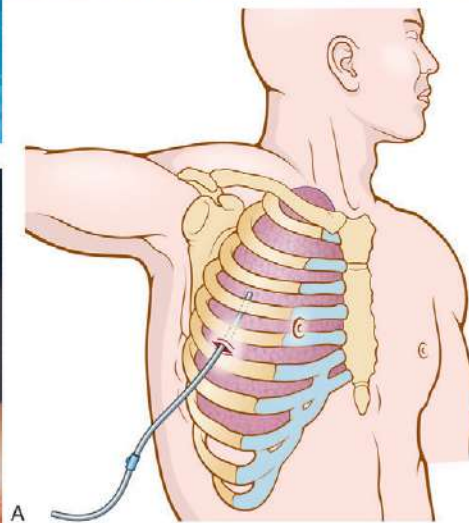
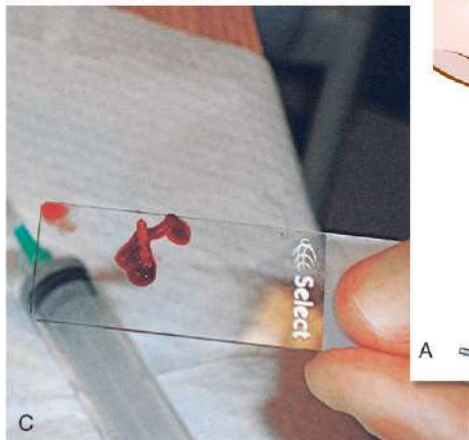
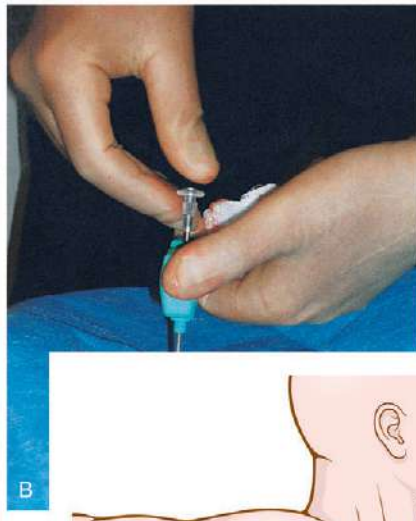
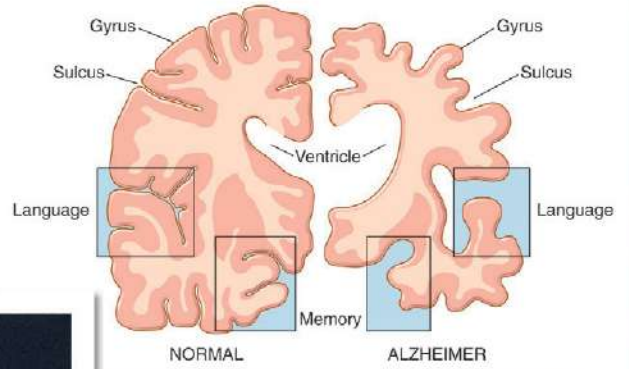
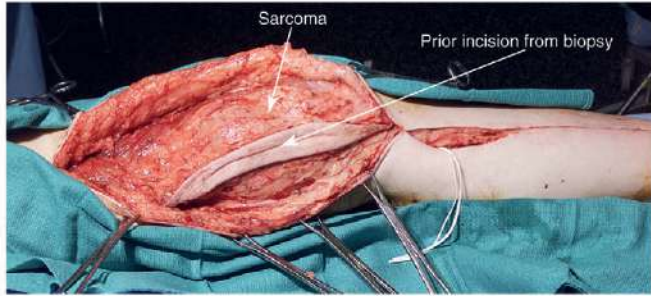


Types of melanin: Eumelanin and Pheomelanin

Eumelanin (eu- = true) is more common and is a brown-black pigment. **Pheomelanin** (ptheo- = dusky) is a red-yellow pigment. People with darker skin have more eumelanin, whereas people with lighter skin have more pheomelanin. Pheomelanin is a photosensitizer (doesn't protect the skin from damaging ultraviolet rays) and makes lighter-skin individuals more susceptible to skin cancer.

New content on cutting-edge procedures enhances the relevance of medical terms.

New clinical photographs and drawings dynamically illustrate medical terminology, conditions, and treatments.



How To Use THE BOOK

The Language of Medicine makes learning easy. The book guides and coaches you step by step through the learning experience. Don't get overwhelmed! Approach learning systematically, step by step. I've helped you study each chapter by organizing the information in small pieces. Icons are provided to help you navigate the sections of the text.



VOCABULARY

This list reviews new terms introduced in the text. Short definitions reinforce your understanding of the terms. See page 449 of this chapter for pronunciation of terms.

aorta	Largest artery in the body.
apex of the heart	The lower tip of the heart.
arteriole	Small artery.
artery	Largest type of blood vessel; carries blood away from the heart to all parts of the body. Notice that artery and away begin with an "a."
atrioventricular bundle (bundle of His)	Specialized muscle fibers connecting the atria with the ventricles and transmitting electrical impulses between them. His is pronounced "hiss."
atrioventricular node (AV node)	Specialized tissue in the wall pass from the pacemaker (SA atrioventricular bundle or bundle of His).



After basic material in the chapter is introduced, the key terms you need to learn are presented in Vocabulary lists. These lists help you study and stay focused.



You cannot get lost using *The Language of Medicine*. You learn and engage in

small incremental steps. The book imparts the most important concepts, allowing you to concentrate on what is essential.



TERMINOLOGY

Write the meanings of the medical terms in the spaces provided.

COMBINING FORMS

COMBINING FORM	MEANING	TERMINOLOGY	MEANING
adenoid/o	adenoids	adenoidectomy _____	
		adenoid hypertrophy _____	
alveol/o	alveolus, air sac	alveolar _____	
bronch/o bronchi/o	bronchial tube, bronchus	bronchospasm _____	
		<i>This tightening of the bronchus is a chief characteristic of asthma and bronchitis.</i>	
		bronchiectasis _____	
		<i>Caused by weakening of the bronchial wall from infection.</i>	



PRACTICAL APPLICATIONS

This section contains an x-ray report, an orthopedic operating room schedule, a case report with findings presented in SOAP format, and a short clinical case. Explanations of more difficult or unfamiliar terms are given in brackets.

Answers to the matching questions are found on page 640.

MEDICAL REPORT: RESULTS OF CHEST X-RAY EXAMINATION

PA [posteroanterior] and lateral chest: The heart is enlarged in its transverse diameter. The lungs are fully expanded and free of active disease.

Thoracic spine shows a scoliosis of the upper thoracic spine convex to the left. There is 50% wedge compression fracture of T6 and slight wedge compression fracture of T5. There is also anterior wedge compression fracture of T12.

Lumbar spine shows 90% compression fractures of L1 and L3 with 30% compression fractures of L2 and L5. All bones are markedly osteoporotic. There is calcification within the aortic arch. There are gallstones in the right upper quadrant. The findings in the spine are most compatible with osteoporotic compression fractures. During the procedure, the patient had a sickle [syncopal—this word was incorrectly transcribed!] episode and fell, striking her head. A skull series, done at no cost to the patient, shows no evidence of bony fracture. The pineal gland is calcified and has a midline location. The sella turcica is normal.

OPERATING ROOM SCHEDULE I

Match the operation in Column I with an accompanying diagnosis or indication for surgery from Column II.

COLUMN I	COLUMN II
1. Excision, osteochondroma, R calcaneus	_____ A. Fracture of the ankle
2. TMJ arthroscopy with probable arthrotomy	_____ B. ACL rupture
3. L4–5 laminectomy and discectomy	_____ C. Neoplastic lesion in brain
4. Arthroscopy, left knee	_____ D. Exostosis on heel bone
	_____ E. Pelvic fracture
	_____ F. Pain and malocclusion of jawbones

tion, or enlargement, of the opening of a ventilation to the lungs. An example is in an inhaler.

tula is an abnormal connection between the pleural cavity (space). Occurring as a or surgical complication, this can cause an al space.

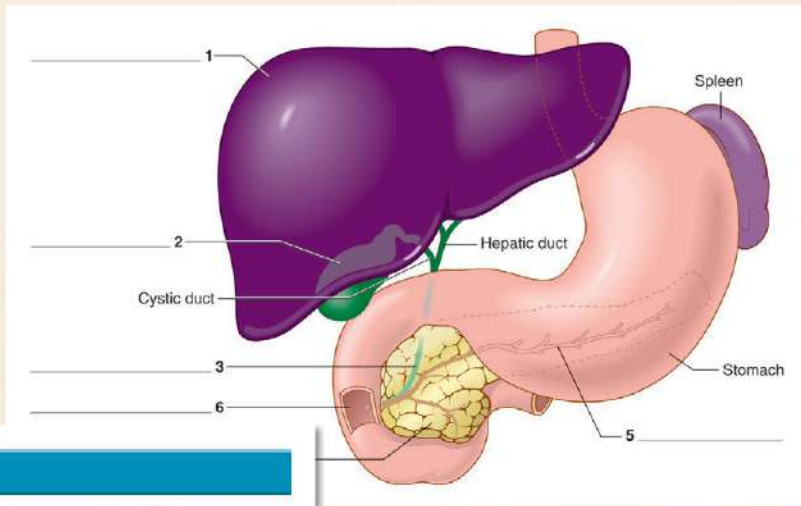


Medical terminology is connected

to real life with case reports and case studies throughout the text and on the companion Evolve website.



As you study with *The Language of Medicine*, you are engaged in each step of the learning process. On nearly every page, you are actively involved in labeling diagrams, dividing words into component parts, writing meanings to terms, testing, reviewing, and evaluating your learning.



EXERCISES

Remember to check your answers carefully with the Answers to Exercises, pages 179 and 180.

A Match the following digestive system structures with their meanings below.

- | | | |
|----------|-------------|---------------|
| anus | esophagus | liver |
| cecum | gallbladder | pancreas |
| colon | ileum | pharynx |
| duodenum | jejunum | sigmoid colon |

- consists of ascending, transverse, descending, and sigmoid sections _____
- small sac under the liver; stores bile _____
- first part of the large intestine _____
- end of the digestive tract opening to the outside of the b _____
- second part of the small intestine _____
- tube connecting the throat to the stomach _____
- third part of the small intestine _____
- large organ in the RUQ; secretes bile, stores sugar, prod _____
- throat _____
- lowest part of the colon _____
- first part of the small intestine _____
- organ under the stomach; produce _____



Abbreviations are listed and explained in each body system chapter.



ABBREVIATIONS

alk phos	alkaline phosphatase	HBV	hepatitis B virus
ALT, AST	alanine transaminase, aspartate transaminase—enzymes measured to evaluate liver function	IBD	inflammatory bowel disease (Crohn disease and ulcerative colitis)
BE	barium enema	LAC	laparoscopic-assisted colectomy
BM	bowel movement	LFTs	liver function tests—alk phos, bilirubin, AST, ALT
BRBPR	bright red blood per rectum—hematochezia (Latin per means through)	MRI	magnetic resonance imaging
CD	celiac disease	NG tube	nasogastric tube
		NPO	nothing by mouth (Latin nil per os)



REVIEW SHEET

Write the meanings of each word part in the space provided. Check your answers with the information in the chapter or in the Glossary (Medical Word Parts—English) at the end of the book.

Combining Forms

COMBINING FORM	MEANING	COMBINING FORM	MEANING
aneurysm/o	_____	ox/o	_____
angi/o	_____	pericardi/o	_____
aort/o	_____	phleb/o	_____
arter/o, arteri/o	_____	pulmon/o	_____
ather/o	_____	rrhythm/o	_____
atri/o	_____	sphygm/o	_____
axill/o	_____	steth/o	_____
brachi/o	_____	thromb/o	_____
cardi/o	_____	valv/o	_____
cholesterol/o	_____	valvul/o	_____
coron/o	_____	vas/o	_____
cyan/o	_____	vascul/o	_____
isch/o	_____	ven/o, ven/i	_____
my/o	_____	ventricul/o	_____
myx/o	_____		



A Review Sheet at the end of each chapter helps you organize and test yourself on what you have learned!

ic gastrostomy
ic jejunostomy
atic
on
ons typically
ose), proteins
olytes (sodium,
, and vitamins.
duct for drainage
bile bag) on the



PRONUNCIATION OF TERMS

To test your understanding of the terminology in this chapter, write the meaning of each term in the space provided. In addition, you may wish to cover the terms and write them by looking at your definitions. Make sure your spelling is correct. The page number after each term indicates where it is defined or used in the book, so you can easily check your responses. You will find complete definitions for all of these terms and their audio pronunciations on the Evolve website.

Pronunciation Guide

ā as in ape	ā as in apple
ē as in even	ē as in every
ī as in ice	ī as in interest
ō as in open	ō as in pot
ū as in unit	ū as in under

Vocabulary and Terminology

TERM	PRONUNCIATION	MEANING
adenoidectomy (••)	ād-ē-noyd-ĒK-tō-mē	_____
adenoid hypertrophy (••)	ĀD-ē-noyd hi-PĒR-trō-fē	_____
adenoids (••)	ĀD-ē-noydz	_____
alveolar (••)	āl-VĒ-ō-lār	_____
alveolus; alveoli (••)	āl-VĒ-ō-lūs; āl-VĒ-ō-lī	_____
anosmia (••)	ān-ŌS-mē-ā	_____
apex of the lung (••)	Ā-pēkz of the lūng	_____
apical (••)	Ā-pī-kāl	_____
apnea (••)	ĀP-nē-ā	_____
asphyxia (••)	ās-FĪK-sē-ā	_____
atelectasis (••)	ā-tē-LĒK-tā-sīs	_____
base of the lung (••)	bās of the lūng	_____
bronchiectasis (••)	brōng-kē-ĒK-tā-sīs	_____
bronchioles (••)	BRŌNG-ke-ōlz	_____
bronchiolitis (••)	brōng-kē-ō-Lī-tīs	_____



The Pronunciation of Terms section shows you how to pronounce each new term in the chapter and gives you the chance to practice writing its meaning. You can also hear these terms pronounced on the companion Evolve website. The answers to the Pronunciation of Terms section are found on the Evolve website as well.

ALSO AVAILABLE

STUDENT EVOLVE RESOURCES

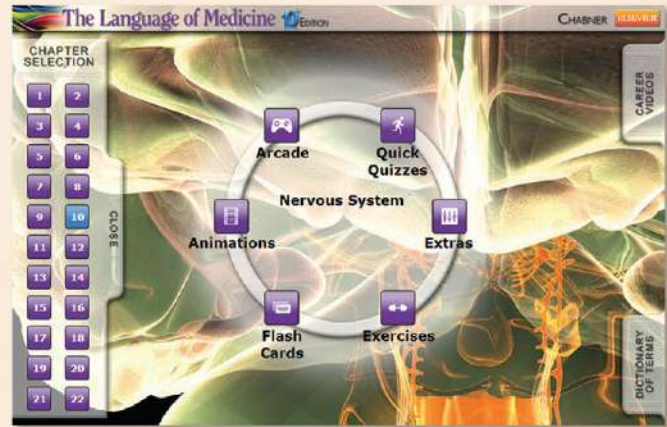
(complimentary access included with purchase of this text)

All student resources are now available online on the Evolve website. The student website accompanying this new edition is packed with activities, games, additional information, and video clips to expand your understanding and test your knowledge. Chapter by chapter you will find quizzes, case studies, examples of medical records, and a wealth of images to illustrate terminology. Additionally, on the website, you can hear the terms corresponding to the Pronunciation of Terms section in each chapter (more than 3,000 terms in all). Access your resources at: <http://evolve.elsevier.com/Chabner/language>.



New to the Student Evolve Website for the 10th Edition

- Updated interface enabling convenient online access to your resources.
- A Mobile Dictionary has been added for this edition. Access this complimentary resource from the Evolve site on your desktop or mobile device and have easy access to definitions of all terms found in the text. This resource helps you study each chapter and also will be a reference for you in the workplace. Each definition has been crafted carefully to explain terms using plain, nontechnical language.
- A Quick Quiz feature has also been added, enabling students to get a snapshot assessment of their knowledge of a chapter's content.
- The new Mobile Dictionary, Quick Quizzes, and updated Flash Cards have been optimized for use on mobile devices, providing convenient access for on-the-go studying.



iTerms Study Companion (for sale separately)

The *iTerms* audio study guide provides pronunciation and enables you to hear each term pronounced with its definition, in a portable format. This audio companion is available for download. Also included are short review quizzes and coaching tips to help you make the most of your study.

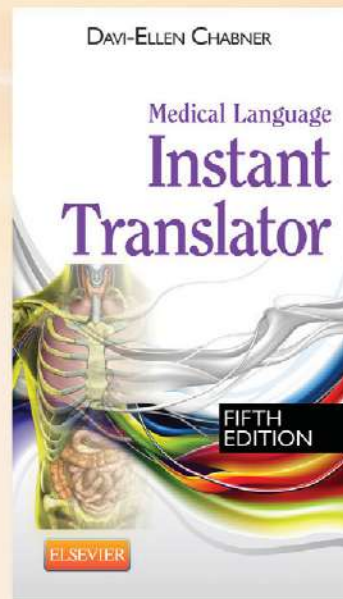
MEDICAL LANGUAGE INSTANT TRANSLATOR (for sale separately)

The *Medical Language Instant Translator* is a uniquely useful resource for all allied health professionals and students of medical terminology. It is a pocket-sized medical terminology reference with convenient information at your fingertips!

- NEW updates to correlate with the revision of *The Language of Medicine*

INSTRUCTOR'S RESOURCE MANUAL

The Language of Medicine Instructor's Resource Manual (includes instructor's manual, PowerPoints, and an image collection) is available with even more new quizzes, teaching suggestions, crossword puzzles, medical reports, and reference material. The image collection contains all figures and photos from the 10th edition. The instructor materials plus a test bank can be accessed online at <http://evolve.elsevier.com/Chabner/language>.



The fundamental features you have come to trust in learning and teaching medical terminology remain strong in this new edition. These are:

- Simple, nontechnical explanations of medical terms.
- Workbook format with ample space to write answers.
- Explanations of clinical procedures, laboratory tests, and abbreviations related to each body system.
- Pronunciation of Terms sections with phonetic spellings and spaces to write meanings of terms.
- Practical Applications sections with case reports, operative and diagnostic tests, and laboratory and x-ray reports.
- Exercises that test your understanding of terminology as you work through the text step by step (answers are included).
- Review Sheets that pull together terminology to help you study.
- Comprehensive glossaries and appendices for reference in class and on the job.

Each student and teacher who selects *The Language of Medicine* becomes my partner in the exciting adventure of learning medical terms. Continuity is crucial. Continue to communicate with me through email (daviellenchabner@gmail.com) with your suggestions and comments so that future printings and editions may benefit. A website connected to *The Language of Medicine* and dedicated to helping students and teachers is located at <http://evolve.elsevier.com/Chabner/language>. I hope you will tell me about additional resources you would like to see on that website so that we can make it an even more useful part of the learning process. You should know that I still experience the thrill and joy of teaching new students. I love being in a classroom and feel privileged to continue to write this text. I hope that my enthusiasm and passion for the medical language are transmitted to you through these pages.

Work hard, but have fun with
The Language of Medicine!



DAVI-ELLEN CHABNER

ACKNOWLEDGMENTS

Maureen Pfeifer has been my extraordinary editorial partner for the last 15 years. Her phenomenal expertise in all facets of communication, coordination, production, editing, updating, and management is amazing. She has the unique ability to “make things happen” and “make things right.” Both personally and professionally, I am grateful for her unique insight and capabilities. She is intelligent, calm, and upbeat in the face of any issue affecting *The Language of Medicine* and its ancillaries. Most of all, I rely on her loyalty and her confidence that we are creating an eminently useful and valuable textbook and resource for both students and instructors. Thank you, Maureen, for everything you do for me.

Ellen Zanolle, Senior Book Designer, Art and Design, continues to astound me with her fresh and vibrant presentation for the cover and interior of this new edition. Her creative genius is evident on every page. She is always responsive and innovative in presenting a complex layout and coordinating multiple elements of the text. Ellen, I am so grateful for your fierce dedication to all of my books! Bill Donnelly, page layout designer, once again did an excellent job arranging and crafting each page to make learning easier for students. Bill, thanks for all your hard work.

Jim Perkins, Assistant Professor of Medical Illustration, Rochester Institute of Technology, has been associated with *The Language of Medicine* since its 6th edition. He has worked with me to create drawings that are not only attractive but also essential in making the terminology more understandable. I have come to rely on his unique talent for clarity, accuracy, and detail.

Elizabeth Galbraith copyedited and proofread the manuscript with her characteristic attention to grammatical detail and medical accuracy. Thanks to her, students will read and study the text with greater ease.

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