



# Medical Language

FIFTH EDITION

IMMERSE YOURSELF



SUSAN M. TURLEY



# Medical Language

IMMERSE YOURSELF

FIFTH EDITION

SUSAN M. TURLEY

Director of Portfolio Management: Marlene McHugh Pratt	Digital Content Project Lead: William Johnson
Courseware Portfolio Manager, Health Sciences: John Goucher	Vice President, Product Marketing: Brad Parkins
Development Editor: Laura S. Horowitz / York Content Development	Product Marketing Manager: Rachele Strober
Medical Illustrator: Anita Impagliazzo	Field Marketing Manager: Brittany Hammond
Portfolio Management Assistant: Cara Schaurer	Full-Service Project Management and Composition: Pearson CSC
Vice President, Content Production and Digital Studio: Paul DeLuca	Project Management Team Lead/Nursing Sciences: Patty Donovan
Managing Producer, Health Science: Melissa Bashe	Production Project Manager: Joanna Stein
Operations Specialist: Maura Zaldivar-Garcia	Editorial Project Manager: Emily Tamburri
Creative Digital Lead: Mary Siener	Inventory Manager: Vatche Demirdjian
Director, Digital Studio, Health Science: Amy Peltier	Interior Design: Studio Montage
Digital Studio Producer, e-text: Ellen Viganola	Cover Design: Studio Montage
Digital Content Team Lead: Brian Prybella	Printer/Binder: LSC Communications, Inc.
	Cover Printer: Phoenix Color/ Hagerstown

**Copyright © 2020, 2017, 2014, 2011, 2007 by Pearson Education, Inc. or its affiliates.** All Rights Reserved. Printed in the United States of America. This publication is protected by copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise. For information regarding permissions, request forms and the appropriate contacts within the Pearson Education Global Rights & Permissions department, please visit [www.pearsoned.com/permissions/](http://www.pearsoned.com/permissions/).

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

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

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

Names: Turley, Susan M., author.  
 Title: Medical language : immerse yourself / Susan M. Turley.  
 Description: Fifth edition. | Hoboken, New Jersey : Pearson Education, Inc., [2020] | Includes index.  
 Identifiers: LCCN 2018054332 | ISBN 9780134988399 (student edition) | ISBN 0134988396 (student edition)  
 Subjects: | MESH: Terminology as Topic | Problems and Exercises  
 Classification: LCC R123 | NLM W 18.2 | DDC 610.1/4--dc23  
 LC record available at <https://lcn.loc.gov/2018054332>

10 9 8 7 6 5 4 3 2 1



ISBN-13: 978-0-13-498839-9  
 ISBN-10: 0-13-498839-6



# Two Journeys

In August 2000, I began two journeys—the adoption of children into our family and the writing of this textbook. Although very different, these two journeys shared a common thread of language and communication.

The first journey was the adoption of two beautiful children, Minh and Lien (then ages 8 and 9), who joined our family from an orphanage in Vietnam in 2001. This journey of adoption involved completing much paperwork, doing research, learning a new language and culture, and traveling to an exotic land.



The second journey was the process of writing this textbook. This journey also involved paperwork and research, but I did not need to learn a new language or culture. Because of my many years of experience in the healthcare field, I already understood medical language and culture.

I did, however, need to determine the best way to convey that knowledge to each student who would study this textbook. And so, as I wrote, I drew on my own efforts and struggles to learn a new language and culture during the adoption process. Those insights helped me identify with students who are learning medical language and culture for the first time and encouraged me to include new real-world-of-medicine features that would support and strengthen students' efforts as they learned.

I am thrilled to say that each of my daughters has begun a new journey of her own in that they have chosen to follow in my footsteps and embrace the medical field as their career choice: Minh is a nursing assistant and Lien is a physician's assistant.

## Did You Know?

As I write this in late 2018, I am ever mindful of the many children in this country and around the world who are in need of help, food, and homes.

All of the royalties from this textbook are given to provide ongoing financial support to orphanages and feed-and-read school programs for destitute children in several countries, as well as to help poor and hungry children in the United States.

# Preface

## Something Different

You may have already noticed that there is something different about this book! Perhaps by thumbing through the pages, you have taken note of the abundance of real-world healthcare images. Maybe you have discovered some of the practice exercises that abound within these pages, many of which place you in your soon-to-be-realized role of a healthcare professional. Or perhaps you have already begun exploring the revolutionary web-based student media materials that are rich with highly engaging and interactive activities that add a unique dimension to your learning. As you begin this exciting and important journey into the world of medical language and health care, we offer you this promise—that you will soon be immersed in a new, exciting learning experience.

As a soon-to-be healthcare professional, your knowledge, hard work, and interpersonal skills will have a direct impact on health care throughout your career. Therefore, we do everything we can to help you learn and to empower you, so you can use what you learn to positively impact the lives of others. And so, we encourage you to immerse yourself in this book and the rich variety of resources it offers to help you learn medical language, the language of your chosen career!

Let's start at the beginning and take a close look at the title of this book: *Medical Language: Immerse Yourself*.

### Medical Language

*Medicine* is the drama of life and death, and few subjects are as compelling, profound, or worthy of study. *Language* is a method of communicating and an expression of the people, events, and culture it represents. This book is about *medical language*. As opposed to simply memorizing vocabulary words, this book offers a complete experience—the opportunity to embrace the world of health care, just as if you were learning a foreign language. Like traveling to Tokyo for a year to learn Japanese, the goal here is for you to become immersed in the sights and sounds of your new culture of health care. This book surrounds you with context that brings the medical words to life.

This book is about real medicine that affects real patients—their lives, their families, and their futures. As a healthcare professional, no matter which aspect of health care you choose, you will have important responsibilities. Therefore, we feel it is our responsibility to provide you with as realistic a view as possible of health care today. Here are some examples of how we have done this:

- The chapters in this textbook are titled as medical specialties, not just as body systems (as are other medical terminology books). This reflects the real world. For example, people with skin conditions visit a dermatologist, not an “integumentary system specialist.” That’s why the related chapter in this book is titled “Dermatology.” A patient with heart problems is treated in a hospital’s cardiology department and not in a “cardiovascular system department.” The decision to present the chapters in this way is an example of our commitment to make this book a realistic reflection of health care as it is in the real world. This distinction was tested extensively, and instructors and students alike overwhelmingly support and validate this way to learn.
- The majority of the images in this book incorporate medical illustrations and photographs that include a diverse array of real people, instead of cartoon-like illustrations. The photographs are of real patients and real healthcare professionals in real healthcare settings.

- The chapter review exercises present real medical reports with related critical-thinking questions. There are also exercises where you play the role of the healthcare professional in interpreting a patient's condition and rephrasing it as medical language.
- The web-based student media will immerse you in the virtual world of MyLab Medical Terminology, where you will explore a variety of fun study opportunities. In one of them, you will listen to real doctors dictating real medical sentences for you to interpret.

## Immerse Yourself

You are about to begin an interactive learning experience between you, this book, and your instructor—one that will equip you and inspire you to become an expert in medical language. The goal of this book is to connect with you, to engage your visual, auditory, and kinesthetic senses, to stimulate you, and to fuel your complete understanding of medical language.

You will not be a passive reader of this book. Instead, you will be challenged to listen, speak, write, respond, examine, think, and make connections to medical language. You should consume this book by writing notes in it and filling in your answers. By being an active participant in your own learning process, the concepts presented here will come alive in vibrant color and full texture. This book is a *living* document about a *living* language. Through the features of this book and the accompanying multimedia resources, you will get a true taste of the world of health care in *living* color.

As you engage in the multisensory experience within these pages, remember to *discover, learn, know, and understand* the information. But—even more—experience it and *live it!* So dive in and immerse yourself!

## New to This Edition

This fifth edition maintains the best aspects of previous editions while continuing to facilitate the learner's mastery of medical language in new and exciting ways. We have revised this edition so that it provides an even more valuable teaching and learning experience. Here are the enhancements that we have made:

## New Book and Chapter Structure

- The book now includes 15 chapters designed to be taught within a 16-week semester course as one chapter per week, leaving the last week for review and the final examination. Much of the content from the three other chapters from the fourth edition (psychiatry, oncology, and radiology) has been incorporated into the 15 chapters and is included in the Index. The full content of the psychiatry chapter is available at [www.pearsonhighered.com/healthprofessionsresources](http://www.pearsonhighered.com/healthprofessionsresources).
- The chapter structure now includes numbered sections that correlate with numbered learning outcomes. These new sections are used in Chapters 2–15, giving instructors and students a consistent template that is easy to follow. These new sections include:
  1. Anatomy
  2. Physiology
  3. Diseases
  4. Laboratory, Diagnostic, and Radiologic Procedures
  5. Medical Procedures, Drugs, and Surgical Procedures

- An innovative student-centered learning format evaluates competency after each chapter section with the use of the Practice Laps exercises.
- A new design reinforces the new chapter structure for ease of use.
- A new eText format is compatible with any device that a student might use.

## Updates to Existing Content

As in every edition of *Medical Language*, we strive to improve existing content. For the fifth edition, we have:

- Improved the Anatomy and Physiology sections by revising all of the illustrations and text to improve the clarity of details concerning complex structures and functions.
- Emphasized the relationship between different body systems and how they work in conjunction to maintain homeostasis.
- Reorganized Appendix A so that it now combines all word parts and their meanings in alphabetical order to facilitate searching. The types of word parts (combining form, prefix, suffix) are indicated by color shading of the rows and by a column that indicates *CF*, *P*, or *S*. The meaning of each word part has been revised, as needed, and verified that it is consistent across all chapters.
- Provided an Answer Key, as in the fourth edition, that includes every other answer. This encourages students to think for themselves about the answers, rather than just copying them from the Answer Key. A full Answer Key is provided in the Instructor's Manual, which allows the instructor to use any chapter exercise as a homework assignment.

## Comprehensive Teaching Package

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

## Online Instructor's Resources

- A complete chapter-by-chapter Test Bank with a full variety of test questions. It also allows instructors to generate customized exams and quizzes.
- A comprehensive, turn-key lecture package with fully narrated chapter-by-chapter lectures ("Guided Lectures") in an audio format, as well as an accompanying PowerPoint presentation containing discussion points and images.
- A sample course syllabus.
- A complete image library that includes every photograph and illustration from the book.
- Articles with useful ideas, such as classroom management tips, how to construct test questions, and how to put students at ease on the first day of class.
- Ready-made worksheets that can be used for quizzes or homework assignments.
- An array of teaching pearls and tips.
- Interesting facts and anecdotes.
- Extra content, such as word origins and the stories behind anatomical structures and diseases named for someone (eponyms)—things not covered in the book.
- A complete Answer Key that includes the answers to each of the student questions in each chapter.



# What Makes This Book Different?

## We Listened

In developing this book over five editions, we have immersed ourselves in the perspective of you, our readers. We have strived to make *Medical Language* a customer-driven text by aggressively and comprehensively researching the needs and desires of current medical terminology students and instructors. We aimed to guarantee that we were “speaking the same language” as those who would ultimately be using this book. To do this, we gathered a highly qualified development team of over 170 reviewers, with over 2,250 years of teaching experience, 4 physician specialists, as well as 11 students from across the United States to help steer us toward success.

Over the past 14 years we sat in classrooms, hosted focus groups, and conducted thorough manuscript reviews. We asked for blunt and uncompromising opinions and insights. We also commissioned dozens of detailed reviews from instructors, asking them to analyze and evaluate each chapter of the textbook. They not only told us what they did and didn’t like, but they identified, page by page, numerous ways in which we could refine and enhance our key features. Their invaluable feedback was compiled, analyzed, and incorporated throughout *Medical Language*, Fifth Edition.

We asked our team to imagine their ideal medical terminology book—what it should include, how it should look. We had the author meet personally with several instructors to discuss the specifics of the book’s organization, layout, format, and features. We asked question after question. This book is truly the product of a successful partnership between the author, the publisher, and our development team of students and instructors. We listened.

## We Learned

Here are some of the recommendations that we heard from our team, responded to, and included in all four editions, now updating and enhancing them even further in the new fifth edition:

- **Design.** Students and instructors alike told us they wanted an appealing, uncluttered design with an abundance of rich medical images and enough white space to allow for notetaking.

<b>cyanosis</b>	Bluish discoloration of the skin and nail beds because of a low level of oxygen and a high level of carbon dioxide in the blood and tissues. <b>Circumoral cyanosis</b> occurs around the mouth (see Figure 4-18 ■). The patient is said to be <b>cyanotic</b> . Treatment: Oxygen therapy. Correct the underlying cause.	<b>cyanosis</b> (SY-ah-NOH-sihs) <b>cyan/o-</b> blue <b>-osis</b> abnormal condition; process  <b>cyanotic</b> (SY-ah-NAW-tik) <b>cyan/o-</b> blue <b>-tic</b> pertaining to  <b>circumoral</b> (SIR-kum-OR-al) <b>circum-</b> around <b>or/o-</b> mouth <b>-al</b> pertaining to
-----------------	--	---

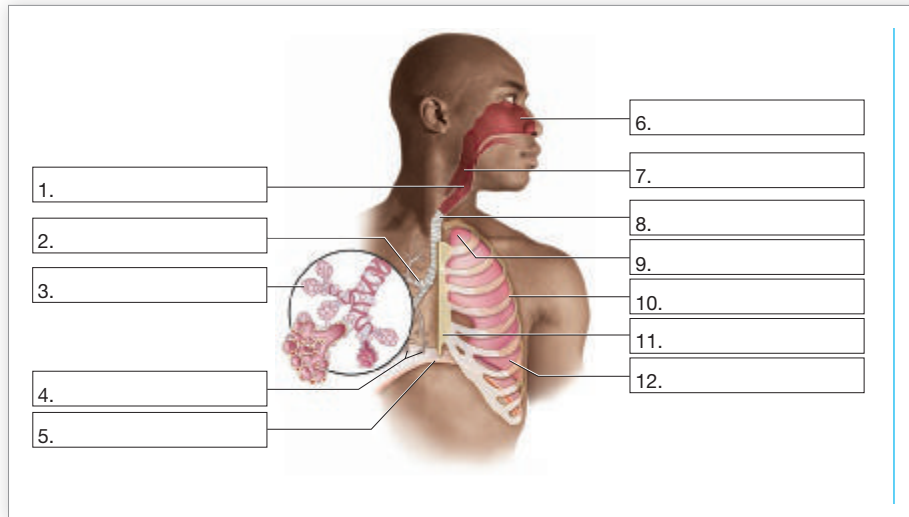


**FIGURE 4-18 ■ Cyanosis.**  
This newborn infant shows cyanosis of his face. He has a structural defect of his heart and, each time his heart beats, it pumps deoxygenated blood (instead of oxygenated blood) to the cells of his body.



## 4.2 PRACTICE LAPS

- **Exercises.** Both students and instructors suggested that we provide a greater quantity and variety of exercises than any other book, thus providing maximum opportunities to reinforce learning. Instructors asked that we only provide the answers to some of the exercises so that the exercises could also be used as graded homework assignments. In the fifth edition, we have added a set of Practice Laps exercises after each numbered section to allow students to immediately assess their knowledge of that section.
- **Illustrations.** Students and instructors alike suggested that we display colorful and interesting illustrations as large as possible on the page, with opportunities to label those images as practice opportunities.



- **Special Feature Boxes.** Students asked for highlighted boxes that would help break up the reading and also provide them with opportunities to learn something new or interesting, thereby providing additional context.
- **Medical Specialties Approach.** A substantial majority (75%) of instructors told us that they wanted a medical specialties approach, rather than an approach based only on body systems.
- **Focus on Word Building.** Another substantial majority of instructors (over 70%) told us that they wanted a focus on word building with analysis of combining forms, suffixes, and prefixes right within the text and not just at the end of each chapter or in isolated boxes.
- **Medical Report Activities.** Instructors wanted an activity in each chapter that challenged students to analyze actual medical reports.
- **Lecture Support Materials.** Instructors told us about the increased challenge of creating interesting lectures and suggested that we create a fully loaded PowerPoint presentation system complete with a multitude of illustrations and photographs. In addition, we created Guided Lectures, a comprehensive auditory and visual learning experience. It includes the PowerPoint presentation coordinated with a full lecture. This is an especially helpful feature for students enrolled in online courses or for students who miss a lecture.

**bronchopulmonary**  
(BRONG-koh-PUL-moh-NAIR-ee)  
**bronch/o-** bronchus  
**pulmon/o-** lung  
**-ary** pertaining to

**cilia** (SIL-ee-ah)

**lung** (LUNG)

**pulmonary** (PUL-moh-NAIR-ee)  
**pulmon/o-** lung  
**-ary** pertaining to

The related combining forms **pneum/o-** and **pneumon/o-** mean air; lung.

**lobe** (LOHB)

- **Tools for Testing.** Instructors asked for a complete testing package that was customizable to fit their needs. Additionally, they asked for these test items to be available in online course formats.

## We Made a Commitment to Accuracy

As part of our respect for real medicine, and the importance of getting it right the first time, we made a commitment to accuracy. It was important to us to attain the highest level of accuracy possible throughout this educational package in order to match the precision required in today's healthcare environment. The author drew on her 30 years of experience in nursing, health information management, medical transcription, and medical publications and as a college instructor to provide accurate and complete information. Our development team read every page, every test question, and every vocabulary word. No less than 11 content experts read each chapter for accuracy and analyzed every bit of content in the ancillary resources. We also engaged the technical editing services of four physician specialists who carefully reviewed the chapters that correspond to their respective practices.

We welcome any and all feedback you may have to help us enhance the accuracy of this book. If you identify any errors that need to be corrected in a subsequent printing, please send them to:

Pearson Health Science Editorial  
Medical Terminology Corrections  
221 River Street, 4th Floor  
Hoboken, NJ 07030

# Our Development Team

## About the Author

**Susan M. Turley, MA (Educ), BSN, RN, RHIT, CMT**, is a full-time author and editor who has extensive experience in both the medical and educational fields.

As a healthcare professional, Susan has worked in a variety of healthcare settings: acute care/ICU, long-term care, physicians' offices, and managed care. She has held positions as an intensive care nurse, plasmapheresis nurse, infection control officer, physician office auditor, medical transcriptionist, director of education, and director of quality management and corporate compliance for an HMO.

As an adjunct professor in the School of Health, Wellness, and Physical Education at Anne Arundel Community College in Arnold, Maryland, Susan taught courses in medical terminology, pathophysiology, pharmacology, and medical transcription. She was instrumental in gaining initial accreditation for the college's medical assisting program. Susan was a codeveloper of *The SUM Program for Medical Transcription Training* and reference books for Health Professions Institute. She developed the curricula for the bachelor, master's, and doctoral programs for the International Institute of Original Medicine. Susan has been a guest speaker at national seminars for accreditation of utilization management programs, medical transcription teacher training, and health information management certification examination review seminars.

Susan is also the author of the soon-to-be-released *Understanding Pharmacology for Health Professionals*, Sixth Edition (Pearson, 2021) and more than 40 articles published in medical transcription and health information management journals. With physician coauthors, she has written three nationally funded grants and two chapters in physicians' anesthesiology and ENT textbooks. Susan has also coauthored numerous abstracts and articles published in nationally known medical journals, and most recently she was the editor for an Opinion column that appeared in the *Journal of the American Medical Association*.

Susan holds a Master of Arts degree in adult education from Norwich University in Vermont, a Bachelor of Science degree in nursing from the Pennsylvania State University, and has state licensure as an RN. She is a member of and has national certification in medical transcription from the Association for Healthcare Documentation Integrity (AHDI) and is a member of and has national certification from the American Health Information Management Association (AHIMA).

## About the Illustrator

The illustrations throughout this book are the result of a close collaborative effort between the author and medical illustrator. Every figure was custom developed specifically for this book and refined to be medically accurate, precise, unique, and fresh. From a pedagogical point of view, it was important that all of the art be consistent throughout, rather than presenting a conglomeration of styles and varying levels of detail. The illustrations for the fifth edition have been revised, clarified, and updated to reflect the highest degree of medical accuracy while retaining realism and ease of understanding for students.

**Anita Impagliazzo, BA, MA, CMI**, is a medical and scientific illustrator in Charlottesville, Virginia. A graduate of the University of Virginia, she went on to



complete the Biomedical Illustration Graduate Program at the University of Texas Southwestern Medical Center at Dallas. She was employed for several years by companies specializing in exhibits for medical malpractice litigation before starting her own business in 2001.

Anita's regular clients now include physicians and researchers at the University of Virginia, Tulane University, University of Pittsburgh, University of Florida, the Max Planck Institute, and the Royal College of London. She also provides pro bono work to St. Jude Children's Research Hospital. She has worked on multiple textbooks, including the popular Martini series of anatomy and physiology atlases and the revered Netter Collection of Medical Illustrations. Anita is a member of the Association of Medical Illustrators and the Society for Neuroscience. Her work has won several awards. She never tires of using medical language to learn and teach about the human body: how it works, how it fails, how it is fixed, and how the fixing fails.

## About the Educational Consultant

**James F. Allen, Jr., RN, MSN-Ed, MBA/HCM, JD**, is an Adjunct Associate Professor at Lansing Community College in Lansing, Michigan. He earned his Master of Science in Nursing Education (MSN-Ed) at Western Governors University; his Master of Business Administration and Healthcare Management (MBA/HCM) at the University of Phoenix; and his Juris Doctorate (JD) from Thomas M. Cooley School of Law. Jim has taught courses both online and in the classroom in medical terminology, pathophysiology, pharmacology, and medical law and ethics. Since his college adopted the first edition, Jim has been an invaluable source of information and suggestions for improvement of *Medical Language*. Jim is the coauthor of *Medical Language STAT!* (Pearson, 2009) and the author of *Health Law and Medical Ethics for Healthcare Professionals* (Pearson, 2013).



## Consultants and Contributors

Each member of our development team has infused this book with ideas, vision, and a passion for medical language. Our team crafted the blueprints for this book and contributed to what has become a landmark educational tool. Their influence will continue to have an impact for decades to come as many students continue to study *Medical Language*. We are pleased to introduce the members of our team.

### Physician Specialist Consultants

**Stephen Caldwell, MD**  
Director of Hepatology  
Digestive Health Center of  
Excellence  
Charlottesville, Virginia

**John H. Dirckx, MD**  
Former Medical Director,  
University of Dayton  
Student Health Center  
Dayton, Ohio

**Joseph Gibbons, MD**  
Internal Medicine Physician  
Centennial Medical Group  
Elkridge, Maryland

**James Michelson, MD**  
Professor of Orthopedic Surgery  
George Washington University School  
of Medicine  
Washington, D.C.

### Quality Assurance Editor

**Garnet Tomich, BA**  
San Diego, California

### Ancillary Content Providers

**James F. Allen, Jr., RN, BSN,  
MBA/HCM, JD, MSN-Ed**  
Lansing Community College  
Lansing, Michigan

**Michael Battaglia, MS, EdD**  
Greenville Technical College  
Greenville, South Carolina

**Dale Brewer, BS, MEd, CMA, (AAMA)**  
Pensacola Junior College  
Pensacola, Florida

**Dean Chiarelli, MA, RD, HFS, CHES**  
Arizona State University  
Phoenix, Arizona

**Dianne Davis, BS, MS, ABD EdD**  
West Virginia University at Parkersburg  
Parkersburg, West Virginia

**Sarah E.W. Finch, PhD**  
Florida State College at Jacksonville  
Jacksonville, Florida

**Jean M. Krueger-Watson, PhD**  
Clark College  
Vancouver, Washington

**Angela Moderow, PT, MPT**  
Carolinas Rehabilitation  
Charlotte, North Carolina

**Janet Pandzik, MS, CMT, RMA**  
Good Careers Academy  
San Antonio, Texas

**Garnet Tomich, BA**  
San Diego, California

**Katherine Twomey, MLS**  
Greenville Technical College  
Greenville, South Carolina



# Manuscript Reviewers for the Fifth Edition

**Jana Allen, MT, ASCP**  
Volunteer State Community College  
Gallatin, Tennessee

**Peggy Anderson, DNP, MS, RN**  
Brigham Young University  
Provo, Utah

**Michelle Cooney, MA, MT(ASCP)**  
Moraine Valley Community College  
Palos Hills, Illinois

**Jeffrey Crisp, MS**  
Program Director, Allied Health Science  
Spartanburg Community College  
Spartanburg, South Carolina

**Shelley Dennis, PhD, MD**  
Rio Salado Community College  
Tempe, Arizona

**Karalea Fisher, RHIT**  
Central New Mexico Community  
College  
Albuquerque, New Mexico

**Marie Hattabaugh, MAT, RT(R)(M),  
CMA (AAMA)**  
Pensacola State College  
Pensacola, Florida

**Rita Kealy, MM, MT(ASCP)**  
Moraine Valley Community College  
Palos Hills, Illinois

**LaShawn Lawrence, MS, RHIT, CCHP**  
Miami-Dade College  
Miami, Florida

**Jennifer Michael, MSRS, RT(R)**  
Northwestern State University  
Natchitoches, Louisiana

**Michele Miller, PhD, CMA(AAMA)**  
Lakeland Community College  
Kirtland, Ohio

**B. Jeanine Newton-Riner, MHSA,  
RRT, EMT-P**  
Chattahoochee Technical College  
Marietta, Georgia

**Tammie Petersen, BSN, RNC-OB**  
Austin Community College  
Austin, Texas

**Susan Stockmaster, OTR, CMAA  
(AAMA)**  
Trident Technical College  
North Charleston, South Carolina

**Cheryl Travelstead, BS, AS, ASS,  
RT(R)(BD)**  
Tidewater Community College  
Norfolk, Virginia

**Deborah Uhlian, BS, AHI, RMA**  
Charles Stewart Mott Community  
College  
Flint, Michigan

**Brad Winterton, DVM, MPH,  
DACVPM**  
Weber State University  
Ogden, Utah

# Manuscript Reviewers for Earlier Editions

(\*Reviewer conference attendee)

**Denise M. Abrams, PT, MASS**  
SUNY Broome Community College  
Appalachian, New York

**Betsy Adams, AAS, BS, MSBE**  
Alamance Community College  
Graham, North Carolina

**Mercedes Alafriz-Gordon, BS**  
High Tech Institute  
Phoenix, Arizona

**Diana Alagna, RN, AHI, CPT**  
Branford Hall Career Institute  
Southington, Connecticut

**Jana Allen, BS, MT\***  
Volunteer State  
Community College  
Gallatin, Tennessee

**Pam Anania, RN, APRN, MSN**  
Brookdale Community College  
Lincroft, New Jersey

**Ellen Anderson, RHIA**  
College of Lake County  
Northfield, Illinois

**Judy Anderson, MEd**  
Coastal Carolina Community College  
Jacksonville, North Carolina

**Wendy Anderson**  
MTI College  
Sacramento, California

**Lori Andreucci, MEd, CMT, CMA**  
Gateway Technical College  
Racine, Wisconsin

**Leah Beall, CST, BS**  
Fortis College  
Westerville, Ohio

**Debbie Bedford, CMA, AAS**  
North Seattle Community College  
Seattle, Washington

**Tricia Berry, OTR/L**  
Hamilton College  
Urbandale, Iowa

**Sue Biederman, MSHP, RHIA**  
Texas State University  
San Marcos, Texas

**Richard Boan, BS, MS, PhD**  
Midlands Technical College  
Columbia, South Carolina

**Jennifer Boles, MSN, RN, NCSN**  
Cincinnati State Technical and  
Community College  
Cincinnati, Ohio

**Julie E. Boles, MS, RHIA**  
Ithaca College  
Ithaca, New York

**Annie M. Boster, PT**  
Bishop State Community College  
Mobile, Alabama

**Susan A. Bouliden, RN**  
Mt. Hood Community College  
Aloha, Oregon

**Beth Braun, MA, PhD**  
Truman College  
Chicago, Illinois

**Shannon Bruley, BAS, AEMT-IC**  
Henry Ford Community College  
Dearborn, Michigan

**Juanita R. Bryant, CMA-A/C**  
Sierra College  
Penn Valley, California

**Thomas Bubar, BA, MS**  
Erie Community College  
Williamsville, New York

**Susan Buboltz, RN, MS, CMA**  
Madison Area Technical College  
Madison, Wisconsin

**Patricia Bufalino, MA, MN, RN,  
FNP**  
Riverside Community College  
Moreno Valley, California

**Ginger Bushway**  
Mendocino College  
Ukiah, California

**Mary Butler, BS**  
Collin County Community College  
McKinney, Texas

**Toni Cade, MBA, RHIA, CCS,  
FAHIMA**  
University of Louisiana at  
Lafayette  
Lafayette, Louisiana

**Cara L. Carreon, BS, RRT, CMA,  
CPC**  
Ivy Tech Community College  
Lafayette, Indiana

**Rafael Castilla, MD**  
Ho Ho Kus School  
Ramsey, New Jersey

**Julia I. Chapman, BS**  
Stark State College of Technology  
North Canton, Ohio

**Dean Chiarelli, MA, RD, HFS,  
CHES**  
Arizona State University  
Phoenix, Arizona

**Kim Christmon, BS, RRT**  
Volunteer State Community  
College  
Gallatin, Tennessee

**Paula-Beth Ciolek**  
National College of Business and  
Technology  
Richmond, Kentucky

**Deresa Claybrook, MS, RHIT**  
Oklahoma City Community  
College  
Oklahoma City, Oklahoma

**Mike Cochran, BA, RT(R)(CT),  
ARRT, VSRT, SWDSRT**  
Southwest Virginia Community  
College  
Richlands, Virginia

**Christine Cole, CCA**  
Williston State College  
Williston, North Dakota

**Ronald Coleman, EdD**  
Volunteer State Community  
College  
Gallatin, Tennessee

**Bonnie Crist**  
Harrison College  
Indianapolis, Indiana

**Cathleen Currie, RN, BS**  
College of Southern Idaho  
Twin Falls, Idaho

**Dianne Davis, BS, MS, ABD  
EdD**  
West Virginia University at  
Parkersburg  
Parkersburg, West Virginia

- Denise J. DeDeaux, AAS, BS, MBA\***  
Fayetteville Technical Community College  
Fayetteville, North Carolina
- Anita Denson, BS, CMA**  
National College of Business and Technology  
Danville, Kentucky
- Susan D. Dooley, CMT\***  
Seminole Community College  
Sorrento, Florida
- Robert Fanger, MSEd**  
Del Mar College  
Corpus Christi, Texas
- Sarah E.W. Finch, PhD**  
Florida State College at Jacksonville  
Jacksonville, Florida
- Vickie Findley, MPA, RHIA**  
Fairmont State College  
Fairmont, West Virginia
- Kathie Folsom, MS, BSN, RN**  
Skagit Valley College—Whidbey Island Campus  
Oak Harbor, Washington
- Joyce Foster**  
State Fair Community College  
Sedalia, Missouri
- Elaine Garcia, RHIT**  
Spokane Community College  
Spokane, Washington
- Suzanne B. Garrett, MSA, RHIA**  
Central Florida Community College  
Ocala, Florida
- Cheryl Gates, RN, MSN, PHN**  
Cerro Coso Community College  
Ridgecrest, California
- Barbara E. Geary, RN, MA**  
North Seattle Community College  
Seattle, Washington
- Paige Gebhardt, RMT**  
Sussex County Community College  
Newton, New Jersey
- Laura Ristrom Goodman, MSSW**  
Pima Medical Institute  
Tucson, Arizona
- Patricia Goshorn, MA, RN, CMA-AC C**  
Cosumnes River College  
Sacramento, California
- Debra Griffin, RN, BSN**  
Tidewater Community College  
Virginia Beach, Virginia
- Dawn Guzicki, RN**  
Detroit Business Institute—Downriver  
Riverview, Michigan
- Paula Hagstrom, MM, RHIA**  
Ferris State University  
Big Rapids, Michigan
- Doty Hall, RN, MSN, CST**  
Ivy Tech Community College  
Lafayette, Indiana
- Karen Hardney, MSED, RT**  
Chicago State University  
Chicago, Illinois
- Marie Hattabaugh, RT(R)(M)**  
Pensacola Junior College  
Pensacola, Florida
- Tiffany Heath, CMA, CMAS, AHI, CS**  
Porter and Chester Institute  
Chicopee, Massachusetts
- Barbara L. Henry, RN, BSN**  
Gateway Technical College  
Racine, Wisconsin
- Forrest Heredia**  
Pima Medical Institute  
Tucson, Arizona
- Cathy Hess, RHIA**  
Texas State University  
San Marcos, Texas
- Dori L. Hess, MS, LMT, BS**  
Stark State College of Technology  
Canton, Ohio
- Jan C. Hess, MA**  
Metropolitan Community College  
Omaha, Nebraska
- Denise M. Hightower, RHIA**  
Cape Fear Community College  
Wilmington, North Carolina
- Beulah A. Hofmann, RN, MSN, CMA**  
Ivy Tech Community College  
Greencastle, Indiana
- Valentina Holder, MA.Ed, RHIA**  
Pitt Community College  
Winterville, North Carolina
- Joe Horan**  
Seacoast Career School  
Manchester, New Hampshire
- Pamela S. Huber, MS, MT(ASCP)**  
Erie Community College  
Williamsville, New York
- James E. Hudacek, MSED\***  
Loraine County Community College  
Amherst, Ohio
- Bud W. Hunton, MA, RT (R) (QM)**  
Sinclair Community College  
Dayton, Ohio
- Karen Jackson, NR-CMA**  
Remington College  
Garland, Texas
- Donna Jimison RN, MSN**  
Cuyahoga Community College  
Parma, Ohio
- Timothy J. Jones, MA**  
Oklahoma City Community College  
Oklahoma City, Oklahoma
- Kathleen Kearney, BS, MED, EMT-P**  
Kent State University  
Kent, Ohio
- Cathy Kelley-Arney, CMA, MLTC, BSHS, AS**  
National College of Business and Technology  
Bluefield, Virginia
- Winifred Khalil, RN, MS**  
San Diego Mesa College  
San Diego, California
- Heather Kies, MHA**  
Goodwin College  
East Hartford, Connecticut
- Jan Klawitter, CMA (AAMA), CPC**  
San Joaquin Valley College  
Bakersfield, California
- Marsha Lalley, BSM, MSM**  
Minneapolis Community and Technical College  
Minneapolis, Minnesota
- Joyce Lammers, PT, MHS, PCS**  
University of Findlay  
Findlay, Ohio
- Carol A. Lehman, ART**  
Hocking College  
Nelsonville, Ohio
- Sandra Lehrke, MS, RN**  
Anoka Technical Community College  
Anoka, Minnesota
- Randall M. Levin, FACEP**  
Sanford Brown College  
Milwaukee, Wisconsin
- Maria Teresa Lopez-Hill, MS**  
Laredo Community College  
Laredo, Texas
- Bow Valley College**  
Calgary, Alberta
- Collin County Community College**  
McKinney, Texas
- Michelle Lovings, BA**  
Missouri College  
Brentwood, Missouri
- Carol Loyd, MSN, RN**  
University of Arkansas Community College  
Morrilton, Arkansas
- Patricia McLane, RHIA, MA**  
Henry Ford Community College  
Dearborn, Michigan
- Michael C. McMinn, MA, RRT**  
Mott Community College  
Flint, Michigan
- Aimee Michaelis**  
Pima Medical Institute  
Denver, Colorado
- Michelle G. Miller, M, CMA, COMT**  
Lakeland Community College  
Kirtland, Ohio
- Ann Minks, FAAMT**  
Lake Washington Technical College  
Kirkland, Washington
- Suzanne Moe, RN**  
Northwest Technical College  
Bemidji, Minnesota
- Barbara S. Moffet, PhD, RN**  
Southeastern Louisiana University  
Hammond, Louisiana
- Debby Montone, BS, RN, CCS-P, RCVT**  
Eastwick College/Ho Ho Kus Schools  
Ramsey, New Jersey
- Karen Myers, CPC**  
Pierce College Puyallup  
Puyallup, Washington
- Gloria Newton, MA-ED**  
Shasta College  
Redding, California
- Amanda Niebur, BA**  
Minneapolis Business College  
Roseville, Minnesota
- Erin Nixon, RN**  
Bakersfield College  
Bakersfield, California
- Alice M. Noblin, MBA, RHIA, CCS, LHRM**  
University of Central Florida  
Orlando, Florida
- Wendy Oguz, AS, BA**  
National College  
Indianapolis, Indiana
- Evie O’Nan, RMA**  
National College  
Florence, Kentucky
- Kerry Openshaw, PhD**  
Bemidji State University  
Bemidji, Minnesota
- Bob Osborn**  
Lansing Community College  
Lansing, Michigan
- Janet Pandzik, MS, CMT, RMA**  
Good Careers Academy  
San Antonio, Texas
- Mirella G. Pardee, MSN, RN**  
University of Toledo  
Toledo, Ohio
- Sherry Pearsall, MSN**  
Bryant & Stratton College  
Liverpool, New York
- Tina Peer, MS, RN**  
The College of Southern Idaho  
Twin Falls, Idaho
- Tammie C. Petersen, RNC-OB, BSN**  
Austin Community College  
Austin, Texas
- Susan Prion, EdD, RN**  
University of San Francisco  
San Francisco, California
- Mary Rahr, MS, RN, CMA**  
Northeast Wisconsin Technical College  
Madison, Wisconsin
- Edilberto A. Raynes, MD**  
Tennessee State University  
Nashville, Tennessee
- Deward Reece, DC**  
Sanford Brown College  
Milwaukee, Wisconsin
- Joy Renfro, EdD, RHIA, CMA, CCS-P, CPC**  
Eastern Kentucky University  
Richmond, Kentucky
- Sheila G. Rockoff, EdD, MSN, BSN, AS, RN**  
Santa Ana College  
Santa Ana, California

**Mary Sayles, RN, MSN**  
Sierra College—Nevada County  
Campus  
Rocklin, California

**Jody E. Scheller, MS, RHIA**  
Schoolcraft College  
Garden City, Michigan

**Patricia Schrull, MSN, MBA,  
MEd, RN**  
Lorain County Community College  
Elyria, Ohio

**Theresa R. Schuldt, MEd, HT/HTL  
(ASCP)**  
Rose State College  
Midwest City, Oklahoma

**Jan Sesser, BS, RMA (AMT), CMA**  
High Tech Institute  
Phoenix, Arizona

**Julie A. Shellenbarger, MBA, RHIA**  
University of Northwestern Ohio  
Lima, Ohio

**Donna Sue Shellman, MA, CPC**  
Gaston College  
Dallas, North Carolina

**Karin Sherrill, BSN**  
Mesa Community College  
Gilbert, Arizona

**Paula Silver, PharmD**  
ECPI University  
Newport News, Virginia

**Vicki Simpson, PhD, RN, CHES**  
Purdue University West Lafayette  
West Lafayette, Indiana

**Erin Sitterley**  
North Seattle Community College  
Seattle, Washington

**Tim J. Skaife, RT(R), MA**  
National Park Community College  
Hot Springs, Arizona

**Lynn G. Slack, CMA**  
ICM School of Business and  
Medical Careers  
Pittsburgh, Pennsylvania

**Ellie Smith, RN, MSN**  
Cuesta College  
San Luis Obispo, California

**Sherman K. Sowby, PhD, CHES**  
California State University—Fresno  
Fresno, California

**Darla K. Sparacino, MEd, RHIA**  
Arkansas Tech University  
Russellville, Arkansas

**Carolyn Stariha, BS, RHIA**  
Houston Community College—  
Coleman Campus  
Houston, Texas

**Kathy Stau, CPhT**  
Medix School  
Smyrna, Georgia

**Twila Sterling-Guillory, RN, MSN**  
McNeese State University  
Lake Charles, Louisiana

**Deb Stockberger, MSN, RN**  
North Iowa Community College  
Mason City, Iowa

**Paula L. Stoltz, CMT-F**  
Medical Transcription Education  
Center  
Fairlawn, Ohio

**Diane Swift**  
State Fair Community College  
Sedalia, Missouri

**J. David Taylor, PhD, PT, CSCS**  
University of Central Arkansas  
Conway, Arkansas

**Sylvia Taylor, CMA, CPCA**  
Cleveland State Community  
College  
Cleveland, Tennessee

**Jean Ternus, RN, MS**  
Kansas City Community College  
Kansas City, Kansas

**Cindy B. Thompson, BSRT, MA\***  
Alamance Community College  
Graham, North Carolina

**Lenette Thompson, CST**  
Piedmont Technical College  
Greenwood, South Carolina

**Margaret A. Tiemann, RN, BS**  
St. Charles Community College  
Cottleville, Missouri

**Mary Jane Tremethick, PhD, RN,  
CHES**  
Northern Michigan University  
Marquette, Michigan

**Valeria D. Truitt, BS, MAEd**  
Craven Community College  
New Bern, North Carolina

**Christine Tufts-Maher, MS, RHIA**  
Seminole Community College  
Altamonte Springs, Florida

**Pam Ventgen, CMA (AAMA),  
CCS-P, CPC, CPC-I**  
University of Alaska—Anchorage  
Anchorage, Alaska

**Patricia Von Knorring**  
Tacoma Community College  
Gig Harbor, Washington

**Jane C. Walker, BBA, PhD, RN,  
ASLNC-C, CPN, CNE**  
Walters State Community College  
Morristown, Tennessee

**Mary Warren-Oliver, BA**  
Gibbs College  
Vienna, Virginia

**Kristen Waterstram-Rich, MS,  
CNMT**  
Rochester Institute of Technology  
Rochester, New York

**Kim Webb, RN, MN**  
Northern Oklahoma College  
Tonkawa, Oklahoma

**Richard Weidman, RHIA, CCS-P**  
Tacoma Community College  
Tacoma, Washington

**Bonnie Welniak, RN, MSN**  
Monroe County Community  
College  
Monroe, Michigan

**Connie Werner, MS, RHIA**  
York College of Pennsylvania  
York, Pennsylvania

**Victoria Lee Wetle, RN, EdD**  
Chemeketa Community College  
Salem, Oregon

**David J. White, MA, MLIS**  
Baylor University  
Waco, Texas

**Jay W. Wilborn, MEd, MT(ASCP)**  
National Park Community College  
Hot Springs, Arkansas

**Tammy L. Wilder, RN, MSN,  
CMSRN**  
Ivy Tech Community College  
Evansville, Indiana

**Antionette Woodall**  
Remington College—Cleveland  
North Olmsted, Ohio

**Scott Zimmer, MS**  
Metropolitan Community College  
Omaha, Nebraska

## Focus Group Participants

**Kim Anthony Aaronson, BS, DC**  
Harry S. Truman College  
Harold Washington College  
Chicago, Illinois

**Kendra J. Allen, LPN**  
Ohio Institute of Health Careers  
Columbus, Ohio

**Delena Kay Austin, BTIS, CMA**  
Macomb Community College  
Clinton Township, Michigan

**Molly Baxter**  
Baker College—Port Huron  
Port Huron, Michigan

**Joan Berry, RN, MSN, CNS**  
Lansing Community College  
Lansing, Michigan

**Kenneth Bretl, MA, RRT**  
College of DuPage  
Glen Ellyn, Illinois

**Carole Bretscher**  
Southwestern College  
Bellbrook, Ohio

**Adrienne L. Carter, MEd, NRMA**  
Riverside Community College  
Moreno Valley, California

**Mary Dudash-White, MA, RHIA,  
CCS**  
Sinclair Community College  
Dayton, Ohio

**Cathy Flite, MEd, RHIA**  
Temple University  
Philadelphia, Pennsylvania

**Sherry Gamble, RN, CNS, MSN,  
CNOR**  
University of Akron  
Akron, Ohio

**Mary Garcia, BA, AD, RN**  
Northwestern Business College  
Northeastern Illinois University  
Truman College  
Chicago, Illinois

**Joyce Garozzo, MS, RHIA, CCS**  
Community College of  
Philadelphia

Philadelphia, Pennsylvania

**Patsy Gehring, PhD, RN, CS**  
Lakeland Community College  
Kirkland, Ohio

**Michelle Heller, CMA, RMA**  
Ohio Institute of Health Careers  
Columbus, Ohio

**Janet Hossli**  
Northwestern Business College  
Chicago, Illinois

**Trudi James-Parks, RT, BS**  
Lorain County Community College  
Elyria, Ohio

**Sherry L. Jones, RN, ASN**  
Western School of Health and  
Business  
Community College of Allegheny  
County  
Pittsburgh, Pennsylvania

**Esther H. Kim**  
Chicago State University  
Chicago, Illinois

**Richelle S. Laipply, PhD, CMA**  
University of Akron  
Akron, Ohio

**Andrea M. Lane, CMA-C, BAS  
RN, MS**  
Brookdale Community College  
Lincroft, New Jersey

**Mary Lou Liebal, BS, RTR, MA**  
Cuyahoga Community College  
Cleveland, Ohio

**Stacey Long, BS**  
Miami Jacobs Career College  
Dayton, Ohio

**Anne Loochtan, MEd**  
Columbus State Community  
College  
Cincinnati, Ohio

**Anne M. Lunde, BS, CMT**  
Waubonsee Community College  
Sugar Grove, Illinois

**Janice Manning, MA, PCP**  
Baker College  
Jackson, Michigan

**Sandy Marks, RN, MS(HCA)**  
Cerritos College  
Norwalk, California

**Kathleen Masters, MS, RN**  
Monroe County Community  
College  
Monroe, Michigan

**Mary Morgan, MS, CNMT**  
Columbus State Community  
College  
Columbus, Ohio

**Andrew Muniz, OT, BBA, MBA**  
Baker College  
Auburn Hills, Michigan

**Michael Murphy, AAS, CMA,  
CLP**  
Berdan Institute  
Union, New Jersey

**Stephen Nardozi, BA**  
SUNY-Westchester Community  
College  
Valhalla, New York

**Ruth Ann O'Brien, MHA, RRT**  
Miami Jacobs Career College  
Dayton, Ohio

**Donna Schnepf, MHA, RHIA**  
Moraine Valley Community  
College  
Palos Hills, Illinois

**Ann M. Smith, MS**  
Joliet Junior College  
Joliet, Illinois

**Mark Velderrain**  
Cerritos College  
Norwalk, California

**Jane C. Walker, BBA, RN,  
ASLNC-C, CPN, CNE**  
Walters State Community College  
Morristown, Tennessee

**Barbara Wiggins, MT(ASCP)**  
Delaware Technical & Community  
College  
Georgetown, Delaware

**Gail S. Williams, Ph.D.,  
MT(ASCP)SBB, CLS(NCA)**  
Northern Illinois University  
DeKalb, Illinois

**Karen Wright, RHIA, MHA**  
Hocking College  
Nelsonville, Ohio

## Student Advisors

**Tobi Burch**  
Community College of  
Philadelphia  
Philadelphia, Pennsylvania

**Calvin Byrd**  
Temple University  
Philadelphia, Pennsylvania

**Kimberly Clark**  
Community College of  
Philadelphia  
Philadelphia, Pennsylvania

**Susan DiMaria**  
Brookdale Community College  
Lincroft, New Jersey

**Avelina Elam**  
Thomas Jefferson University  
Philadelphia, Pennsylvania

**Michael Flores**  
Berdan Institute  
Union, New Jersey

**Frederick Herbert**  
Temple University  
Philadelphia, Pennsylvania

**Brenda Merlino**  
Thomas Jefferson University  
Philadelphia, Pennsylvania

**Megan Milos**  
Ocean County College  
Toms River, New Jersey

**Payam Mohadjeri**  
Temple University  
Philadelphia, Pennsylvania

**Monica Narang**  
Westchester Community College  
Valhalla, New York



# Thank You

## To the Pearson Development Team

My utmost thanks go to John Goucher, Courseware Portfolio Manager, Health Sciences, for bringing to completion the very successful most recent editions of *Medical Language*, as well as this new fifth edition. I also want to express my thanks to Melissa Bashe, Managing Producer, Health Sciences, who coordinated activities on the first edition and has now returned to expertly manage many facets of the fifth edition,

My gratitude and thanks go to Anita Impagliazzo, my medical illustrator. She embraced much more than her original role and quickly became a creative collaborator and advisor for all five editions. She is a wonderfully talented medical illustrator whose efforts made this book medically accurate, artistically unique, and without equal. By combining real-life photographs of people superimposed with medical illustrations, she created a never-before-seen level of medical realism, to the delight of the author and the awe of students and instructors alike.

My sincere thanks go to Laura S. Horowitz, York Content Development, my development editor. She expertly and seamlessly coordinated all aspects of the very complicated process of creating a new edition. Her professional expertise was a constant throughout the process, and all of the many steps and details involved would have been overwhelming and difficult to complete without her all-encompassing and timely editorial assistance and personal support.

My thanks go to Studio Montage for creating a beautiful, fresh, and inviting design and format for the fifth edition. My thanks go to all of members of the Pearson team from portfolio management assistants to project managers to marketing managers and sales representatives to the executive editors and the publisher!

My thanks go to the talented team at SPi Global, led by Patty Donovan, Project Management Team Lead/Nursing Science, Emily Tamburri, Editorial Project Manager, and Joanna Stein, Project Manager, who oversaw the extensive editing, layout, typesetting, and indexing of the fifth edition. In light of the complexity of the book, I especially appreciated their professionalism, flexibility, creative insights, and can-do approach.

My thanks go to the Pearson media team that designed and produced a spectacular array of learning applications to support my textbook.

## To Students and Instructors

As the author, my thanks go to the many classes of students who motivated me to continually research and present medical language clearly and thoroughly. It was their warm response to my teaching methods and materials that encouraged me to keep improving in the classroom and throughout all five editions of the textbook.

My thanks go to the many reviewers, instructors, and practitioners—my colleagues—who have overwhelmingly validated my efforts to write about medical language with a uniquely interesting, lively, and fresh approach. Each and every person listed played an important role in the development of this book, and I hope they share my sense of pride and accomplishment in this fifth edition.

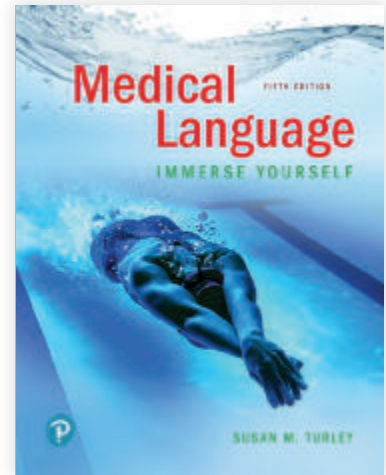
# An Overview of *Medical Language*

No new medical terminology book has touched the lives of so many people as profoundly as *Medical Language*. We credit the astounding success of the award-winning first edition and all subsequent editions to their special ability to meet the needs of students and instructors.

Students need to be immersed in the real world of medicine from the moment they begin to study medical terminology. That is why the chapters in *Medical Language* are named—not by body system (as is the case with anatomy textbooks and other medical terminology textbooks)—but by medical specialties, which reflects the practice of medicine in the real world. In addition, all of the text, illustrations, and photo images have been carefully revised and updated to reflect the most up-to-date medical information and the most realistic medical images available.

The emphasis on learning medical language as a language is reinforced by including see-and-say pronunciations for each bolded word in the text and providing a breakdown of each bolded word into its component word parts and their meanings.

The fifth edition builds on our commitment to excellence, and so we have once again challenged the author, our reviewers, and our development team to critique every feature, every page, every word—all to help enhance the learning and teaching process. The information in each section of a chapter is presented in a way that reflects the level of detail that the majority of instructors told us they need. The result of this feedback has been an intelligent reorganization as well as the integration of features that you, our customer, have asked for and will not find in any other medical terminology textbook.



## Chapter Format

Each chapter follows a consistent organization designed for student success.

### Chapter Overview, Learning Outcomes, and Medical Language Key

The first page of each chapter offers a brief chapter outline to help students see the scope of the chapter as well as its special features. Each section of the chapter is numbered, and this same numbering is consistently used throughout the chapter, including in all of the exercises. The overall learning outcome for the chapter can be fulfilled by students in a very practical way by successfully completing chapter exercises. Individual learning outcomes are listed under each numbered section. The first page ends with a Medical Language Key feature box that provides a word analysis of the medical specialty described in that chapter.

**4 Pulmonology**  
Respiratory System

Pulmonology (puh-moh-NAW-kuh-leej) is the medical specialty that studies the anatomy and physiology of the respiratory system; uses laboratory, diagnostic, and radiologic procedures to diagnose respiratory diseases; and uses medical procedures, drugs, and surgical procedures to treat respiratory diseases.

**Chapter Overview and Learning Outcomes**

After you study this chapter, you should be able to demonstrate mastery of the outcomes by successfully completing the exercises.

**4.1 Anatomy**  
Identify the structures of the respiratory system.  
Demonstrate proficiency in medical language.  
4.1 Practice Laps

**4.2 Physiology**  
Describe the functions of the respiratory system.  
Demonstrate proficiency in medical language.  
4.2 Practice Laps

**4.3 Diseases**  
Describe common respiratory diseases.  
Demonstrate proficiency in medical language.  
4.3 Practice Laps

**4.4 Laboratory, Diagnostic, and Radiologic Procedures**  
Describe common respiratory laboratory tests, diagnostic procedures, and radiologic procedures.  
Demonstrate proficiency in medical language.  
4.4 Practice Laps

**4.5 Medical Procedures, Drugs, and Surgical Procedures**  
Describe common respiratory medical procedures, drugs, and surgical procedures.  
Demonstrate proficiency in medical language.  
4.5 Practice Laps

**Abbreviations Summary**  
**Career Focus**  
**Chapter Review Exercises**  
Do It In: Medical Language Exercises (Learning Outcomes 4.1–4.2)  
Immerse Yourself: Analyze Medical Reports

**Medical Language Key**  
To unlock the definition of a medical word, first break it into word parts. Then give the meaning of each word part. Put the meanings of the word parts in order, beginning with the meaning of the suffix, then the meaning of the prefix (if there is one), then the meaning of the combining form.

**pulmon/o-** means lung  
**-logy** means study of

**Pulmonology** Study of (the) lungs (and related structures).

The following sections are included in most chapters. The material in these sections is comprehensive in its scope but is at a level that is appropriate for a terminology textbook as opposed to an anatomy, physiology, disease, laboratory, or surgical textbook. Each section is supplemented by a rich variety of medical illustrations and photographs as well as several different Special Features, as described later.

### Anatomy

The first section in each chapter is a comprehensive presentation of the anatomy of the body system related to that chapter's medical specialty.

## 4.1 Anatomy

### Upper Respiratory System

The upper respiratory system is in the head and neck. It includes the nose, nasal cavity, and pharynx (throat). *Note:* Some of these same structures—as well as others (the sinuses, adenoids, tonsils)—are part of the ears, nose, and throat (described in Chapter 15, Otolaryngology).

### 4.1 PRACTICE LAPS

Use the Answer Key at the end of the book to check your answers.

#### A. Label Structures

Write each anatomy word c

#### B. Give the Meaning of Combining Forms

Next to each combining form, write its meaning. The first one has been done for you.

Combining Form	Meaning	Combining Form	Meaning
1. alveol/o-	air sac	8. or/o-	

#### C. Build Words

Read the definition of the medical word. Look at the combining form that is given. Select the correct suffix from the Suffix List, and write it on the blank line. Then build the medical word, and write it on the line. (Remember: You may need to remove the combining vowel. Always remove the hyphens and slash.) Be sure to check your spelling.

##### Suffix List

-al (pertaining to)	-ate (composed of; pertaining to)	-eal (pertaining to)	-ole (small thing)
-ar (pertaining to)		-ic (pertaining to)	-ous (pertaining to)
-ary (pertaining to)			

Definition of the Medical Word	Combining Form	Suffix	Build the Medical Word
Example: Pertaining to (the) bronchiole	bronchiol/o-	-ar	bronchiolar

### Practice Laps

The Anatomy section (and each subsequent numbered section) ends with a set of Practice Laps exercises that reinforce the material that has just been presented.

### Physiology

This second section is a comprehensive presentation of the physiology of the body system related to that chapter's medical specialty.

## 4.2 Physiology

Breathing is normally an involuntary process that occurs without any conscious effort. **Respiratory control centers** in the brain regulate the depth and rate of respiration. Receptors in large arteries in the chest and neck send information to the brain about the level of oxygen in the blood, and receptors in the brain send information about the blood level of carbon dioxide. Based on this information, the respiratory control centers regulate the rate of respiration by sending nerve impulses to the **phrenic nerve**, causing the diaphragm to contract. You can voluntarily control your respiration (when you hold your breath), but eventually involuntary control takes over, forcing you to breathe.

### Vocabulary Review

Word or Phrase	Description	Combining Forms
<b>Overview</b>		
<b>cardiopulmonary</b>	Pertaining to the heart and lungs	cardi/o- heart pulmon/o- lung
<b>respiratory system</b>	The structures of the upper respiratory system include the nose, nasal cavity, and pharynx (throat). The lower respiratory system includes the larynx (voice box), trachea (windpipe), bronchi, bronchioles, lungs, and thorax. Also known as the <b>respiratory tract</b> . The functions of the respiratory system are to bring oxygen into the body and expel carbon dioxide.	spir/o- breathe; coil
<b>Anatomy of the Upper Respiratory System</b>		
<b>mucosa</b>	<b>Mucous membrane</b> that lines most of the respiratory system. It warms and humidifies incoming air. It produces <b>mucus</b> to trap foreign particles and bacteria.	muc/o- mucus
<b>nasal cavity</b>	Hollow area inside the nose. The <b>nasal septum</b> divides the nasal cavity into right and left sides.	nas/o- nose sept/o- dividing wall; septum
<b>pharynx</b>	The throat. A shared passageway for both air and food. The <b>nasopharynx</b> is posterior to the nasal cavity, the <b>oropharynx</b> is posterior to the oral cavity, and the <b>laryngopharynx</b> is posterior to the larynx.	pharyng/o- pharynx; throat nas/o- nose or/o- mouth laryng/o- larynx; voice box
<b>turbinate</b>	Scroll-like projections of bone covered by mucous membrane on either side of the nasal cavity. They slow down and give moisture to inhaled air. Also known as <b>nasal conchae</b> .	turbin/o- scroll-like structure

### Vocabulary Review

After the first two sections, a Vocabulary Review reinforces an understanding of anatomy and physiology with an at-a-glance review of each bolded word or phrase, its description, and related combining forms. Some chapters also contain an **Abbreviation Review** at this point.



## Diseases

The third section in each chapter provides descriptions, causes, symptoms, and treatments for common diseases related to that chapter's medical specialty, again ending with a set of Practice Laps exercises.

## 4.3 Diseases

Note: Diseases of the nose, sinuses, pharynx, tonsils, adenoids, and larynx are described in Chapter 15, Otolaryngology.

Word or Phrase	Description	Pronunciation/Word Parts
<b>Nose and Pharynx</b>		
<b>upper respiratory infection (URI)</b>	Bacterial or viral infection of the nose and/or throat. Also known as a <b>common cold</b> or a <b>head cold</b> (see Figure 4-8 ■). Treatment: Antibiotic drug for a bacterial infection	<b>infection</b> (in-FEK-shun) <b>infect/o-</b> disease within <b>-ion</b> action; condition

## 4.4 Laboratory, Diagnostic, and Radiologic Procedures

Word or Phrase	Description	Pronunciation/Word Parts
<b>Laboratory Tests and Diagnostic Procedures</b>		
<b>arterial blood gases (ABG)</b>	Blood test to measure the partial pressure (p) of the gases oxygen (pO <sub>2</sub> ) and carbon dioxide (pCO <sub>2</sub> ) in the arterial blood. The pH (how acidic or alkaline the blood is) is also measured. The higher the level of carbon dioxide, the more acidic the blood and the lower the pH.	<b>arterial</b> (ar-TEER-ee-al) <b>arteri/o-</b> artery <b>-al</b> pertaining to

## Laboratory, Diagnostic, and Radiologic Procedures

The fourth section describes the most common types of tests that are ordered to diagnose diseases related to that medical specialty, again ending with Practice Laps exercises.

## 4.5 Medical Procedures, Drugs, and Surgical Procedures

## Medical Procedures, Drugs, and Surgical Procedures

The last numbered section in each chapter describes the most common medical and surgical procedures and drugs used in that medical specialty, once again ending with Practice Laps exercises.

Word or Phrase	Description	Pronunciation/Word Parts
<b>Medical Procedures</b>		
<b>auscultation and percussion (A&amp;P)</b>	Auscultation uses a <b>stethoscope</b> to listen to breath sounds in all lobes of the lungs. Percussion uses the finger of one hand to tap over the finger of the other hand that is spread across the patient's back over a lobe of the lung. After a few taps, the hand is moved over another lobe. Auscultation and percussion tell the physician if the lung sounds are clear or if there is dullness because of the presence of fluid or a tumor (see Figure 4-24 ■).	<b>auscultation</b> (aws-kul-TAY-shun) <b>auscult/o-</b> listening <b>-ation</b> being; having; process <b>stethoscope</b> (STETH-oh-skohp) <b>steth/o-</b> chest <b>-scope</b> instrument used to examine <b>percussion</b> (per-KUH-shun) <b>percuss/o-</b> tapping <b>-ion</b> action; condition

## Abbreviations Summary

<b>A&amp;P</b>	auscultation and percussion	<b>LUL</b>	left upper lobe (of the lung)
<b>ABG</b>	arterial blood gases	<b>MDI</b>	metered-dose inhaler
<b>AFB</b>	acid-fast bacillus	<b>MDR-TB</b>	multidrug-resistant tuberculosis
<b>AP</b>	anteroposterior	<b>MRI</b>	magnetic resonance imaging
<b>AQI</b>	Air Quality Index	<b>O<sub>2</sub></b>	oxygen
<b>ARDS</b>	adult respiratory distress syndrome	<b>PA</b>	posteroanterior
<b>BS</b>	breath sounds	<b>PCO<sub>2</sub>, pCO<sub>2</sub></b>	partial pressure of carbon dioxide
<b>C&amp;S</b>	culture and sensitivity	<b>PFT</b>	pulmonary function test
<b>CAT, CT</b>	computerized axial tomography	<b>PND</b>	paroxysmal nocturnal dyspnea
<b>CF</b>	cystic fibrosis	<b>PO<sub>2</sub>, pO<sub>2</sub></b>	partial pressure of oxygen
<b>CO</b>	carbon monoxide	<b>PPD</b>	packs per day (of cigarettes); purified protein derivative (TB test)
<b>CO<sub>2</sub></b>	carbon dioxide	<b>RA</b>	room air (no supplemental oxygen)
<b>COPD</b>	chronic obstructive pulmonary disease	<b>RLL</b>	right lower lobe (of the lung)
<b>CPAP</b>	continuous positive airway pressure (pronounced "SEE-pap")	<b>RML</b>	right middle lobe (of the lung)

## Abbreviations Summary

Each chapter ends with a summary of all of the abbreviations and their meanings that were used in the chapter.

## Career Focus

### Meet Susan, a respiratory therapist in a hospital

"I love my job. I've been doing it for 36 years. I probably could retire, but I choose not to. We treat neonates to geriatric patients. We treat asthma, COPD, and pulmonary fibrosis patients and give information to the patients' families. We also manage oxygen therapy, nebulizer therapy, and medication therapy. We do pulmonary function technology and blood gases. I feel that being a respiratory therapist allows me to feel respected and appreciated, not only by the medical staff, but by the patients because you are giving patient care. You are dealing with the patient directly, as well as the physician. You feel good at the end of the day when you leave."



- **Respiratory therapists** are allied health professionals who perform pulmonary function tests and administer respiratory therapy with various types of equipment that provide oxygen or respiratory assistance to a patient.
- **Pulmonologists** are physicians who practice in the medical specialty of pulmonology. They diagnose and treat patients with respiratory problems. Physicians can take additional training and become board certified in the subspecialty of pediatric pulmonology.
- **Thoracic** (or cardiothoracic) **surgeons** perform pulmonary surgery, including surgery for cancer.
- **Oncologists** treat cancer of the lungs with drugs.

**therapist** (THAIR-ah-pist)  
**therap/o-** treatment  
**-ist** person who specializes in

**pulmonologist** (PUL-moh-NAW-loh-jist)  
**pulmon/o-** lung  
**log/o-** study of; word  
**-ist** person who specializes in

**oncologist** (ong-KAW-loh-jist)  
**onc/o-** mass; tumor  
**log/o-** study of; word  
**-ist** person who specializes in

## Career Focus

This section orients students to a different healthcare career in each chapter.

## Chapter Review Exercises

This section fortifies students with a fun and extensive variety of exercises. **Dive In** exercises are linked to each numbered section in the chapter and are designed for a range of learning styles. These exercises emphasize mastery of the medical information presented in each section as well as mastery of the language aspects of word parts and their meanings, building words, dividing words, singular and plural nouns, adjectives, spelling, and pronunciation. **Immerse Yourself** exercises emphasize the application of knowledge as students read real patient records and answer thought-provoking questions about their content.

## Chapter Review Exercises

### Dive In: Medical Language Exercises

Test your knowledge of the chapter by completing these review exercises. Use the Answer Key at the end of the book to check your answers. Note: Each of the numbered exercise headers corresponds to a numbered learning outcome at the beginning of the chapter.

#### 4.1 Anatomy

##### MATCHING EXERCISE


Match each word or phrase to its description.

1. a
2. tu

### Immerse Yourself: Analyze Medical Reports

#### Electronic Patient Record #1

This is an Office Visit in the SOAP note format. Read the note and answer the questions.

PEARSON PRIMARY CARE ASSOCIATES	
Task Edit View Time Scale Options Help	
[Icons: Home, Print, Copy, Paste, Undo, Redo, Save, Refresh, Close]	
	<b>OFFICE VISIT SOAP NOTE</b>
PATIENT NAME: GUPTA, Priya	
MEDICAL RECORD NUMBER: 964-43651	
DATE OF VISIT: 11/19/xx	

## MyLab Medical Terminology™

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

- A multitude of quizzes and activities built within the MyLab platform
- Powerful tools that track and analyze your results—allowing you to create a personalized learning experience
- Videos and audio pronunciations to help enrich your progress
- Streaming lesson presentations (guided lectures) and self-paced learning modules
- A space where you and your instructor can check your progress and manage your assignments

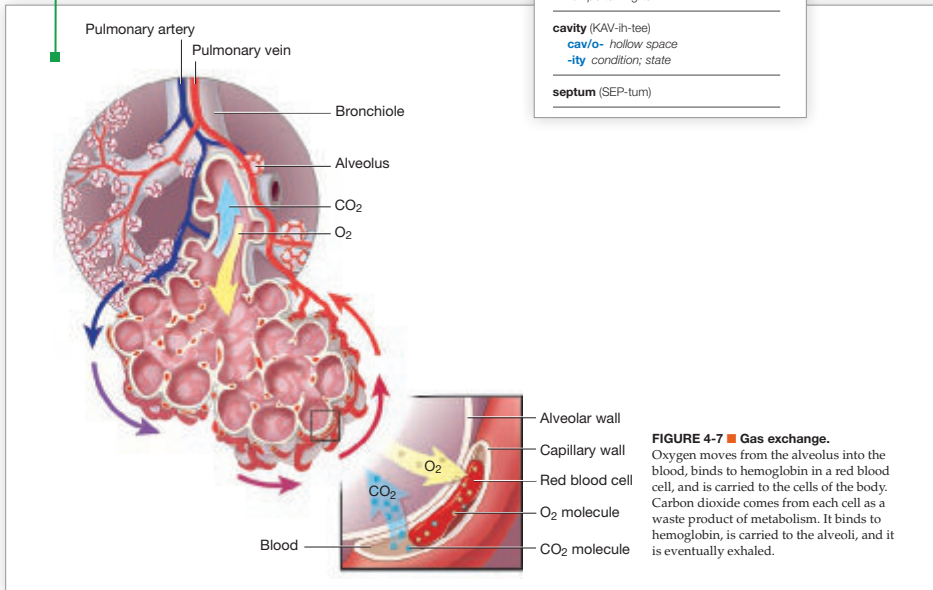
## MyLab Medical Terminology Preview

This end-of-chapter reminder encourages students to make use of the rich variety of online interactive activities and games to further enhance their learning experience.

# Special Features

“How would you describe the ideal medical terminology textbook?” That is the question we asked our development team of students and instructors. Their responses helped us craft an array of special features that make this book unique.

**Vibrant Medical Illustrations and Photographs** bring medical language to life and facilitate understanding, especially for visual learners.



Pronunciation/Word Parts
<b>respiratory</b> (RES-pih-rah-TOR-ee) <b>re-</b> again and again; backward; unable to <b>spit/o-</b> breathe; coil <b>-atory</b> pertaining to Respiratory: Pertaining to again and again (to) breathe
<b>cardiopulmonary</b> (KAR-dee-oh-PUL-moh-NAIR-ee) <b>cardi/o-</b> heart <b>pulmon/o-</b> lung <b>-ary</b> pertaining to
<b>nose</b> (NOHZ)
<b>naris</b> (NAY-ris)
<b>nares</b> (NAY-reez) Latin plural noun: Change the singular ending -is to -es.
<b>nasal</b> (NAY-zal) <b>nas/o-</b> nose <b>-al</b> pertaining to
<b>cavity</b> (KAV-ih-tee) <b>cav/o-</b> hollow space <b>-ity</b> condition; state
<b>septum</b> (SEP-tum)

**Pronunciation/Word Parts** are in the page margins (and within various tables), whenever a bolded word is introduced in the text. This feature gives students the tools to understand unfamiliar words on their own—a see-and-say pronunciation guide and the word parts and meanings of each bolded word—reinforcing that word building is an ongoing process.

**Tables** are used whenever appropriate to present the content in a visually organized way that students can more easily understand and study.

**Table 5-3 Locations and Descriptions of the Veins**

The veins are listed as they are encountered anatomically, beginning with the vena cava.

Veins	Location and Description	Pronunciation/Word Parts
<b>superior vena cava</b>	The <b>superior vena cava</b> brings deoxygenated blood from the head, neck, chest, and arms to the right atrium. The superior vena cava is named for its location, which is superior to the heart.	<b>vena cava</b> (VEE-nah KAY-vah) Latin plural noun: Change the singular ending -a to -ae. Example: The superior and inferior venae cavae
<b>inferior vena cava</b>	The <b>inferior vena cava</b> brings deoxygenated blood from the abdomen, pelvis, and legs to the right atrium. The inferior vena cava is named for its location, which is inferior to the heart. In the pelvic cavity in the area of the hip bones, the inferior vena cava ends as it divides to become the right and left iliac veins.	
<b>jugular veins</b>	The <b>jugular veins</b> bring deoxygenated blood from the head and neck to the superior vena cava. The jugular vein takes its name from a Latin word that means neck.	<b>jugular</b> (JUG-yoo-lar) <b>jugul/o-</b> throat <b>-ar</b> pertaining to
<b>pulmonary veins</b>	The <b>pulmonary veins</b> bring oxygenated blood from the lungs to the left atrium of the heart. Remember: The pulmonary veins are the exception because they are the only veins that carry oxygenated blood. The adjective for the lung is <i>pulmonary</i> .	<b>pulmonary</b> (PUL-moh-NAIR-ee) <b>pulmon/o-</b> lung <b>-ary</b> pertaining to
<b>portal veins</b>	The <b>portal veins</b> bring deoxygenated blood from the intestines and liver to the inferior vena cava. The portal vein is named for the porta hepatis, an opening (or portal) in the liver where blood vessels enter and exit.	<b>portal</b> (POR-tal) <b>port/o-</b> point of entry <b>-al</b> pertaining to
<b>fibular veins</b>	The <b>fibular veins</b> bring deoxygenated blood from the little toe side of the lower leg to the femoral veins. The fibular vein is named for the fibula bone in the lower leg.	<b>fibular</b> (FIH-byoo-lar) <b>fibul/o-</b> fibula <b>-ar</b> pertaining to
<b>saphenous veins</b>	The <b>saphenous veins</b> bring deoxygenated blood from the lower legs to the femoral veins. The saphenous vein takes its name from a Latin word that means <i>clearly visible</i> , as this vein often can be seen through the skin on the inside lower leg.	<b>saphenous</b> (SAF-eh-nuhs) <b>saphen/o-</b> clearly visible <b>-ous</b> pertaining to

Feature Boxes spark student interest with key details relating the material to the real world of medicine and include:

**Across the Life Span** brings an infusion of relevant information related to each stage of life from neonatology to pediatrics to geriatrics.

### Across the Life Span

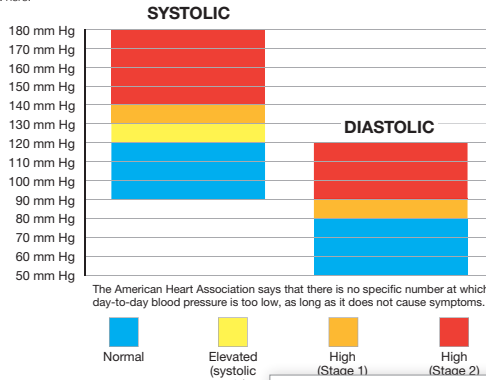
**Pediatrics.** In the uterus, the fetus does not breathe, and its lungs are collapsed. It receives oxygen from the mother's lungs via the placenta and umbilical cord. The lungs of the fetus do not function until the very first breath after birth. At that time, they must expand fully and stay expanded (which is helped by the presence of surfactant).

The normal respiratory rate for a newborn infant is 30–60 breaths per minute. The normal respiratory rate for an adult is 12–20 breaths per minute.

**Geriatrics.** As a person ages, the number of alveoli in the lungs decreases, and the remaining alveoli are less elastic. The thorax becomes stiff and is less able to expand on inhalation. In addition, a lifetime of exposure to air pollution, chemical fumes, and smoke causes damage to the lungs. These changes decrease pulmonary function in older adults.

### Dive Deeper

The American College of Cardiology and the American Heart Association issued new guidelines for blood pressure and hypertension in 2017. Normal blood pressure is now anything **less than 120/80**. The new guidelines are illustrated here.



**Dive Deeper** presents a quick, focused glance at pertinent additional in-depth details related to the material being covered.

**Clinical Connections** highlights the relationships between the chapter material and other medical specialties or presents snapshots of the ways technology is changing health care.

### Clinical Connections

**Dietetics.** The body produces its own supply of cholesterol to make bile, neurotransmitters, and male and female sex hormones. The diet contains additional cholesterol in foods from animal sources. An excessive amount of animal fat in the diet increases the cholesterol level in the blood. An excessive amount of sugar in the diet is converted by the body to triglycerides, and this causes an increased triglyceride level in the blood and increased storage as adipose tissue (fat). Fatty plaque deposits in the arteries grow more quickly in patients who eat high-fat diets or have uncontrolled diabetes mellitus.

**Psychology.** Some people have increased blood pressure readings just because they are nervous about being in a doctor's office. This is known as **white-coat hypertension**. This is not a true hypertension because, as soon as they leave the doctor's office, their blood pressure returns to normal.

**Public Health.** There are many factors that contribute to the development of coronary artery disease. These are known as **cardiac risk factors**. They include demographic factors (heredity, gender, age), medical factors (hypertension, hypercholesterolemia, diabetes mellitus, obesity), and lifestyle factors (smoking, lack of exercise, poor diet, stress, alcoholism).

### Word Alert

#### Sound-Alike Words

<b>breath</b> (BRETH)	(noun)	the air that flows in and out of the lungs <i>Example: The breath of a diabetic patient can have a fruity odor to it.</i>
<b>breathes</b> (BREETH)	(verb)	the action of inhaling and exhaling <i>Example: If you ask an asthmatic patient to breathe deeply, you might hear a wheezing sound.</i>
<b>mucosa</b> (myoo-KOH-sah)	(noun)	Latin word that means <i>mucous membrane</i> <i>Example: The nasal mucosa warms and moistens inhaled air.</i>
<b>mucous</b> (MYOO-kuhs)	(adjective)	pertaining to a membrane (the mucosa) that secretes mucus <i>Example: Allergies make the mucous membranes of the nose swollen and inflamed.</i>
<b>mucus</b> (MYOO-kuhs)	(noun)	a secretion from a mucous membrane <i>Example: A chronic smoker coughs and produces a significant amount of mucus.</i>

**Word Alert** presents important notes about the nuances, meanings, variations, and peculiarities of language and specific, selected bolded words in the chapter. Word Alert includes topics such as Abbreviations, Sound-Alike Words, and It's Greek to Me!, which gives useful reminders about how Greek and Latin combining forms remain part of medical language today.

**Appendix A: Glossary of Medical Word Parts: Prefixes, Suffixes, and Combining Forms** Appendix A gathers all medical word parts into one table to facilitate searching. Prefixes, suffixes, and combining forms and their meanings are indicated by color shading.

**Appendix B: Glossary of Medical Abbreviations, Acronyms, and Short Forms** gathers the shortened forms of medical language from the Abbreviations Summary feature within each chapter.

Rows shaded in orange contain **Prefixes**, abbreviated **P** in the Word Part Abbreviation column.

Rows shaded in blue contain **Combining Forms**, abbreviated **CF**. The chapters where a combining form can be found are listed in the Chapter column (e.g., C3 stands for Chapter 3).

Rows without shading contain **Suffixes**, abbreviated **S**.

Word Part	Meaning	Word Part Abbreviation	Chapter
<b>a-</b>	away from; without	<b>P</b>	
<b>ab-</b>	away from	<b>P</b>	
<b>abdomin/o-</b>	abdomen	<b>CF</b>	
<b>ablat/o-</b>	destroy; take away	<b>P</b>	
<b>-able</b>	able to be	<b>S</b>	

B		B	
<b>B</b>	blood type B in the ABO blood group	<b>BPH</b>	benign prostatic hyperplasia
<b>BAEP</b>	brainstem auditory evoked potential	<b>Bpm</b>	beats per minute
<b>BAER</b>	brainstem auditory evoked response	<b>BPP</b>	biophysical profile
<b>basos</b>	basophils (short form)	<b>BRCA</b>	breast cancer (gene)
<b>BE</b>	barium enema	<b>BS</b>	breath sounds



# MyLab Medical Terminology™

## What Is MyLab Medical Terminology?

MyLab Medical Terminology is a comprehensive online testing program that gives you, the student, the opportunity to test your understanding of information, concepts, and medical language to see how well you know the material. From the test results, MyLab Medical Terminology builds a self-paced, personalized study plan unique to your needs. Remediation in the form of etext pages, illustrations, exercises, audio segments, and video clips is provided for those areas in which you may need additional instruction, review, or reinforcement. You can then work through the program until your study plan is complete and you have mastered the content. MyLab Medical Terminology is available as a standalone program or with an embedded etext.

MyLab Medical Terminology is organized to follow the chapters and learning outcomes in *Medical Language, Fifth Edition*. With MyLab Medical Terminology, you can track your own progress through your entire medical terminology course.

## How Do Students Benefit?

Here's how MyLab Medical Terminology helps you:

- Keep up with information presented in the text and lectures.
- Save time by focusing your study to review just the content you need.
- Increase your understanding of difficult concepts with study material that is appropriate for different learning styles.
- Remediate in areas in which you need additional review.

## Key Features of MyLab Medical Terminology

**Pre-Tests and Post-Tests.** Using questions aligned to the learning outcomes in *Medical Language*, multiple tests measure your understanding of topics.

**Personalized Study Material.** Based on the topic pre-test results, you receive a personalized study plan, highlighting areas where you may need improvement. It includes these study tools:

- Links to specific pages in the etext
- Images for review
- Interactive exercises
- Animations and video clips
- Audio glossary
- Access to full Personalized Study Material.

## How Do Instructors Benefit?

- Save time by providing students with a comprehensive, media-rich study program.
- Track student understanding of course content in the program gradebook.
- Monitor student activity with viewable student assignments.

