CONTENTS

Stedman’s Medical Dictionary for the Health Professions and Nursing

at a Glance ................................................................. inside front cover

A Message from the Publisher ................................................ iv

Consultants in the Health Professions and Nursing .................. vii

Consultants to the Stedman’s Dictionaries ................................ xi

Illustration Index ................................................................ xvii

Illustration Sources ............................................................... xxix

Artwork Credits .................................................................. xlii

A-Z Vocabulary ................................................................ 1

Anatomical Chart Company Anatomy Atlas ................................ A1

Image Insert ....................................................................... B1

Contents to the Appendices .................................................. APP 1
A Message from the Publisher

It is with the long-standing tradition of excellence synonymous with the Stedman’s name that we proudly present this new edition of *Stedman’s Medical Dictionary for the Health Professions and Nursing, Illustrated, 7th Edition*. From the first edition of *Dunglison’s New Dictionary of Medical Science and Literature* in 1833, the historic work from which the Stedman’s family of dictionaries ultimately evolved, we have continued our focus to provide our readers with comprehensive, highly-vetted, accurate content both in print and electronically, and organized in the most accessible manner.

With the previous edition of *Stedman’s Medical Dictionary for the Health Professions and Nursing*, adding more than 4,000 terms and increasing the number of reviewers to nearly 50 discipline specialists provided a high degree of accuracy regarding multi-disciplinary content and current usage. Extending our consultant board ensured that we continued to provide students, educators, and practitioners access to the core language of medicine, health professions, and nursing to meet the needs of our readers.

This new edition features more than 56,000 terms and approximately 1,000 illustrations. We have undertaken a meticulous review of every image, soliciting feedback and improvements to enhance and finely hone the usefulness to our readers by utilizing our expert team of consultants. Selection and definitions of terms also were reviewed by our team of more than 70 health care consultants—with nearly half from nursing—to ensure that we have provided well-rounded definitions for the core medical terminology encountered by all health professionals. The significant increase in the number of health care specialists that comprise our expert team serves to confirm the accuracy of the content and they have worked tirelessly to ensure our readers can confidently use this resource. A complete listing of our consultants can be found on page vii. We have also continued our efforts to recognize our international readers by including international content in our appendices and providing British spellings for appropriate terms.

**Exciting Online Additions**

In addition to the revision of our print version of *Stedman’s Medical Dictionary for the Health Professions and Nursing, 7th Edition*, we are proud to announce the launch of *Stedman’s Medical Dictionary Online*. The website includes five content sets from the Stedman’s family of dictionaries: *Stedman’s Medical Dictionary, Stedman’s Abbreviations, Acronyms and Symbols, Stedman’s Medical Dictionary for the Health Professions and Nursing, Stedman’s Medical Dictionary for the Dental Professions*, and *Stedman’s Pocket Medical Dictionary*. As a valued reader of this print edition, we are pleased to offer you a FREE one-year subscription to *Stedman’s Medical Dictionary for the Health Professions and Nursing*, providing access to the essential information you want, when you want it. With robust multi-media content, this site includes more than 56,000 terms, more than 5,600 illustrations, more than 48,000 audio pronunciations, and nearly 50 videos. “My Stedman’s” allows users to customize their content by adding new terms, writing notes, saving often-reviewed visuals, and including links to outside content for quick and easy access. We are committed to serving the needs of our readers by creating content, highly sought-after delivery methods, and the tools that give you the flexibility to access the information as readily as you need it.
Stedman’s Plus Medical/Pharmaceutical Spellchecker

We are also pleased to include in this new edition of *Stedman’s Medical Dictionary for the Health Professions and Nursing, 7th Edition*, the most up-to-date edition of our *Stedman’s Plus Medical/Pharmaceutical Spellchecker*. *Stedman’s Plus Medical/Pharmaceutical Spellchecker* has been providing medical, pharmaceutical, and bioscience terms to medical language specialists for nearly 20 years. Since *Stedman’s Plus Medical/Pharmaceutical Spellchecker* provides authoritative content in both medical and pharmaceutical terminology, it’s no wonder health care professionals rely on *Stedman’s Plus* for the most comprehensive and cutting-edge medical spellchecking available. *Stedman’s Plus* seamlessly loads into most major word processing programs and you’ll have the confidence of knowing that nearly half a million Stedman’s terms are working behind the scenes to spellcheck all of your documentation. Sold traditionally for $99.95, it is included FREE on our CD-ROM—a true value for our readers.

Acknowledgements

As always, we at Lippincott Williams & Wilkins are grateful to all of our consultants from the medical, nursing, and health professions for their help in reviewing, writing, and revising the thousands of entries in this dictionary. Without them, none of the terminology presented here would be relevant or useful. We are also indebted to the many reviewers who assisted us in making critical decisions about the presentation of the dictionary, the dictionary entries themselves, and the content presented in this new edition. Finally, we continue to be thankful to have Dr. John H. Dirckx as a long-standing member of our dictionary team. His expertise, love of language, and consistent availability to consult with us cannot be replaced.

The development of this new edition has greatly benefited from the experience and expertise of Raymond Lukens, Chief Copyeditor, whose patience, dedication, and hard work have given this edition an unparalleled level of quality. Our thanks also go out to Susan Caldwell for her assistance and quality work in helping us prepare the art program. We are indebted to our colleagues at Lippincott Williams & Wilkins, including Amy Burroughs, Product Manager; Margie Orzech, Manufacturing Coordinator; and Doug Smock and Jennifer Clements, Art Program Consultants. Without the Lippincott Williams & Wilkins team’s commitment to our readers and to the quality expected of Stedman’s publications, this new edition would not have been possible. Finally, we must thank you, the reader.

We have appreciated all of the input we have received from previous editions and thank you for your continued support of our dictionary.

Your Medical Words Publisher

We strive to provide our readers—students, educators, and practitioners—with the most up-to-date and accurate medical language references. We, as always, welcome any suggestions you may have for improvements, changes, corrections, and additions—whatever makes it possible for this Stedman’s product to serve you better.

Julie K. Stegman Eric Branger Jennifer R. Feldman
Senior Publisher Product Director Brand Manager

*Stedman’s Medical Dictionary for the Health Professions and Nursing, Illustrated, 7th Edition*
Lippincott Williams & Wilkins
Baltimore, Maryland
Consultants in the Health Professions and Nursing

Diana Alagna  
Medical Director of the Medical Assistant Department, Branford Hall Career Institute, Southington, CT, USA

Dolores Bertoti, MS, PT  
Associate Professor and Department Chair, Alvernia University, Reading, PA, USA

Schvon Bussey, RN, MSN  
Nursing Instructor, Albany Technical College, Albany, GA, USA

Mary Ellen Camire, PhD  
Professor, Department of Food Science and Human Nutrition, University of Maine, Orono, ME, USA

Susan Carlson, MS, RN, APRN-BC, NPP  
Nurse Practitioner and Educator, Monroe Community College, Rochester, NY, USA

Carol E. Charie, CPC  
Health Claims Specialist Program Director, The Salter School, Fall River, MA, USA

Annie Collins, RN, MSN  
Assistant Professor of Nursing, Washburn University, Topeka, KS, USA

Todd Curtis, PT, PhD  
Lecturer, University of Texas, Austin, TX, USA

Carmen Denton, RN, MA  
Practical Nursing and Allied Health Department Chair, Northeast Louisiana Technical College, West Monroe, LA, USA

Amy M. DeVore, MSTD, CPC, CMA (AAPC)  
Program Advisor and Instructor, Medical Assisting and Medical Coding Program, Butler County Community College, Butler, PA, USA

Brian Dickens, MBA, RMA, CHI  
Regional Director, Keiser Career College, Greenacres, FL, USA

John R. Dirckx, MD  
Dayton, OH, USA

Philip Docking, EdD, MSc, Cert Ed, RN MFPHC  
Associate Director, Education and Development, HMI Institute of Health Sciences, Singapore

Marsha Dolan, MBA, RHIA, FAHIMA  
Coordinator, HIT/Informatics Programs, Missouri Western State University, St. Joseph, MO, USA
Mark Drnach, PT, DPT, MBA, PCS  
Clinical Associate Professor, Department of Physical Therapy, Wheeling Jesuit University, Wheeling, WV, USA

Marianne Durling, BSHS  
Medical Coding and Medical Assisting Instructor, Piedmont Community College, Roxboro, NC, USA

Douglas A. Fabick, MAAEd, BS, RN, CEN  
Healthcare Consultant, Successful Organizational Strategies, Kingsport, TN, USA

Mary M. Fabick, MSN, MEd, RN-BC, CEN  
Associate Professor of Nursing, Milligan College, Milligan College, TN, USA

Robert C. Fader, PhD, D(ABMM)  
Section Chief of Microbiology, Scott & White Healthcare, Temple, TX, USA

Mary Kaye Griffin, MS, RT(R)(M)  
Radiology Program Director, Spencerian College, Louisville, KY, USA

Joyce P. Griffin-Sobel, PhD, RN, AOCN, CNE, ANEF  
Assistant Dean of Curriculum & Technology, Professor and Director of Undergraduate Programs, Bellevue School of Nursing, Hunter College, New York, NY, USA

Nicholas M. Hipskind, PhD  
Professor Emeritus, Department of Speech and Hearing Sciences, Indiana University, Bloomington, IN, USA

Nancy Hislop, BSN  
Online Instructor, Medical Assisting Program, Globe University, Richfield, MN, USA

Harold Horn, MA  
Professor of Math and Sciences, Lincoln Land Community College, Springfield, IL, USA

Cristina Kaiser, MA, CPhT  
Curriculum Technician, San Joaquin Valley College, Visalia, CA, USA

Kandon Kamae, MD  
John A. Moran Eye Center, University of Utah, Salt Lake City, UT, USA

Jennifer Kleinow, PhD, CCC-SLP  
Associate Professor of Speech, Language and Hearing, La Salle University, Philadelphia, PA, USA
Consultants in the Health Professions and Nursing

Barbara Marchelletta, CMA (AAMA), CPC, CPT  
Program Director of Allied Health, Beal College, Bangor, ME, USA  

Keith L. Moore, MSc, PhD, FIAC, FRSM, FAAA  
Professor Emeritus, Division of Anatomy, Department of Surgery,  
Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada;  
Member of Federative International Committee on Anatomical  
Terminology of the International Federation of Associations of Anatomists  

Catharine A. Muskus, MS, FNP-BC  
Clinical Assistant Professor of Nursing, University of Vermont,  
Burlington, VT, USA  

Tamra Nasworthy, LPN, PHD, ABD  
Educator, Athens Technical College, Athens, GA, USA  

Susan Polasek, MA, RD, LD  
Adjunct Faculty of Biology, Austin Community College, Austin, TX, USA  

John Romfh, PhD  
Professor of Anatomy (Ret.), Life University, Marietta, GA, USA  

Michael Schade, MNsg, BNsg, PostGradDiplHigherEduc, DiplNsg  
Faculty, Higher College of Technology, Abu Dhabi Women’s College,  
Khalifa Campus, Abu Dhabi, United Arab Emirates  

Mattie M. Shiloh, MSN, RN  
Nursing Instructor, Darton College, Albany, GA, USA  

Sandra K. Stewart, MS  
Professor Emeritus of Life Science and Distance Education Instructor,  
Vincennes University, Vincennes, IN, USA  

Robin Sylvis, RDH, MS  
Professor of Dental Hygiene and Director of Business Development,  
CoreMedical Group, Salem, NH, USA  

Geoffrey C. Tabin, MA, MD  
Professor of Ophthalmology and Visual Sciences, John A. Moran Eye  
Center, University of Utah, Salt Lake City, UT, USA  

Tom R. Thomas, PhD  
Professor and Director of Graduate Studies, Nutrition and Exercise  
Physiology, University of Missouri, Columbia, MO, USA  

Walter R. Thompson, PhD, FACSM, FAACVPR  
Regents Professor, Department of Kinesiology and Health, College of  
Education; Professor, Division of Nutrition, School of Health  
Professions, College of Health and Human Sciences, Georgia State  
University, Atlanta, GA, USA
Amy VonKadich, MEd, RTT  
Radiation Therapy Program Director, NHTI-Concord's Community College, Concord, NH, USA

Bruce J. Walz, PhD, NREMT-P  
Professor and Chair of Emergency Health Services, University of Maryland, Baltimore County, Baltimore, MD, USA

Marsha Wamsley, RN, MSN  
Professor of Nursing, Sinclair Community College, Dayton, OH, USA

Helen Weeks, MA, BAS, RMA  
Medical Assistant/Medical Insurance Specialist Program Director, Health Careers Division, Henry Ford Community College, Dearborn, MI, USA

Ruth Werner, LMP, NCTMB  
President, Massage Therapy Foundation, Evanston, IL, USA

Mary Ann Wiebe, RN, MN  
Associate Professor of Nursing, Mount Royal University, Calgary, Alberta, Canada

Heather Wilson-Ashworth, PhD  
Associate Professor of Biology, Utah Valley University, Orem, UT, USA

Carole Zeglin, MSeD, BS, MT, RMA  
Assistant Professor and Director of Medical Assisting/Phlebotomy Programs, Westmoreland County Community College, Youngwood, PA, USA
Consultants to the Stedman’s Dictionaries

Steven Ades, MD, FRCPC  
Associate Professor of Medicine and Oncology, McGill University  
Health Center, Montreal, Quebec, Canada

R. Donald Allison, PhD  
Associate Scientist, Department of Biochemistry and Molecular Biology, University of Florida College of Medicine, Gainesville, FL, USA

David A. Bloom, MD  
The Jack Lapides Professor of Urology, University of Michigan, Ann Arbor, MI, USA

Jane Bruner, PhD  
Chair, Department of Biological Sciences, California State University, Stanislaus, Turlock, CA, USA

Kathleen E. Cavanagh, BSC, DVM  
Fonthill, ON, Canada

Mitchell Charap, MD, FACP  
The Abraham Sunshine Associate Professor of Clinical Medicine, Associate Chair for Postgraduate Programs, Program Director, Department of Medicine, NYU School of Medicine, New York, NY, USA

George P. Chrousos, MD, FAAP, MACP, MACE  
Professor and Chairman, First Department of Pediatrics, Athens University Medical School, Aghia Sophia Children’s Hospital, Athens, Greece

Mark B. Constantian, MD  
St. Joseph Hospital, Southern New Hampshire Medical Center, Nashua, NH, USA

Arthur F. Dalley, II, PhD  
Professor of Cell and Developmental Biology and Director, Gross Anatomy Program, Department of Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN, USA; Adjunct Professor for Anatomy, Belmont University School of Physical Therapy, Nashville, TN, USA

Ivan Damjanov, MD, PhD  
Professor of Pathology, University of Kansas School of Medicine, Kansas City, KS, USA

John A. Day, Jr., MD, FCCP  
Assistant Professor of Medicine, University of Massachusetts Medical School, Worcester, MA, USA
Consultants to the Stedman’s Dictionaries

John H. Dirckx, MD
Dayton, OH, USA

Thomas W. Filardo, MD
Physician-Consultant, Evendale, OH, USA

Benjamin K. Fisher, MD, FRCP(C)
Professor Emeritus, University of Toronto Medical School, Toronto, Ontario, Canada

Lee A. Fleisher, MD
Robert D. Dripps Professor and Chair of Anesthesiology and Critical Care, Professor of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA, USA

Robert J. Fontana, MD
Gastroenterology
Associate Professor of Medicine, University of Michigan, Ann Arbor, MI, USA

Paul J. Friedman, MD
Professor Emeritus, Department of Radiology, University of California, San Diego, CA, USA

Leslie P. Gartner, PhD
Professor of Anatomy, Department of Biomedical Sciences, Dental School, University of Maryland at Baltimore, Baltimore, MD, USA

Douglas J. Gould, PhD
Associate Professor, University of Kentucky College of Medicine, Lexington, KY, USA

Steven Gutman, MD, MBA
Director, Office of In Vitro Diagnostics, Center for Devices and Radiological Health, Food and Drug Administration, Rockville, MD, USA

Duane E. Haines, PhD
Professor and Chairman of Anatomy, Professor of Neurosurgery and of Neurology, University of Mississippi Medical Center, Jackson, MS, USA

Nicola C. Y. Ho, MD
Assistant Professor of Pediatrics and Active Staff of Johns Hopkins Medical Institutions, Baltimore, MD, USA

Iain H. Kalfas MD, FACS
Chairman, Department of Neurosurgery, Cleveland Clinic Foundation, Cleveland, OH, USA
John B. Kerrison, MD
Assistant Professor of Ophthalmology, Neurology, and Neurosurgery, Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore, MD, USA

Jeffrey L. Kishiyama
Associate Clinical Professor of Medicine, University of California, San Francisco, CA, USA

John M. Last, MD, FRACP, FRCPC, FFPH(UK)
Professor Emeritus, Department of Epidemiology and Community Medicine, University of Ottawa, Ottawa, Ontario, Canada

James L. Lear, MD
Founder, Scientific Imaging, Inc., Larkspur, CO, USA; Professor and Director, Division of Nuclear Medicine, University of Colorado Health Sciences Center, Denver, CO, USA

Joseph LoCicero, III, MD
Professor and Chair, Department of Surgery, University of South Alabama, Mobile, AL, USA

Lisa Marcucci, MD
Fellow, Division of Critical Care, Department of Surgery, Johns Hopkins University, Baltimore, MD, USA

Keith L. Moore, PhD, FIAC, FRSM
Professor Emeritus in Division of Anatomy, Department of Surgery, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada; Member of Federative International Committee on Anatomical Terminology of the International Federation of Associations of Anatomists

Marianna M. Newkirk, MSc, PhD
Associated Professor of Medicine, Physiology, Microbiology and Immunology, McGill University, Montreal, Quebec, Canada

J. Patrick O’Leary, MD
Associate Dean for Clinical Affairs, The Isidore Cohn, Jr. Professor and Chairman of Surgery, LSU Health Sciences Center, New Orleans, LA, USA

Stephen J. Peroutka, MD, PhD
Consultant, Hillsborough, CA, USA

Sharon T. Phelan, MD, FACOG
Professor, Department of Obstetrics and Gynecology, University of New Mexico, Albuquerque, NM, USA

Richard A. Prayson, MD
Section Head of Neuropathology, Department of Anatomic Pathology, Cleveland Clinic Foundation, Cleveland, OH, USA
William Reichel, MD
Affiliated Scholar, Center for Clinical Bioethics, Georgetown University, School of Medicine, Washington, DC, USA

George S. Schuster, DDS, MS, PhD
Ione and Arthur Merritt Professor, Chair, Department of Oral Biology and Maxillofacial Pathology, Medical College of Georgia, School of Dentistry, Augusta, GA, USA

Linda N. Sevier, MD
Pediatric Faculty, The Children’s Hospital at Sinai, Baltimore, MD, USA

James B. Snow, Jr., MD, FACS
Former Director, National Institute on Deafness and Other Communication Disorders, National Institutes of Health, Bethesda, MD, USA; Professor Emeritus of Otorhinolaryngology, University of Pennsylvania, Philadelphia, PA, USA

Roger M. Stone, MD, MS, FAAEM, FACEP
Clinical Assistant Professor, Emergency Medicine Residency, University of Maryland School of Medicine, Baltimore, MD, USA; EMS Medical Director, Montgomery and Caroline Counties, MD, USA

Janet L. Stringer, MD, PhD
Associate Professor of Pharmacology and Neuroscience, Baylor College of Medicine, Houston, TX, USA

Deanna A. Sutton, PhD, MT, SM(ASCP), RM, SM(NRM)
Assistant Professor, Department of Pathology, Administrative Director, Fungus Testing Laboratory, University of Texas Health Science Center at San Antonio, San Antonio, TX, USA

Alexandra Valsamakis, MD, PhD
Assistant Professor of Pathology, Johns Hopkins School of Medicine, Baltimore, MD, USA

Galen S. Wagner, MD
Duke University Medical Center, Durham, NC, USA

Dr. Brian J. Ward
Chief, McGill University Division of Infectious Diseases, Departments of Medicine & Microbiology, McGill University, Montreal, Quebec, Canada

Asa J. Wilbourn, MD
Director, EMG Laboratory, Cleveland Clinic; Clinical Professor of Neurology, Case University School of Medicine, Cleveland, OH, USA
Helaine R. Wolpert, MD
Anatomic and Clinical Pathologist, Newton, MA, USA

Clinical
Pathology/
Hematology/
Laboratory
Medicine

Douglas B. Woodruff, MD
Private Practice, Baltimore, MD, USA

Psychiatry/
Psychology

David B. Young, PhD
Professor, Physiology and Biophysics, University of Mississippi Medical Center, Jackson, MS, USA

Physiology

Joseph D. Zuckerman, MD
Professor & Chairman, Department of Orthopaedic Surgery,
NYU–Hospital for Joint Diseases, New York, NY, USA

Orthopaedics
Abbreviations
A = anatomic position
B = angiogram, normal intravenous fluorescein
APP = anterior-posterior projection

Illustrations Index
The Illustrations Index provides a quick way to find any image in Stedman’s Health Professions & Nursing Dictionary. The page number accompanying each term listed below tells you where an illustration related to that term is found. A page number preceded by the letter A indicates that the image can be found in the first color insert, the 40-page anatomic atlas. A page number preceded by the letter B indicates that the image can be found in the second color insert, a 32-page section dedicated to diagnostic medicine, imaging techniques, and condition images. When you look up a word in the A to Z section, you can tell it is illustrated— either at the word itself or in the inserts or appendices—if it is accompanied by this symbol: ☀.

abdominal regions 3
abdominal viscera A11–12
abduction APP 109
acanthosis nigricans 10
accommodative convergence 13
Achilles tendon 16
achondroplasia B30
acne 20, B9
acrodermatitis 22
actinic granuloma 24
actinic keratoses 25
adduction APP 109
adductor hallucis muscle 33
adductor magnus muscle 33
adenocarcinoma B14
adenocarcinoma, ulcerated B16
adenovirus, bronchitis due to B6
Adson forceps 41
adult respiratory distress syndrome B18
air-fluidized bed 52
airway (adult vs. child) B32
alarm reaction 54
algorithm (decision tree) 58
alopecia areata 64
alveolar abscess 67
Alzheimer disease B23
Ambu bag 71
ameloblastoma B15
amniocentesis 77
amnion B1
amyloidosis 82
anatomic position APP 111
androgenic alopecia 89
anesthetic 91
aneurysm 92
angioedema 94
angiogram, magnetic resonance B22
angiogram, normal intravenous fluorescein B26
angular cheilosis 97
anisocytosis B3
ankle joint 99
ankylosing spondylitis B24
anteroposterior projection APP 115
anthracosilicosis 108
antibody 110
antral fold, abnormal B16
aortic valve 119
Apgar score 120
Aphthous ulcer 121
apical granuloma 122
apical periodontal cyst 122
apical pulse 123
arachnid bite reaction B8
arm 132
arterial blood 137
arterial system A22
arteriography 141
arteriole 141
Ascaris 147
Aspergillus fumigatus B5
Illustrations Index

Illustrations

Illustrations Index

Illustrations Index
<table>
<thead>
<tr>
<th>Term</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>decubitus position</td>
<td>B29, APP 114</td>
</tr>
<tr>
<td>decubitus ulcer</td>
<td>446</td>
</tr>
<tr>
<td>dehiscence</td>
<td>450</td>
</tr>
<tr>
<td>deltoid muscle</td>
<td>453</td>
</tr>
<tr>
<td>dental implants</td>
<td>457</td>
</tr>
<tr>
<td>dentigerous cyst</td>
<td>B15</td>
</tr>
<tr>
<td>dentition</td>
<td>459</td>
</tr>
<tr>
<td>dermatitis</td>
<td>463, B9</td>
</tr>
<tr>
<td>dermatofibroma</td>
<td>464</td>
</tr>
<tr>
<td>dermatomes</td>
<td>465</td>
</tr>
<tr>
<td>dermatomyositis</td>
<td>465</td>
</tr>
<tr>
<td>developmental milestones</td>
<td>471</td>
</tr>
<tr>
<td>diabetic retinopathy</td>
<td>474</td>
</tr>
<tr>
<td>diaphragm</td>
<td>476</td>
</tr>
<tr>
<td>digestive system</td>
<td>A26</td>
</tr>
<tr>
<td>disc anatomy, vertebral and invertebral</td>
<td>A6</td>
</tr>
<tr>
<td>discoid lupus erythematosus</td>
<td>489</td>
</tr>
<tr>
<td>dislocations</td>
<td>491</td>
</tr>
<tr>
<td>distal</td>
<td>APP 108</td>
</tr>
<tr>
<td>diverticulitis of colon</td>
<td>496</td>
</tr>
<tr>
<td>diverticulosis</td>
<td>496, B17</td>
</tr>
<tr>
<td>DNA</td>
<td>498</td>
</tr>
<tr>
<td>Doppler flow sonogram</td>
<td>B21</td>
</tr>
<tr>
<td>Doppler ultrasonography</td>
<td>501</td>
</tr>
<tr>
<td>dorsal decubitus position</td>
<td>APP 114</td>
</tr>
<tr>
<td>dorsal decubitus position</td>
<td>B29</td>
</tr>
<tr>
<td>drusen</td>
<td>B26</td>
</tr>
<tr>
<td>dry gangrene</td>
<td>508</td>
</tr>
<tr>
<td>duodenum</td>
<td>512</td>
</tr>
<tr>
<td>dwarfism</td>
<td>B30</td>
</tr>
<tr>
<td>dystrophia unguium</td>
<td>519</td>
</tr>
<tr>
<td>ear</td>
<td>521, B28</td>
</tr>
<tr>
<td>ecchymosis</td>
<td>523</td>
</tr>
<tr>
<td>echocardiogram</td>
<td>B21</td>
</tr>
<tr>
<td>ectodermal dysplasia</td>
<td>825, B12</td>
</tr>
<tr>
<td>ectopic pregnancy</td>
<td>526</td>
</tr>
<tr>
<td>elbow joint</td>
<td>533</td>
</tr>
<tr>
<td>electrocardiography</td>
<td>534</td>
</tr>
<tr>
<td>electroencephalography</td>
<td>536</td>
</tr>
<tr>
<td>elephantiasis</td>
<td>539, B8</td>
</tr>
<tr>
<td>elliptocytes</td>
<td>B3</td>
</tr>
<tr>
<td>embolism</td>
<td>541</td>
</tr>
<tr>
<td>embryo</td>
<td>B1, B21</td>
</tr>
<tr>
<td>embryology</td>
<td>B1</td>
</tr>
<tr>
<td>emergency medicine</td>
<td>B32</td>
</tr>
<tr>
<td>emphysema</td>
<td>545</td>
</tr>
<tr>
<td>endometriosis</td>
<td>553</td>
</tr>
<tr>
<td>endophthalmitis, candidal</td>
<td>B26</td>
</tr>
<tr>
<td>endoscopy</td>
<td>B16, B17</td>
</tr>
<tr>
<td>endosteal implants</td>
<td>554</td>
</tr>
<tr>
<td>Entamoeba coli</td>
<td>B7</td>
</tr>
<tr>
<td>Entamoeba histolytica</td>
<td>557</td>
</tr>
<tr>
<td>Enterobius</td>
<td>558</td>
</tr>
<tr>
<td>enterostomy</td>
<td>561</td>
</tr>
<tr>
<td>eosinophil</td>
<td>B2</td>
</tr>
<tr>
<td>epidermolysis bullosa</td>
<td>567</td>
</tr>
<tr>
<td>epidural anesthesia</td>
<td>568</td>
</tr>
<tr>
<td>episcleritis</td>
<td>B27</td>
</tr>
<tr>
<td>epithelium</td>
<td>572</td>
</tr>
<tr>
<td>erect (standing) position</td>
<td>B29</td>
</tr>
<tr>
<td>erector spinae muscles</td>
<td>575</td>
</tr>
<tr>
<td>erosion</td>
<td>B15</td>
</tr>
<tr>
<td>erysipelas</td>
<td>577</td>
</tr>
<tr>
<td>erythema caloricum</td>
<td>578</td>
</tr>
<tr>
<td>erythema nodosum</td>
<td>578</td>
</tr>
<tr>
<td>erythrocyte</td>
<td>580</td>
</tr>
<tr>
<td>erythrocytes, abnormalities of</td>
<td>B3</td>
</tr>
<tr>
<td>erythrodema</td>
<td>580</td>
</tr>
<tr>
<td>erythromelalgia</td>
<td>581</td>
</tr>
<tr>
<td>Escherichia coli, cyst of</td>
<td>B7</td>
</tr>
<tr>
<td>esophageal obturator airway</td>
<td>583</td>
</tr>
<tr>
<td>esophageal varices</td>
<td>B16</td>
</tr>
<tr>
<td>esophagogastrroduodenoscopy</td>
<td>B16</td>
</tr>
<tr>
<td>eversion</td>
<td>APP 110</td>
</tr>
<tr>
<td>excision biopsy</td>
<td>215</td>
</tr>
<tr>
<td>excoriation</td>
<td>B11</td>
</tr>
<tr>
<td>exfoliative dermatitis</td>
<td>596</td>
</tr>
<tr>
<td>exostosis</td>
<td>598, B28</td>
</tr>
<tr>
<td>extension</td>
<td>APP 109</td>
</tr>
<tr>
<td>extensor digitorum brevis muscle</td>
<td>601</td>
</tr>
<tr>
<td>extensor digitorum longus muscle</td>
<td>601</td>
</tr>
<tr>
<td>extensor digitorum muscle</td>
<td>602</td>
</tr>
</tbody>
</table>
extensor retinaculum 602
external oblique muscle 604
eye 608, B26
eye, disorders and injuries to B27
facial bones 610
facial nerve 611
fascia 618
fatigue fracture B25
female urogenital system A14
femur 624
fetus, 11-week B1
fetus, 18-week 628
fibroadenoma B19
filum terminale 636
finger 636
fissure B11
flexion APP 109
flexor digiti minimi brevis muscle of hand 643
flexor digitorum brevis muscle 643
flexor digitorum profundus muscle 644
flexor digitorum superficialis muscle 644
flow rates for IV drips B32
Foley catheter 650
folliculitis B4
forearm 655
Fowler position B29
fracture 659
Frankfurt horizontal plane 661
frontal plane APP 107
fundus, normal B26
fungi and fungal infections B5
furuncle B10
Fusarium solani B5
Galeazzi fracture B25
gallbladder carcinoma B21
gamma camera B23
ganglion 678
gangrene 679
Gardner-Wells tongs 680
gastric bypass 681
gastric ulcer 682
gemination 687
glaucoma 699
glaucomatous cupping of disc B26
glenohumeral joint 699
gluteus maximus muscle 706
gluteus medius muscle 706
Goldenhar syndrome 710
Golgi tendon organ 711
gonococcemia, disseminated B4
gonorrhea B4
gout B24
gouty tophus 715
graft-versus-host disease 716
granuloma 719, B14
grasp patterns 721
greenstick fracture 724
gustation 729
gynecomastia 731
Haemophilus influenzae B4
Haemophilus influenzae meningitis B4
hairy tongue B15
hamstring 741
head A4
hangman’s fracture B25
hearing aid 749
heart 749
Hegar sign 751
Heimlich maneuver 751
Heinz bodies B3
hemangioendothelioma 754
hematoma 756
hemolytic anemia 763, B3
hemorrhagic cystitis 765
Henoch-Schönlein syndrome 767
hepatic diverticulum 768
hepatitis A virus B6
hepatitis B virus B6
Illustrations Index

herniated disc 774
herpes simplex 775, B15
herpes zoster 775, B6, B9
herpetic whitlow 776
hiatal hernia 781
high Fowler position B29
Hodgkin disease B31
hookworm B7
hot tub folliculitis B4
human blastocyst, 107-cell B1
human embryo, 18-day B1
human embryo, 28-somite B1
human embryo, 3-week B1
human embryo, 7-week B1
human embryos, 22-day and 23-day B1
human immunodeficiency virus (HIV) 799, B6
hydatid cyst 804
hydrocephalus 805
hydronephrosis 807
hyperopia 816
hyperpigmentation 818
hyperplasia 818
hyperplastic polyp 818
hypertrophy 821
hyphema 822, B27
hypochromic anemia B3
hypodontia 825
hypopigmentation 829
hypothenar eminence 831
ichthyosis vulgaris 836
ileostomy 840
iliotibial tract 842
ilium 842
impetigo 846
incentive spirometer 849
incision 850
incision biopsy 215
inflammation 862
infraespinatus muscle 864
inguinal hernia 866
inguinal ligament 866
injection 868
innervation of the hand and wrist 869
insulin pump 873
internal oblique muscle 881
interstitial cystitis 885
interstitial lung disease B18
intestine 888
intracranial pressure 890
intravenous B92
inversion APP 110
islets of Langerhans 902
Isospora belli, immature oocyst of B7
jack-knife prone position B29
jaundice 910
jellyfish sting B8
joint 912
Kaposi sarcoma 916, B14
keloid B11
keratoacanthoma B14
keratocyte 920
keratoses, seborrheic B14
keratosis follicularis 921
kidney 923
kidney position B29
Klippel-Feil syndrome 926
knee joint 927
kneecap, tendons, and menisci 969
knee-crest position B29
kyphoscoliosis 931
Langerhans cell histiocytosis 940
laparoscopic cholecystectomy 941
laryngeal mask 942
larynx 944
lateral decubitus position APP 114
lateral position APP 108
lateral projection APP 115
latissimus dorsi muscle 949
Le Fort classification of facial fractures 952
left anterior oblique position APP 113
left posterior oblique position APP 113
<table>
<thead>
<tr>
<th>Illustrations Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legg-Calvé-Perthes disease 954</td>
</tr>
<tr>
<td>lentigo maligna melanoma B14</td>
</tr>
<tr>
<td>leprosy 957</td>
</tr>
<tr>
<td>lesion 959</td>
</tr>
<tr>
<td>lesions, primary B10</td>
</tr>
<tr>
<td>lesions, secondary B11</td>
</tr>
<tr>
<td>leukoplakia 964</td>
</tr>
<tr>
<td>lichen planus 968</td>
</tr>
<tr>
<td>lichenification B11</td>
</tr>
<tr>
<td>ligament 969</td>
</tr>
<tr>
<td>limbic system 972</td>
</tr>
<tr>
<td>linea nigra B9</td>
</tr>
<tr>
<td>liposarcoma 977</td>
</tr>
<tr>
<td>lithotomy position B29</td>
</tr>
<tr>
<td>livedo reticularis 980</td>
</tr>
<tr>
<td>longitudinal plane APP 107</td>
</tr>
<tr>
<td>lumbar puncture 990</td>
</tr>
<tr>
<td>lumbrical muscles of hand 991</td>
</tr>
<tr>
<td>Lund-Browder chart 992</td>
</tr>
<tr>
<td>lungs and respiratory anatomy 993, A25</td>
</tr>
<tr>
<td>lung collapse B18</td>
</tr>
<tr>
<td>Lyme disease, <em>(Borrelia</em> infection) B4</td>
</tr>
<tr>
<td>lymph node 997</td>
</tr>
<tr>
<td>lymphatic system A24</td>
</tr>
<tr>
<td>lymphocyte B2</td>
</tr>
<tr>
<td>lymphocytic leukemia B31</td>
</tr>
<tr>
<td>lymphoma, cutaneous B14</td>
</tr>
<tr>
<td>lymphoma, metastatic to scalp B14</td>
</tr>
<tr>
<td>macrocytosis B3</td>
</tr>
<tr>
<td>macula, normal B26</td>
</tr>
<tr>
<td>macules B10</td>
</tr>
<tr>
<td>magnetic resonance angiograph B22</td>
</tr>
<tr>
<td>magnetic resonance imaging, knee B22</td>
</tr>
<tr>
<td>male urogenital system A13</td>
</tr>
<tr>
<td>malignant melanoma, nodular B14</td>
</tr>
<tr>
<td>mammogram B19</td>
</tr>
<tr>
<td>mammography B19</td>
</tr>
<tr>
<td>Marfan syndrome 1016</td>
</tr>
<tr>
<td>mastication 1020</td>
</tr>
<tr>
<td>mastoiditis 1021</td>
</tr>
<tr>
<td>maxilla 1024</td>
</tr>
<tr>
<td>measles B30</td>
</tr>
<tr>
<td>mechanical ventilation criteria APP 248</td>
</tr>
<tr>
<td>Meckel diverticulum 1028</td>
</tr>
<tr>
<td>medial APP 108</td>
</tr>
<tr>
<td>medial meniscus 1030</td>
</tr>
<tr>
<td>median nerve 1031</td>
</tr>
<tr>
<td>median plane APP 107</td>
</tr>
<tr>
<td>melanoma 1040</td>
</tr>
<tr>
<td>melasma 1041</td>
</tr>
<tr>
<td>meningitis, <em>(Haemophilus influenzae</em> B4</td>
</tr>
<tr>
<td>meninges 1044</td>
</tr>
<tr>
<td>metacarpalphalangeal joint 1055</td>
</tr>
<tr>
<td>metanephric diverticulum 1057</td>
</tr>
<tr>
<td>metered dose inhaler 1059</td>
</tr>
<tr>
<td>microcytic, hypochromic anemia B3</td>
</tr>
<tr>
<td>microcytosis B3</td>
</tr>
<tr>
<td>microfilaria B7</td>
</tr>
<tr>
<td>Microsporum canis B5</td>
</tr>
<tr>
<td>microtubules 1068</td>
</tr>
<tr>
<td>midsagittal plane APP 107</td>
</tr>
<tr>
<td>milia B13</td>
</tr>
<tr>
<td>mitochondrion 1076</td>
</tr>
<tr>
<td>Möbius syndrome 1079</td>
</tr>
<tr>
<td>molar tooth 1081</td>
</tr>
<tr>
<td>molluscum contagiosum B6</td>
</tr>
<tr>
<td>monocyte B2</td>
</tr>
<tr>
<td>Monteggia fracture B25</td>
</tr>
<tr>
<td>morula B1</td>
</tr>
<tr>
<td>mouth 1092</td>
</tr>
<tr>
<td>mouth, disorders associated with B15</td>
</tr>
<tr>
<td>MR angiogram B22</td>
</tr>
<tr>
<td>MRI machine B22</td>
</tr>
<tr>
<td>mucocele 1097</td>
</tr>
<tr>
<td>multifidus muscle 1097</td>
</tr>
<tr>
<td>multifocal duct carcinoma B19</td>
</tr>
<tr>
<td>multiple myeloma 1099</td>
</tr>
<tr>
<td>multiple pregnancy 1100</td>
</tr>
<tr>
<td>multiple sclerosis, magnetic resonance images B22</td>
</tr>
<tr>
<td>mumps B30</td>
</tr>
<tr>
<td>muscle 1102</td>
</tr>
</tbody>
</table>
muscles of head 1103
muscular anatomy of head and neck A4
muscular and skeletal anatomy of ankle and foot A16
muscular and skeletal anatomy of wrist and hand A8
muscular system A19, A20
Mycobacterium marinum 1114
mycosis fungoides 1115
myelogram, CT B20
myopia 1122
myositis ossificans 1123
nail and hair disorders B12
nasal cannula 1128
nasal cavity 1128
nasopharyngeal airway, inserting B32
neck A4
necrosis 1134
needle biopsy 215
Neisseria gonorrhoeae B4
nematode B7
neoplasia B14
nephrolithiasis 1139
nervous system of pelvis and lower limb A15
nervous system of thorax and upper limb A7
neural fold B1
neuroblastoma B31
neuroglia 1149
neuron 1152
neutrophil B2
nevus 1156
nits (egg cases attached to hairs) B8
non-Hodgkin lymphoma B31
normal tympanic membrane B28
nuclear medicine B23
nummular eczema 1174
nutrient absorption 1176
nystagmus 1177
oat cell carcinoma 1178
oblique position APP 112
oblique projection APP 116
obstetric sonography B21
obturater externus muscle 1181
obturater internus muscle 1182
olfaction 1190
onycholysis in psoriasis B12
onychomycosis B12
onychoschizia B12
oocyte, sperms binding to B1
ophthalmology B26
ophthalmoscope B26
oral airway, inserting B32
orbicularis muscle 1204
orbit 1205
orbital cellulitis B9
oropharyngeal tube 1209
osteoarthritis 1215
osteosarcoma B31
otitis externa 1219, B28
otitis media 1219, B28
otomycosis B28
otoscope B28
otoscope, doctor examining patient using B28
otoscopy B28
Paget disease 1231
pain scales 1231
palmar interosseous muscle 1235
palpation technique 1235
pancreas 1236
pancreas, stages in development 1237
pannus 1239
panoramic radiograph 1239
PA projection APP 115
papules B10
parasites and parasitic infections B7
paronychia, chronic 1253, B12
patch (café au lait spot) B10
pectoral region 1261
pelvic diaphragm 1264
pelvic girdle 1265
pemphigus vulgaris 1266
Illustrations Index

peptic ulcer 1268
carcinoma 1270
percutaneous endoscopic gastrostomy tube 1270
percutaneous transluminal angioplasty 1270
perforation B28
perfusion scan B23
periodontitis 1277
peritonitis 1280
permanent dentition 1281
phagocyte 1287
phygymnastics 1291
Philadelphia chromosome 1293
photodermatitis 1299
pinch 1309
pitting edema 1311
placenta 1313
planes (anatomic) APP 107
plantar warts 1316
plaque B10
Plasmodium vivax B7
platysma muscle 1320
Pneumocystis jiroveci pneumonia B5
pneumonia 1326, B5
poikilocytosis B3
polio B6
polyp 1335
polypectomy (colon) B17
popliteal artery B21
popliteal fossa 1338
popliteus muscle 1339
positioning terminology (radiography) APP 111–114
positions, surgical B29
positron emission tomography (PET) B23
posterior APP 108
posteroanterior projection APP 115
postural drainage 1350
Pott fracture B25
pregnancy 1357
primitive node B1
prolapse of umbilical cord 1373
pronation APP 110
pronator quadratus muscle 1375
prone position B29, APP 112
Proteus syndrome 1382
proximal APP 108
Pseudomonas aeruginosa B4
pseudopelade 1389
psoriasis 1391, B9
psoriatic arthritis 1391
Phtheus pubis infestation B8
pubic bone 1396
pulmonary circulation 1399
pulmonary emphysema 1399
pulses, peripheral 1401
punch biopsy 215
purpura B13
pustules B10
pycnotic granuloma B14
quadrants 1414
quadratus lumborum muscle 1414
quadratus plantae muscle 1414
quadriceps 1415
radiographic anatomy and positioning APP 106–116
radiographic projections APP 115–116
radiography B18
radiolucent 1424
Raynaud phenomenon B9
rectus abdominis muscle 1436
recumbent position B29
Refsum disease 1441
respiration 1452
respiratory diverticulum 1453
respiratory system A25
restoration 1455
retina 1458
retinal detachment B26
retinoblastoma B27, B31
retinopathy, diabetic B26
rhabdomyosarcoma B31
rheumatoid arthritis 1465, B24
rheumatoid nodules 1466
rhythm 1470
rib 1471
right anterior oblique position APP 113
right posterior oblique position APP 113
rigidity 1474
rotatores muscles 1480
rouleaux B3
rubella B30
rule of nines 1483
ruptured globe B27
sacral foramen 1487
sacrum 1488
saddle joint 1489
sagittal plane APP 107
sarcoïdosis 1495
scabies 1497, B8
scabies mite B8
scapula 1499
scar B11
sciatic nerve 1504
scirrhous carcinoma B19
scleroderma 1506, B9
scolex B7
scoliosis 1508, B24
seborrhoeic dermatitis 1511, B9
seborrhoeic keratoses 1511, B14
secondary syphilis 1514
serratus anterior muscle 1528
shingles 1534
shingles, disseminated B9
shoulder girdle 1536
shoulder joint 1536
sickle cell anemia B3
Sims position B29
sitting position B29
skeletal anatomy A17–A18
skeletal muscle 1546
skeleton 1546
skin 1547
skin conditions, common B9
skinfold measurement 1548
skin tag 1548
skull A1–3
Smith fracture B25
soft palate 1554
soleus muscle 1555
somite B1
sonogram, two-dimensional B21
sonography B21
sphygmomanometer 1568
spider angioma B13
spina bifida 1569
spinal and cranial nerves A21
spinal cord, CT myelogram of transverse section of B20
spiral fracture, long B25
spinal organ 1573
spirometry 1573
splenius capitis muscle 1575
splenomegaly 1576
spondylolisthesis 1578
spondyloysis 1578
spondylolysis 1578
squamous cell carcinoma 1582, B14
staghorn calculus 1583
Staphylococcus aureus B4
stasis dermatitis 1587
stent 1590
sting B8
strabismus 1597
strawberry hemangioma B30
streptococci B4
striae gravidarum, linea nigra and B9
subcostal plane APP 107
subdural hematoma 1609
subscapularis muscle 1612
superior APP 108
supination APP 110
Illustrations Index

supinator muscle 1624
supine position B29, APP 111
surface biopsy 215
swallow 1631
symbols APP 40–48
sympathetic trunk 1634
synapse 1636
syphilis 1641
syringe 1641
Taenia saginata 1648, B7
talipes cavus 1646
talipes planus 1646
tangential projection APP 116
tapeworm 1648
telangiectases B13
temperature 1655
temporals muscle 1656
temporomandibular joint 1657
teratoma 1662
thalassemia 1667
thoracic cage 1673
thoracolumbar fascia 1675
thoracoscopy B17
thorax, viscera of A9
thromboangiitis obliterans 1677
thrombus 1679
thrush B15
tibialis anterior muscle 1683
tick bite B8
tinea 1685
tinea capitis 1685, B5
tinea capitis (black dot type) B5
tinea capitis (gray patch type) B5
tinea corporis 1685, B8
tinea pedis 1685, B9
tinea versicolor 1685
tonsil 1690
tooth 1692
tophaceous gout 1692
toxic epidermal necrolysis 1695

Toxicodendron 1696
trachea B16
tracheostomy 1699
transcutaneous electrical nerve stimulation (TENS) 1702
transverse plane APP 107
transversus abdominis muscle 1709
trapezius muscle 1710
trauma, ruptured globe from blunt B27
trematode B7
triiceps brachii muscle 1715
Trichinella spiralis, adult female worm of B7
trichobezoar 1716
Trichophyton tonsurans B5
Trichuris trichiura 1719
trichotillomania B12
trophozoite B7
Trousseau sign 1725
tuberculin test 1728
tumor B10
tympanic membrane B28
tympanic thermometer 1735
tympanogram 1735
tympanosclerosis B28
ulcerative colitis 1739, B17
ulcers 1739, B11
umbilical cord 1742, B1
upper gastrointestinal series 1748
urinary system A27
urogram 1754
urticaria (hives) B9
uterus 1758
valves, venous 1763
varicella (chicken pox) B30
varicosity 1765
vascular and specialized primary lesions B13
vasectomy 1767
vastus lateralis muscle 1770
venipuncture 1773
venous system A23
ventilation scan B23
ventral decubitus position APP 114
ventricles of the brain 1775
ventriculoperitoneal shunt 1777
Venturi mask 1777
verruca 1779
vertebral and invertebral disc anatomy A6
vertebral column 1781
vertical banded gastroplasty 1782
vesicles (in pemphigus) B10
viruses and viral infections B6
viscera of thorax A9
vision 1792
vitiligo 1794
vocal folds B16
volvulus 1798
warts, filiform and common B9
wheal 1807
wheals (urticaria) B10
Wilms tumor B31
Wilson disease 1809
wound healing 1813
Wuchereria bancrofti, microfilaria of B7
xanthelasma palpebrarum 1815
xanthogranuloma 1815
xerosis 1817
Yankauer suction catheter 1819
zoster eruption, mild B6
Z-track method 1825
zygomaticus major muscle 1826
Zygomycetes B5
zygomycosis B5
zygote development B1
Illustration Sources

Courtesy of Acuson Corporation, Mountain View, CA (Doppler ultrasonography).

Courtesy of Jennifer Anderson at U.S. Department of Agriculture-Natural Resources Conservation Service Plants Database (poison ivy).


Courtesy of Benjamin Barankin, MD, Edmonton, Alberta, Canada (elephantiasis; nodulocystic acne of the back; acrodermatitis; actinic granuloma; hypertropic actinic keratoses; amyloidosis; atopic dermatitis; Becker nevus; bullous pemphigoid; calcinosis; cellulitis surrounding ulcer; chemotherapy; cherry angiomas; cold urticaria; congenital nevus; contact dermatitis; cutis rhomboidalis nuchae; dermatitis; pigmented dermatofibroma; dermatomyositis on the knee; discoid lupus erythematosus; dry gangrene; dystrophia unguium; epidermolysis bullosa; erysipelas; erythema caloricum; erythema nodosum; erythroderma; erythromelalgia; ganglion; gouty tophus; graft-versus-host disease; granuloma; herpes zoster; herpetic whitlow; hyperpigmentation; hyperplasia; hypopigmentation; ichthyosis vulgaris; keratosis follicularis; Langerhans cell histiocytosis; lichen planus; livedo reticularis; Marfan syndrome; Mycobacterium marinum infection; mycosis fungoides; necrosis; nevus; nummular eczema; chronic paronychia; pemphigus vulgaris; plantar warts; pneumonia; pseudopelade; psoriasis; psoriatic arthritis; pyoderma gangrenosum; aphthous ulcer; scabies; seborrheic dermatitis; seborrheic keratoses; secondary syphilis; skin tag; squamous cell carcinoma; stasis dermatitis; thromboangiitis obliterans; tinea; verruca; vitiligo; xanthogranuloma; xerosis; herpes simplex infection; rheumatoid nodules: elbow; impetigo: forearms, hands; subcutaneous hematomata; arachnoid bite; birthmark: strawberry hemangioma; cheilitis; comedones; contact dermatitis; cradle cap; cutaneous lymphoma; Darier disease: nails; geographic tongue; metastatic lymphoma; molluscum contagiosum; onycholysis: nails; onychomycosis: nails; psoriasis; rheumatoid arthritis; scleroderma; seborrheic dermatitis; seborrheic keratosis; shingles; trichotillomania; hair).


Courtesy of Baschat A, MD, Center for Advanced Fetal Care, University of Maryland School of Medicine, Baltimore, MD (Doppler flow sonogram).

Courtesy of Bear MF, Connors BW, Parasido, MA. Neuroscience: Exploring the Brain. 2nd ed. Balti-
Illustrations Sources

more, MD: Lippincott Williams & Wilkins; 2001 (alarm reaction; mitochondrion and cellular respiration; synapse).


Courtesy of Bennett, J, PhD, National Institutes of Health, Bethesda, MD (brain MRI).


Courtesy of Bickley LS, Szilagyi P. Bates’ Guide to Physical Examination and History Taking. 8th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003 (sounds in recording blood pressure; carotid pulse; milestones in normal child development; ecchymosis; macules; pustules; vesicles).

Courtesy of Blackbourne LH. Advanced Surgical Recall. 2nd ed. Baltimore, MD: Lippincott Williams & Wilkins; 2004 (jack-knife prone position; kidney position).


Courtesy of Centers for Disease Control and Prevention, Atlanta, GA (bacteria: bacilli; chickenpox; measles; mumps; rubella).

Illustrations Sources

Courtesy of Clay JH, Pounds DM. Basic Clinical Massage Therapy: Integrating Anatomy and Treatment. Baltimore, MD: Lippincott Williams & Wilkins; 2003 (achilles tendon; adductor hallucis muscle; adductor magnus muscle; ankle joint; arm; atlas; brachial plexus; calcaneus; carpal bones; cervical vertebrae; crura of the diaphragm; deltoid muscle; diaphragm; elbow joint; erector spinae muscles; extensor digitorum brevis muscle; extensor digitorum longus muscle; extensor digitorum muscle extensor retinaculum; external oblique muscle; facial bones; plantar fascia; femur; flexor digiti minimi brevis muscle of hand; flexor digitorum brevis muscle; flexor digitorum profundus muscle; flexor digitorum superficialis muscle; forearm; glenohumeral joint; gluteus maximus muscle; gluteus medius muscle; hamstring; humerus; hypothenar eminence; iliotibial tract; ilium; infraspinatus muscle; inguinal ligament; internal oblique muscle; latissimus dorsi muscle; lumbrical muscles of hand; maxilla; median nerve; metacarpophalangeal joint; multifidus muscles; muscles of the head; nasal cavity; obturator externus muscle; obturator internus muscle; orbicularis oris muscle; palmar interosseous muscle; pectoral region; pelvic diaphragm; pelvic girdle; popliteal fossa; popliteus muscle; pronator quadratus muscle; pubic bone; quadratus lumborum muscle; quadratus plantae muscle; quadriceps; rectus abdominis muscle; rib (II-XI); rotatores muscles; sacral foramen; sacrum; scapula; sciatic nerve; serratus anterior muscle; shoulder girdle; shoulder joint; soft palate; soleus muscle; splenius capitis muscle; subscapularis muscle; supinator muscle; temporalis muscle; thoracic cage; thoracolumbar fascia; thyroid; tibialis anterior muscle; transversus abdominis muscle; trapezius muscle; triceps brachii muscle; vastus lateralis muscle; vertebral column; zygomaticus major muscle).


Illustrations Sources


Courtesy of Dr. George A. Datto, III (acanthosis nigricans).

Courtesy of Day JA, MD, University of Massachusetts Medical School, Worcester, MA (adult respiratory distress syndrome; interstitial lung disease).

Courtesy of Dean D, Herbener TE. *Cross-Sectional Human Anatomy*. Baltimore, MD: Lippincott Williams & Wilkins; 2000 (3D CT; carpal tunnel syndrome; Pott fracture; gemination).

Courtesy of Dr. Philip Docking, Eatons Hill, QLD, Australia (laryngeal mask; Yankauer suction catheter).


Courtesy of Feinsilver SH, Fein A. *A Textbook on Bronchoscopy*. Baltimore, MD: Lippincott Williams & Wilkins; 1995 (bronchus; carina; trachea; vocal folds).

Courtesy of Christine Finck, MD (gynecomastia).
Illustrations Sources

Courtesy of Fleisher GR, Ludwig S, Baskin MN. *Atlas of Pediatric Emergency Medicine*. Philadelphia, PA: Lippincott Williams & Wilkins; 2004 (Legg-Calve-Perthes disease; gonorrhea infection; herpes zoster; pyogenic granuloma; scabies; scabies mite; *Staphylococcus aureus* infection; tick bite; tinea corporis; wheal; hydrocephalus; mucocele).


Courtesy of General Electric Medical Systems, Milwaukee, WI (meniscal tear; nuclear lung scan, gamma camera).


Courtesy of Goodheart HP. *A Photo Guide of Common Skin Disorders: Diagnosis and Management*. Baltimore, MD: Lippincott Williams & Wilkins; 1999 (morpheiform, nodular, and ulcerated basal cell carcinoma).

Courtesy of Goodheart HP. *Goodheart's Photoguide of Common Skin Disorders*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003 (superficial basal cell carcinoma; alopecia areata; angioedema due to bee sting; sarcoidosis; scleroderma; melasma; bulla; burrows; chronic paronychia: nails; cryptococcosis; excoration; fissure; furuncle; head lice; jellyfish sting; lichenification; linea nigra and striae gravidarum; Lyme disease; onychoschizia: nails; purpura; spider angioma; telangiectasia; tinea capitis; tinea pedis; warts; hot tub folliculitis; contact dermatitis; allergic contact dermatitis; eczema; syphilis).


Illustrations Sources

Courtesy of Hawke M, MD, Toronto, Canada (acute otitis media; cholesteatoma; normal tympanic membrane; otitis externa; tympanosclerosis).


Courtesy of Hoag Memorial Presbyterian Hospital, Bloomington, IN (bone scan).


Courtesy of Dr. Norman Jacobs. From the Centers for Disease Control and Prevention, Atlanta, GA (bacteria: diplococci).


Illustrations Sources


Courtesy of Laclette, JP, MD, Instituto de Investigaciones Biomédicas, UNAM, Mexico (cestode).

Courtesy of Langlais RP, Miller CS. *Color Atlas of Common Oral Diseases*. 3rd ed. Baltimore, MD: Lippincott Williams & Wilkins; 2003 (angular cheilosis; ameloblastoma; attrition; bilateral cleft lip; cleft palate; cold sores; dental caries, class II and III; dentigerous cyst; erosion; thrush).

Courtesy of Langland OE, Langlais RP. *Principles of Dental Imaging*. Baltimore, MD: Williams & Wilkins; 1997 (apical granuloma; apical periodontal cyst).


From *LifeART Nursing 1* (CD-ROM). Baltimore, MD: Lippincott Williams & Wilkins; 2000 (Brudzinski sign; central venous pressure catheterization; intracranial pressure monitoring; venipuncture).


From *LifeART Nursing 3*, (CD-ROM). Baltimore, MD: Lippincott Williams & Wilkins; 2000 (cricothyrotomy; tympanic thermometer; vasectomy).

Illustrations Sources


Courtesy of McClatchey KD. Clinical Laboratory Medicine. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2002 (staphylococci; streptococci; Aspergillus fumigatus; Borrelia; Candida albicans; Cryptococcus neoformans; Fusarium solani; Haemophilus influenzae; Microsporum canis; Neisseria gonorrhoeae; Pneumocystis carinii; Staphylococcus aureus; Trichophyton tonsurans; Zygomycetes; zygomycosis; Chlamydia).

Courtesy of McConnell TH. The Nature of Disease, Pathology for Health Professions. Baltimore, MD: Lippincott Williams & Wilkins; 2007 (congestive splenomegaly in cirrhosis).

Courtesy of McKenzie SB, Clare N, Burns C, Larson L, Metz J. Textbook of Hematology. 2nd ed. Baltimore, MD: Williams & Wilkins; 1996 (Philadelphia chromosome translocation; hemolytic anemia; anisocytosis; macrocytosis; microcytic, hypochromic anemia; poikilocytosis; rouleaux; sickle cell anemia).

From MediClip Clinical Cardiopulmonary Collection. Baltimore, MD: Lippincott Williams & Wilkins; 2010 (human heart).


Courtesy of Mission Hospital Regional Medical Center, Mission Viejo, CA (breech fetus; colon polypectomy; esophageal varices).


Courtesy of Moore KL, Dalley AF. Clinical Oriented Anatomy. 4th ed. Baltimore, MD: Lippincott Williams & Wilkins; 1999 (swallowing; tracheostomy; Frankfurt horizontal plane).

Courtesy of Dr. P. Motta. From Sadler T. Langman’s Medical Embryology. 9th ed [image bank]. Baltimore, MD: Lippincott Williams & Wilkins; 2003 (zona pellucid; human heart).
Illustrations Sources


From the National Pressure Ulcer Advisory Panel, Reston, VA (ulcers).


Courtesy of Newport Diagnostic Center, Newport Beach, CA (Alzheimer disease).

Courtesy of Nursing Procedures. 4th ed. Ambler, PA: Lippincott Williams & Wilkins; 2004 (electrocardiography photo; flow rates for IV drips; nasopharyngeal airway; oropharyngeal airway; air-fluidized bed; esophageal gastric tube airway).


Courtesy of Olympus Corporation of Tokyo (colonoscope).

Courtesy of Philips Ultrasound, Bothell, WA (obstetrical sonography).

Courtesy of Pillitteri A. Maternal and Child Nursing. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003 (Ambu bag; male and female condom drawings; meninges; multiple gestation; ventriculoperitoneal shunt; common sites of endometriosis formation).


Courtesy of Potter B, DDS, School of Dentistry, Medical College of Georgia, Augusta, GA (bitewing radiograph; cephalometry; dentition; endosteal implants; molar tooth; radiolucent area; panoramic radiograph).
Illustrations Sources


Courtesy of Rubin E, Farber JL. Pathology. 3rd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 1999 (Ascaris; berry aneurysm; cholelithiasis; budding of virions from the plasma membrane of HIV-infected cell; spina bifida with meningomyelocele; adenocarcinoma; adenovirus: bronchiolitis; crust; Cytomegalovirus vs. normal respiratory tract; bancroftian filariasis infestation; fibroadenoma; Haemophilus influenzae meningitis; Hepatitis A virus; Hepatitis B virus; keloid; Down syndrome; liposarcoma).


Courtesy of Rubin R, Strayer DS, et al. Rubin’s Pathology: Clinicopathologic Foundations of Medicine. 5th ed. Baltimore, MD: Lippincott Williams & Wilkins; 2008 (endometriosis nodules; subdural hematoma; cerebral hemorrhage; anthracosilicosis; centrilobular emphysema; alcoholic cirrhosis; Crohn disease; panacinar emphysema; gastric ulcer; acute hemorrhagic cystitis; hydropnephrosis; hyperplastic polyp; interstitial cystitis; jaundice; Meckel diverticulum; multiple myeloma; Paget disease; chronic pyelonephritis; staghorn calculi; development of subdural hematoma; arterial thrombus; trichobezoar; ulcerative colitis; gallbladder carcinoma; myocardial hypertrophy; cataract; gynecomastia).

Courtesy of Sadler TW, PhD. Langman’s Medical Embryology. 8th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2000 (histologic development of the lung; liver development in the embryo; metanephric diverticulum; stages in development of the pancreas; respiratory diverticulum).
Illustrations Sources

Courtesy of Sadler T. *Langman’s Medical Embryology.* 9th ed [image bank]. Baltimore, MD: Lippincott Williams & Wilkins; 2003 (human blastocyst; fetus; dwarfism; 22/23-day human embryo; fetus; human embryo: 3rd week; zygote and morula).


Courtesy of Scheie Eye Institute, Philadelphia, PA (normal retina; retinal detachment).

Courtesy of Shriners Hospitals for Children, Houston, Texas (Proteus syndrome).

Reprinted with permission from The Skin Cancer Foundation, New York, NY (squamous cell carcinoma).

Reprinted with permission from The Skin Cancer Foundation, New York, NY. *Basal Bell Carcinoma: The Most Common Skin Cancer.* 1986; revised 1999 (basal cell carcinoma).

Courtesy of Smelter SC, Bare BG. *Brunner & Suddarth’s Textbook of Medical-Surgical Nursing.* 9th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2000 (arterial aneurysm; progression of atherosclerosis; breast self-examination; hives; wounds; gangrene of the toes; Trousseau sign; tuberculin test; thoracoscopy; esophagogastroduodenoscopy; colonoscopy).

Courtesy of Smelter SC, Bare BG, Hinkle JL, Cheever KH. *Brunner & Suddarth’s Textbook of Medical-Surgical Nursing.* 11th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008 (anesthetic delivery methods; anatomy of autonomic nervous system; cardiomyopathies that lead to congestive heart failure; implantable cardioverter defibrillator; cochlear implant; injection sites for spinal and epidural anesthesia; insulin pump; intravenous cannulation sites; knee joint; laproscopic cholecystectomy; knee ligaments, tendons, and menisci; pannus; deep peptic ulcer; common GI causes of peritonitis; pharyngitis; oral structures; pitting edema; shingles; anatomic structures of skin; Kaposi sarcoma; electrocardiography strip; impetigo: nostril; color flow duplex image: popliteal artery).
Illustrations Sources

Courtesy of Snell R. Clinical Anatomy. 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003 (mature placenta; medial meniscus; bottom image; umbilical cord).

Courtesy of Larry Staugger, Oregon State Public Health Laboratory. From the Centers for Disease Control and Prevention, Atlanta, GA (bacteria: bacilli).

Courtesy of Stoelting Co., Wood Dale, IL (Adson forceps).


Courtesy of Sun T. Parasitic Disorders: Pathology, Diagnosis, and Management. 2nd ed. Baltimore, MD: Lippincott Williams & Wilkins, 1999 (Entamoeba coli; Giardia lamblia; hookworm; Isospora belli; nematode; cestode; trematode; Taenia saginata; Trichinella spiralis; Wuchereria bancrofti; hydatid cyst).


Courtesy of Tasman W, Jaeger E. The Wills Eye Hospital Atlas of Clinical Ophthalmology. 2nd ed. Baltimore, MD: Lippincott Williams & Wilkins; 2001 (mature cataract with complete opacification of lens; Goldenhar syndrome; blepharitis; drusen; Candida albicans infection; conjunctivitis; corneal foreign body; corneal ulcer; cotton wool spots; endophthalmitis; episcleritis; Fusarium infection; hyphema; keratoconchoma; milia; normal angiogram; normal macula; orbital cellulites; Phthiriasis pubis infestation; retinoblastoma causing glaucoma; retinoblastoma; rhabdomyosarcoma; tumor; accommodative convergence accommodation ratio; coloboma; diabetic retinopathy; esotropia/exotropia; Mobius syndrome; Refsum disease).


Courtesy of Taylor C, Lillis C, LeMone P, Lynn P. Fundamentals of Nursing: The Art and Science of Nursing Care. 6th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008 (stoma; injections; apical pulse; lateral view of female breast; location of lymph nodes of the neck; sphygmomanometer; parts of needle and syringe; transcutaneous electrical nerve stimulation; Z-track method).

Courtesy of Wang F, MD, Orange, CA (perfusion scan, ventilation scan).
Illustrations Sources

Courtesy of Weber J, Kelley J. *Health Assessment in Nursing*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003 (Hegar sign; pain scales; cerumen; bunion; cherry angiomas; patches; scar; shingles: herpes zoster).

Courtesy of Welch Allyn, Inc., Skaneateles Falls, NY (exostosis; glaucoma; ophthalmoscope; otopharyngoscopy; otoscope; otoscopy; perforation).


Courtesy of World Health Organization, Washington, DC (polio).


Artwork Credits

Anatomical Chart Company: all artwork in the anatomy insert, umbilical cord prolapse, tooth anatomy, left kidney and adrenal gland, malignant melanoma, nephrolithiasis, bony orbit, conception, respiration, Lund-Browder chart, blood cell development

Mary Anna Barratt-Dimes, Parkton, MD: tympanogram

Susan Caldwell, Parsonsburg, MD: apgar score, arterial blood gases, normal body temperature by age

Jonathon Clements, Baltimore, MD: hearing aids, male condom photograph

Neil O. Hardy, Westport, CT: ectopic pregnancy, eye, facial nerves, Foley catheter, types of fractures, gastric bypass, glaucoma, gestation, antibody, arteriole, asthma, auditory ossicles, biopsy, segmental bronchi, capillary bed, dental caries, cerebral cortex, coronary arteries, frontal section of ear, embolism, enterostomy tubes, types of epithelium, Heimleich maneuver, vertebral disc herniation, hyperopia, hypHEMA, ileostomy, indirect inguinal hernia, innervation of the hand and wrist, intestines, pancreas, joints, laryngeal cartilages, Le Fort classification of facial fractures, lungs and respiratory anatomy, metered dose inhaler, mouth, myopia, neuroglia, typical efferent neurons, nutrient absorption, nystagmus, olfaction, otitis externa, otitis media, pancreas, percussion, percutaneous transluminal angioplasty, permanent dentition, polyps, postural drainage, pulmonary circulation, peripheral pulses, quadrants of abdomen, layers of the retina, scoliosis, skeletal muscle, spirometry, spondylolysis, vascular stent, talipes cavus and talipes planus, temporomandibular joint, vertical banded gastroplasty, digital clubbing, cochlea, cranial nerves, deciduous dentition, decubitus ulcer, dental implant, dermatomes, DNA, abdominal regions, alveolar abscess, amniocentesis, palpation technique, varicosis, venous valves, ventricles of the brain, vision, electrocardiography, colostomy, heart valves, bronchoscopy, computed tomography, MRI machine, computer monitors, tapeworm

Siri Mills, Munich, Germany: human heart, sympathetic trunk

Barbara Proud, Wilmington, DE: female condom

Michael Schenk, Jackson, MS: bomb calorimeter, carpal tunnel syndrome, finger deformities and fractures, grasp patterns, sliding esophageal and paraesophageal hernias, muscles of mastication, skinfold measurement sites

Mikki Senkarik, San Antonio, TX: thoracoscopy, esophagastroduodenoscopy, colonoscopy