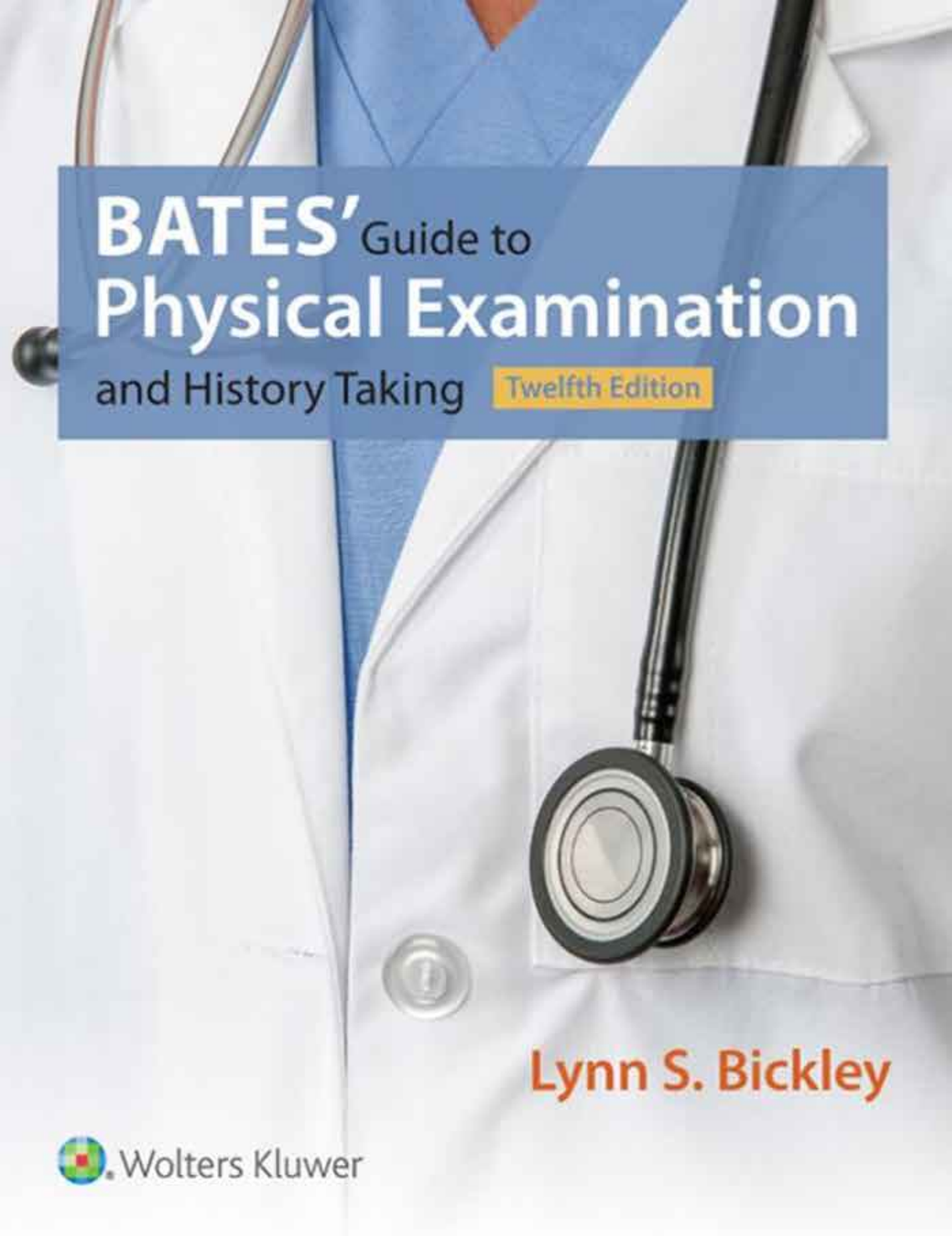


BATES' Guide to Physical Examination and History Taking

Twelfth Edition

Lynn S. Bickley

Wolters Kluwer

Thank you

for purchasing this e-book.

To receive special offers and news about our latest products, sign up below.

Sign Up

Or visit LWW.com

Wolters Kluwer

BATES' *Guide to* Physical Examination AND History Taking

BATES' *Guide to* Physical Examination AND History Taking

TWELFTH EDITION

Lynn S. Bickley, MD, FACP
Clinical Professor of Internal Medicine
School of Medicine
University of New Mexico
Albuquerque, New Mexico

Peter G. Szilagyi, MD, MPH
Professor of Pediatrics and Executive Vice-Chair
Department of Pediatrics
University of California at Los Angeles (UCLA)
Los Angeles, California

Guest Editor

Richard M. Hoffman, MD, MPH, FACP
Professor of Internal Medicine and Epidemiology
Director, Division of General Internal Medicine
University of Iowa Carver College of Medicine
Iowa City, Iowa

Wolters Kluwer

Philadelphia • Baltimore • New York • London
Buenos Aires • Hong Kong • Sydney • Tokyo

Acquisitions Editor: Crystal Taylor
Product Development Editor: Greg Nicholl
Marketing Manager: Michael McMahon
Production Project Manager: Cynthia Rudy
Design Coordinator: Holly McLaughlin
Art Director: Jennifer Clements
Illustrator: Body Scientific International
Manufacturing Coordinator: Margie Orzech
Prepress Vendor: Aptara, Inc.

Twelfth Edition

9 8 7 6 5 4 3 2 1

Printed in China

Library of Congress Cataloging-in-Publication Data
Names: Bickley, Lynn S., author. | Szilagyi, Peter G., author. | Hoffman, Richard M., editor.
Title: Bates' guide to physical examination and history taking / Lynn S. Bickley, Peter G. Szilagyi ; guest editor, Richard M. Hoffman.
Other titles: Guide to physical examination and history taking
Description: Twelfth edition. | Philadelphia : Wolters Kluwer, [2017] | Includes bibliographical references and index.
Identifiers: LCCN 2016018376 | ISBN 9781469893419 (alk. paper)
Subjects: | MESH: Physical Examination—methods | Medical History Taking–methods
Classification: LCC RC76 | NLM WB 205 | DDC 616.07/54—dc23
LC record available at https://lccn.loc.gov/2016018376

We would like to dedicate this book to all our students, trainees, and mentees who have taught us the true value of both the science and the art of medicine.

Faculty Reviewers

J.D. Bartleson Jr., MD
Associate Professor of Neurology
Mayo Clinic
Rochester, Minnesota

John D. Bartlett, MD
Assistant Clinical Professor of Ophthalmology
Jules Stein Eye Institute
David Geffen School of Medicine
Los Angeles, California

Amy E. Blatt, MD
Assistant Professor
Department of Medicine
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Adam Brodsky, MD
Associate Professor
Medical Director, Geriatric Psychiatry Services
Department of Psychiatry and Behavioral Sciences
School of Medicine
University of New Mexico Psychiatric Center &
Sandoval Regional Medical Center
Albuquerque, New Mexico

Thomas M. Carroll, MD, PhD
Assistant Professor
Department of Medicine and Palliative Care
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Adam J. Doyle, MD
Assistant Professor
Department of Surgery
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Amit Garg, MD, FAAD
Associate Professor and Founding Chair
Department of Dermatology
Hofstra Northwell School of Medicine
Northwell Health
Manhasset, New York

Catherine F. Gracey, MD
Associate Professor
Department of Medicine
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Carla Herman, MD, MPH
Chief
Division of Geriatrics and Palliative Medicine
Professor
Department of Internal Medicine
School of Medicine
University of New Mexico
Albuquerque, New Mexico

Mark Landig, OD
Division of Cataract & Refractive Surgery
Jules Stein Eye Institute
David Geffen School of Medicine
Los Angeles, California

Helen R. Levey, DO, MPH
PGY5 Resident in Urology
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Patrick McCleskey, MD
Dermatologist
Kaiser Permanente Oakland Medical Center
Oakland, California

Jeanne H.S. O'Brien, MD
Associate Professor
Department of Urology
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Alec B. O'Connor, MD, MPH
Director, Internal Medicine Residency
Associate Professor
Department of Medicine
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

A. Andrew Rudmann, MD
Associate Professor
Department of Medicine
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Moira A. Szilagyi, MD, PhD
Professor of Pediatrics
University of California at Los Angeles (UCLA)
Los Angeles, California

Loralei Lacina Thornburg, MD
Associate Professor
Department of Obstetrics and Gynecology
School of Medicine and Dentistry
University of Rochester Medical Center
Rochester, New York

Scott A. Vogelgesang, MD
Director, Division of Immunology
Clinical Professor
Department of Internal Medicine–Immunology
University of Iowa Carver College of Medicine
Iowa City, Iowa

Brian P. Watkins, MD, MS, FACS
Partner
Genesee Surgical Associates
Rochester, New York

Paula Zozzaro-Smith, DO
Fellow of Maternal-Fetal Medicine
Department of Obstetrics and Gynecology
University of Rochester Medical Center
Rochester, New York

STUDENT REVIEWERS

Ayala Danzig
University of Rochester School of Medicine and Dentistry

Benjamin Edmonds
University of Central Florida College of Medicine

Nicholas PN Goldstein
University of Rochester School of Medicine and Dentistry

Preface

Bates' Guide to Physical Examination and History Taking is designed for medical, physician assistant, nurse practitioner, and other students who are learning to interview patients, perform their physical examination, and apply clinical reasoning and shared decision making to their assessment and plan, based on a sound understanding of clinical evidence. The twelfth edition has many new features to facilitate student learning. As with previous editions, these changes spring from three sources: the feedback and reviews of students, teachers, and faculty; our commitment to making the book easier to read and more efficient to use; and the abundant new evidence that supports the techniques of examination, interviewing, and health promotion.

Throughout the twelfth edition, we emphasize common or important problems rather than the rare or esoteric, though at times we include unusual findings that are classic or life threatening. We encourage students to study the strong evidence base that informs each chapter and to carefully review the clinical guidelines and citations from the health care literature.

Special Features and Highlights

In this edition we have introduced *clinical pearls*, printed in blue, to highlight key points. We have also used color to highlight textboxes so students and teachers can quickly find important summaries of clinical conditions and tips for challenging examination techniques such as inspecting the fundus or measuring the jugular venous pressure. Many of the figures are new or have been updated and, for the first time, all figures are numbered with captions to make them easier to locate and reference in both the print and electronic editions.

Organization

The book comprises three units: *Foundations of Health Assessment*, *Regional Examinations*, and *Special Populations*.

Unit 1, *Foundations of Health Assessment*, includes chapters on clinical proficiency, assessing clinical evidence, and interviewing and health history. These chapters follow a logical sequence that begins with an overview of the components of patient evaluation, followed by important concepts in assessment of clinical evidence and clinical decision making, and the artful task of gathering the history.

- Chapter 1, *Foundations for Clinical Proficiency*, features an overview of history taking, physical examination, and now includes the assessment and plan, and a sample patient record. This chapter describes the differences between

subjective and objective data and symptoms and signs, and provides a model for sequencing the examination that optimizes patient comfort. It presents guidelines for creating a clear, succinct, and well-organized patient record.

- Chapter 2, *Evaluating Clinical Evidence*, has been entirely rewritten in the twelfth edition by Dr. Richard Hoffman and clarifies key concepts to ensure student understanding of the history and physical examination as diagnostic tests; tools for evaluating diagnostic tests such as sensitivity, specificity, positive and negative predictive values, and likelihood ratios; types of studies that inform recommendations for health promotion; and an approach to critical appraisal of the clinical literatures and types of bias.

- Chapter 3, *Interviewing and the Health History*, describes the differences between a comprehensive and focused health history, and between the fluid exchange of the interview and its transformation into the structured format of the written health history. It presents the techniques of skilled and advanced interviewing, the sequence and context of the interview, including its cultural dimensions, and foundational concepts of ethics and professionalism. It clarifies the transition from the open-ended interviewing of the Present Illness (and Personal and Social History) to the direct questions of the Past Medical History and Family History to the closed-ended "yes–no" questions of the Review of Systems. This chapter emphasizes the importance of *masterful listening*, so easily sacrificed to the time pressures of office and hospital care. It mirrors the precepts of Sir William Osler . . . for therapeutic relationships, always "Listen to your patient. He is telling you the diagnosis," and "The good physician treats the disease. The great physician treats the patient who has the disease."

Unit 2, *Regional Examinations* covers the regional examinations from "head to toe." The 14 chapters in this unit have been thoroughly updated and contain a review of anatomy and physiology, the common symptoms encountered in the health history, important topics for health promotion and counseling, detailed descriptions and images of techniques of examination, a sample written record, comparative tables of abnormalities, and conclude with extensive references from the recent clinical literature. Chapters with the most significant revisions are highlighted below.

- Chapter 4, *Beginning the Physical Examination: General Survey, Vital Signs, and Pain*, contains updates on obesity and nutrition counseling, and new standards for measuring blood pressure from the *Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure VII Report* (*JNC 8*).

- Chapter 5, *Behavior and Mental Status*, has been substantially revised according to the *Diagnostic and Statistical Manual of Mental Disorders,* 5th Edition (*DSM-5*) of 2013.

- Chapter 6, *The Skin, Hair, and Nails*, has been entirely rewritten for the twelfth edition by Dr. Patrick McCleskey and Dr. Amit Garg to improve the framework for assessing common lesions and abnormalities and the quality of its

teaching photographs, and to align this chapter with recommendations of the American Academy of Dermatology for student learners.

- Chapter 9, *The Cardiovascular System*, has detailed new evidence about risk factor screening, new clinical guidelines, and the complexities of assessing hypertension.

- Chapter 16, *The Musculoskeletal System*, contains a more systematic approach to the musculoskeletal examination and an updated classification of maneuvers to assess the shoulder, with reference to likelihood ratios for abnormalities whenever permitted by the clinical literature.

Other notable features include discussion of new screening guidelines for breast cancer, prostate cancer, colon cancer, Papanicolaou smears, and stroke risk factors as well as updated information on sexually transmitted diseases.

Unit 3, *Special Populations* includes chapters covering special stages in the life cycle—infancy through adolescence, pregnancy, and aging.

- Chapter 18, *Assessing Children: Infancy through Adolescence*, includes an increased emphasis on health promotion and child development, as well as the many tables and figures that highlight key concepts.

- Chapter 19, *The Pregnant Woman*, updates health promotion and counseling topics such as nutrition, weight gain, immunizations, substance abuse, and intimate partner violence.

- Chapter 20, *The Older Adult*, presents new information on frailty, when to screen, immunizations and cancer screening, the spectrum of cognitive decline and dementia screening tests, and the new algorithm for falls prevention from the Centers for Disease Control and Prevention. This chapter and Chapter 17, *The Nervous System*, also explore the challenging complexities of distinguishing delirium, dementia, and depression.

Additional Resources

Bates' Pocket Guide to Physical Examination and History Taking

As a companion to Bates' twelfth edition, we recommend *Bates' Pocket Guide to Physical Examination and History Taking, Eighth edition*. The *Pocket Guide* is an abbreviated version of the Bates' twelfth edition textbook, which is designed for portability and convenience at the bedside. Return to the textbook whenever more comprehensive study and understanding are needed.

Bates' Visual Guide to Physical Examination

The Bates' Visual Guide to Physical Examination (www.batesvisualguide.com), refilmed in 2013, is a key adjunct for mastering the many techniques of physical examination. This series of 18 videos displays seasoned clinicians conducting each of the regional examinations and demonstrates visually the varying techniques of inspection, palpation, percussion, and auscultation in the regional

examinations and special populations. We encourage students to study the written chapters and videos in tandem, often numerous times.

For students preparing for clinical testing, the Visual Guide includes 10 Objective Structured Clinical Examinations (or OSCEs), which shows students evaluating patients with common clinical problems in standard OSCE formats, interspersed with questions to guide learning key points. These OSCEs cover:

1. Chest Pain
2. Abdominal Pain
3. Sore Throat
4. Knee Pain
5. Cough
6. Vomit
7. Amenorrhea
8. Falls
9. Back Pain
10. Shortness of Breath

Acknowledgments

Bates' Guide to Physical Examination and History Taking, now in its twelfth edition, spans an evolution of four decades. Drs. Barbara Bates and Robert Hoekelman, colleagues in internal medicine and pediatrics at the University of Rochester School of Medicine and Dentistry, launched the first edition in 1974 as a hands-on manual for medical and advanced practice nursing students learning to master the physical examination of adults and children. With clear prose and black and white drawings, they devoted 18 chapters to the techniques of regional examination for adults and children. They devised the classic format of the *Bates' Guide* still present today—black explanatory text in the major column, examples of abnormalities in red in the minor column, and comparative tables of abnormalities at the end of each chapter. Dr. Bickley became chief editor and author for the seventh edition, joined by Dr. Szilagyi for the eighth edition. By then the *Bates' Guide* contained additional sections on anatomy and physiology and new chapters on interviewing, the approach to symptoms, the mental status examination, and clinical thinking from data to plan.

Over the next four editions Drs. Bickley and Szilagyi added many features to make *Bates' Guide* useful to student learners. They introduced health history and health promotion and counseling sections in each chapter, and have increasingly accommodated the evidence-based medicine "revolution" with updated health promotion and counseling sections in each edition that cite major studies and clinical guidelines; examples of abnormalities, tables, and footnotes and references reflecting advances in the clinical literature; and now a new chapter on evaluating clinical evidence.

In this edition with pleasure and esteem the authors welcome Dr. Richard Hoffman, Professor of Internal Medicine and Epidemiology and Director of the Division of General Internal Medicine at the University of Iowa Carver College of Medicine/Iowa City VA Medical Center, as guest editor. Dr. Hoffman is Associate Editor for the American College of Physicians (ACP) Journal Club, and has been a peer reviewer for a number of prostate screening guidelines, authored two Cochrane reviews, and writes and reviews for UpToDate.

Each edition of the *Bates' Guide* builds on an extensive review process, with many thanks due. First, the publisher surveys students and faculty about the merits of each chapter. Summaries of their responses provide helpful recommendations for subsequent revisions. Then the authors elicit intensive chapter critiques and updates from faculty at health sciences schools across the country, listed in the Reviewers section to follow. For their valuable insights and intense focus on this edition, the authors especially commend Dr. Richard Hoffman for his lucid presentation of the complex concepts governing evaluation of clinical evidence in

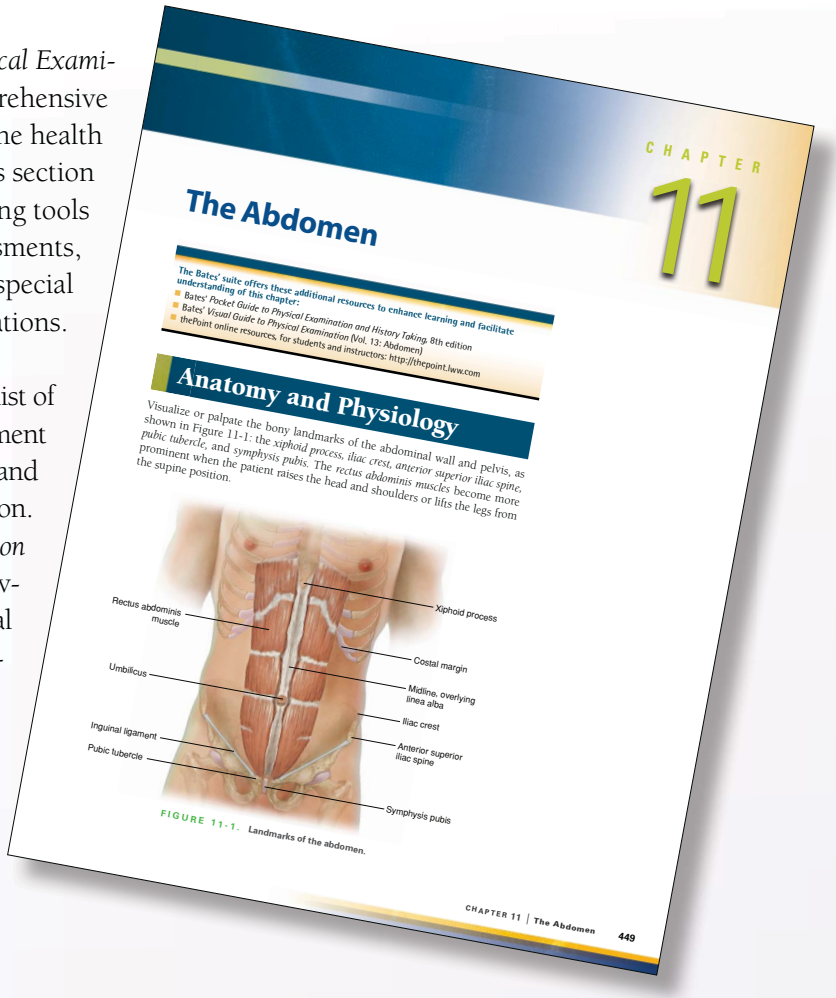
Chapter 2, Dr. Patrick McCleskey for rewriting Chapter 6 and presenting a new paradigm for assessing skin lesions with many new teaching photographs, assisted by Dr. Amit Garg. Drs. John Bartlett and Mark Landig for their review of the head and neck examination in Chapter 7, Dr. J.D. Bartleson for refining the always challenging fundamentals of the examination of the nervous system in Chapter 17, and Drs. Carla Herman and John Robertson for their useful scrutiny of new developments in the evaluation of older adults in Chapter 20. We also appreciate the assistance of Dr. Alec O'Connor in locating skilled faculty reviewers for many of the adult examination chapters and making important contributions to revisions of Chapter 8. Several reviewers made valued additions to the assessment of children and adolescents in Chapter 18—Dr. Moira Szilagyi and medical students Nicholas Goldstein and Ayala Danzig.

To compose and produce the *Bates' Guide* requires the deft touch of a maestro. Newly revised chapters must be reviewed, author queries issued and answered, and photos and illustrations checked and rechecked for teaching style and accuracy. Text, textboxes, examples of abnormalities, and images all must be carefully aligned. Each page is designed to hold reader appeal, highlight key points, and facilitate student learning. For his untiring craft and dedication, we especially thank Greg Nicholl, Senior Product Development Editor at Wolters Kluwer, who has woven these many strands into a coherent and exemplary text. We commend Kelly Horvath who assisted Greg with line-by-line review and careful annotations to prepare the book for the compositor, and Chris Miller of Aptara who turned complex text documents into corrected print proofs ready for publication. Early in the editing process and preceding Greg Nicholl, Stephanie Roulias was a conscientious collaborator who set many of the editing processes for the twelfth edition in motion. Crystal Taylor has been an astute manager of acquisitions for the Bates' Suite of teaching materials, contracting, and marketing. The publishing team brings invaluable talent to the tradition of excellence that has made the *Bates' Guide* a premier text for students learning the time-honored skills of patient assessment and care.

How To Use
Bates' Guide To Physical Examination And History Taking

The twelfth edition of *Bates' Guide to Physical Examination and History Taking* is your comprehensive guide to learning to effectively conduct the health interview and physical examination. This section introduces you to the features and learning tools that will lead to successful health assessments, regional examinations, and working with special patient populations.

At the start of every chapter, you will see a list of additional learning resources that complement the book in order to build your knowledge and confidence in history taking and examination. The *Bates' Visual Guide to Physical Examination* offers over 8 hours of video content and delivers head-to-toe and systems-based physical examination techniques. When used alongside the book, you have a complete learning solution for preparedness for the boards and patient encounters.


CHAPTER 11

The Abdomen

The Bates' suite offers these additional resources to enhance learning and facilitate understanding of this chapter:
- Bates' *Pocket Guide to Physical Examination and History Taking*, 8th edition
- Bates' *Visual Guide to Physical Examination* (Vol. 12: Abdomen)
- thePoint online resources, for students and instructors: http://thepoint.lww.com

Anatomy and Physiology

Visualize or palpate the bony landmarks of the abdominal wall and pelvis, as shown in Figure 11-1: the *xiphoid process, iliac crest, anterior superior iliac spine, pubic tubercle,* and *symphysis pubis*. The *rectus abdominis muscles* become more prominent when the patient raises the head and shoulders or lifts the legs from the supine position.

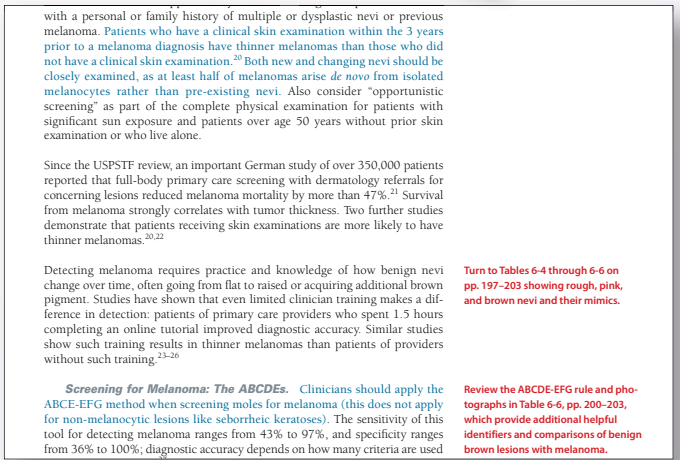
Rectus abdominis muscle
Xiphoid process
Costal margin
Umbilicus
Midline, overlying linea alba
Iliac crest
Inguinal ligament
Anterior superior iliac spine
Pubic tubercle
Symphysis pubis

FIGURE 11-1. Landmarks of the abdomen.

CHAPTER 11 | The Abdomen 449

Clinical Pearls—NEW!

Be sure to pay special attention to the clinical pearls, printed in **blue**. These clinical comments provide practical "pearls" that enhance your understanding of the assessment techniques.


with a personal or family history of multiple or dysplastic nevi or previous melanoma. Patients who have a clinical skin examination within the 3 years prior to a melanoma diagnosis have thinner melanomas than those who did not have a clinical skin examination.[20] Both new and changing nevi should be closely examined, as at least half of melanomas arise *de novo* from isolated melanocytes rather than pre-existing nevi. Also consider "opportunistic screening" as part of the complete physical examination for patients with significant sun exposure and patients over age 50 years without prior skin examination or who live alone.

Since the USPSTF review, an important German study of over 350,000 patients reported that full-body primary care screening with dermatology referrals for concerning lesions reduced melanoma mortality by more than 47%.[21] Survival from melanoma strongly correlates with tumor thickness. Two further studies demonstrate that patients receiving skin examinations are more likely to have thinner melanomas.[20,22]

Detecting melanoma requires practice and knowledge of how benign nevi change over time, often going from flat to raised or acquiring additional brown pigment. Studies have shown that even limited clinician training makes a difference in detection: patients of primary care providers who spent 1.5 hours completing an online tutorial improved diagnostic accuracy. Similar studies show such training results in thinner melanomas than patients of providers without such training.[23–26]

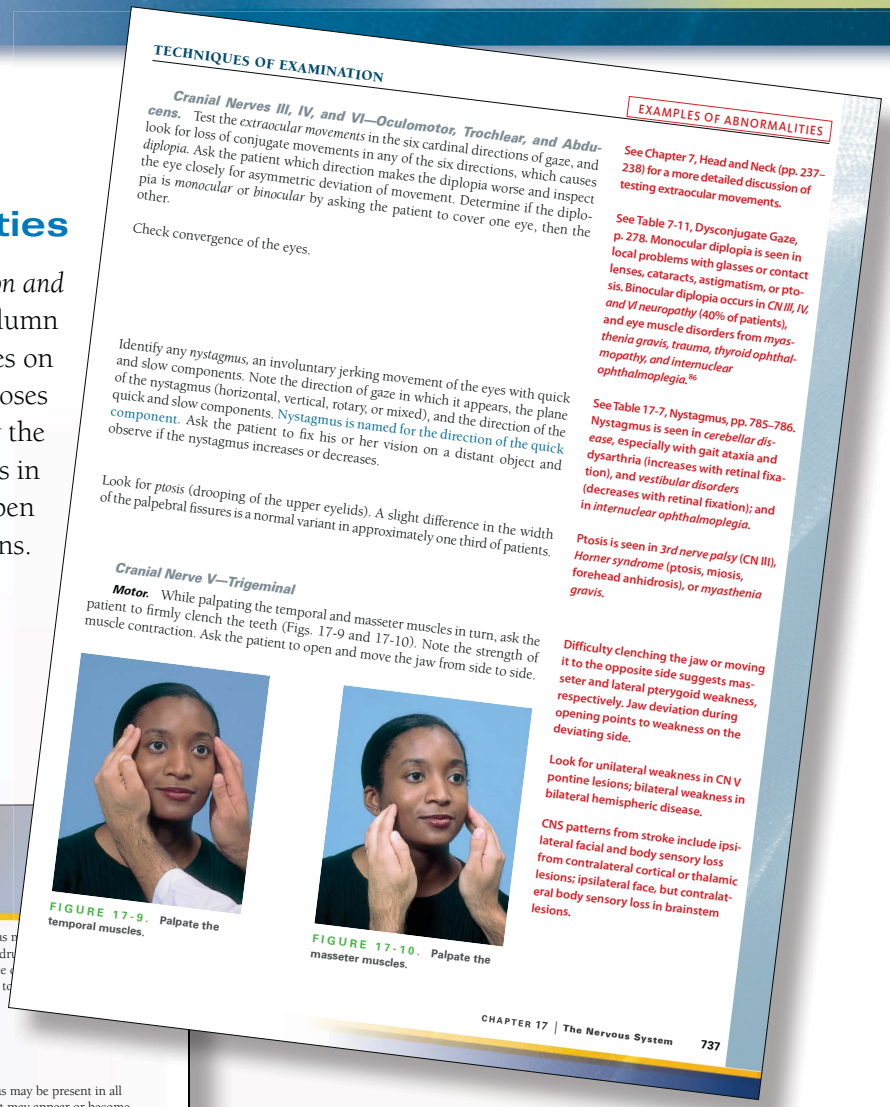
Turn to Tables 6-4 through 6-6 on pp. 197–203 showing rough, pink, and brown nevi and their mimics.

Screening for Melanoma: The ABCDEs. Clinicians should apply the ABCE-EFG method when screening moles for melanoma (this does not apply for non-melanocytic lesions like seborrheic keratoses). The sensitivity of this tool for detecting melanoma ranges from 43% to 97%, and specificity ranges from 36% to 100%; diagnostic accuracy depends on how many criteria are used

Review the ABCDE-EFG rule and photographs in Table 6-6, pp. 200–203, which provide additional helpful identifiers and comparisons of benign brown lesions with melanoma.

Examples of Abnormalities

Once again, *Bates' Guide to Physical Examination and History Taking* offers an easy-to-follow two-column format with step-by-step examination techniques on the left and abnormalities with differential diagnoses on the right. As your skills progress, study the abnormal variants of common physical findings in the red *Examples of Abnormalities* column to deepen your knowledge of important clinical conditions.



TECHNIQUES OF EXAMINATION

EXAMPLES OF ABNORMALITIES

Cranial Nerves III, IV, and VI—Oculomotor, Trochlear, and Abducens. Test the *extraocular movements* in the six cardinal directions of gaze, and look for loss of conjugate movements in any of the six directions, which causes *diplopia*. Ask the patient which direction makes the diplopia worse and inspect the eye closely for asymmetric deviation of movement. Determine if the diplopia is *monocular* or *binocular* by asking the patient to cover one eye, then the other.

See Chapter 7, Head and Neck (pp. 237–238) for a more detailed discussion of testing extraocular movements.

See Table 7-11, Dysconjugate Gaze, p. 278. Monocular diplopia is seen in local problems with glasses or contact lenses, cataracts, astigmatism, or ptosis. Binocular diplopia occurs in CN III, IV, and VI neuropathy (40% of patients), and eye muscle disorders from myasthenia gravis, trauma, thyroid ophthalmopathy, and internuclear ophthalmoplegia.[86]

Check convergence of the eyes.

Identify any *nystagmus*, an involuntary jerking movement of the eyes with quick and slow components. Note the direction of gaze in which it appears, the plane of the nystagmus (horizontal, vertical, rotary, or mixed), and the direction of the quick and slow components. Nystagmus is named for the direction of the quick component. Ask the patient to fix his or her vision on a distant object and observe if the nystagmus increases or decreases.

See Table 17-7, Nystagmus, pp. 785–786. Nystagmus is seen in cerebellar disease, especially with gait ataxia and dysarthria (increases with retinal fixation), and vestibular disorders (decreases with retinal fixation); and in internuclear ophthalmoplegia.

Look for *ptosis* (drooping of the upper eyelids). A slight difference in the width of the palpebral fissures is a normal variant in approximately one third of patients.

Ptosis is seen in 3rd nerve palsy (CN III), Horner syndrome (ptosis, miosis, forehead anhidrosis), or myasthenia gravis.

Cranial Nerve V—Trigeminal

Motor. While palpating the temporal and masseter muscles in turn, ask the patient to firmly clench the teeth (Figs. 17-9 and 17-10). Note the strength of muscle contraction. Ask the patient to open and move the jaw from side to side.

Difficulty clenching the jaw or moving it to the opposite side suggests masseter and lateral pterygoid weakness, respectively. Jaw deviation during opening points to weakness on the deviating side.

FIGURE 17-9. Palpate the temporal muscles.

FIGURE 17-10. Palpate the masseter muscles.

Look for unilateral weakness in CN V pontine lesions; bilateral weakness in bilateral hemispheric disease.

CNS patterns from stroke include ipsilateral facial and body sensory loss from contralateral cortical or thalamic lesions; ipsilateral face, but contralateral body sensory loss in brainstem lesions.

CHAPTER 17 | The Nervous System 737

Table 17-7 Nystagmus

Nystagmus is a rhythmic oscillation of the eyes, analogous to a tremor in other parts of the body. It has n
including impairment of vision in early life, disorders of the labyrinth and the cerebellar system, and dru
occurs normally when a person watches a rapidly moving object (e.g., a passing train). Study the three
nystagmus described in this table so that you can correctly identify the type of nystagmus. Then refer to
for differential diagnoses.

Direction of Gaze in Which Nystagmus Appears
Example: Nystagmus on Right Lateral Gaze

Nystagmus Present (Right Lateral Gaze)

Although nystagmus may be present in all directions of gaze, it may appear or become accentuated only on deviation of the eyes (e.g., to the side or upward). On extreme lateral gaze, the normal person may show a few beats resembling nystagmus. Avoid making assessments in such extreme positions, and *observe for nystagmus only within the field of full binocular vision.*

Nystagmus Not Present (Left Lateral Gaze)

Direction of the Quick and Slow Phases
Example: Left-Beating Nystagmus—a Quick Jerk to the Left in Each Eye, then a Slow Drift to the Right

Nystagmus usually has both slow and fast movements, but *is defined by its fast phase.* For example, if the eyes jerk quickly to the patient's left and drift back slowly to the right, the patient is said to have *left-beating nystagmus.* Occasionally, nystagmus consists only of coarse oscillations without quick and slow components, described as *pendular.*

(*continued*)

CHAPTER 17 | The Nervous System 785

To further sharpen your clinical acumen, turn to the end-of-chapter *Tables of Abnormalities*, which allow you to compare and contrast clinical conditions in a convenient single table format.

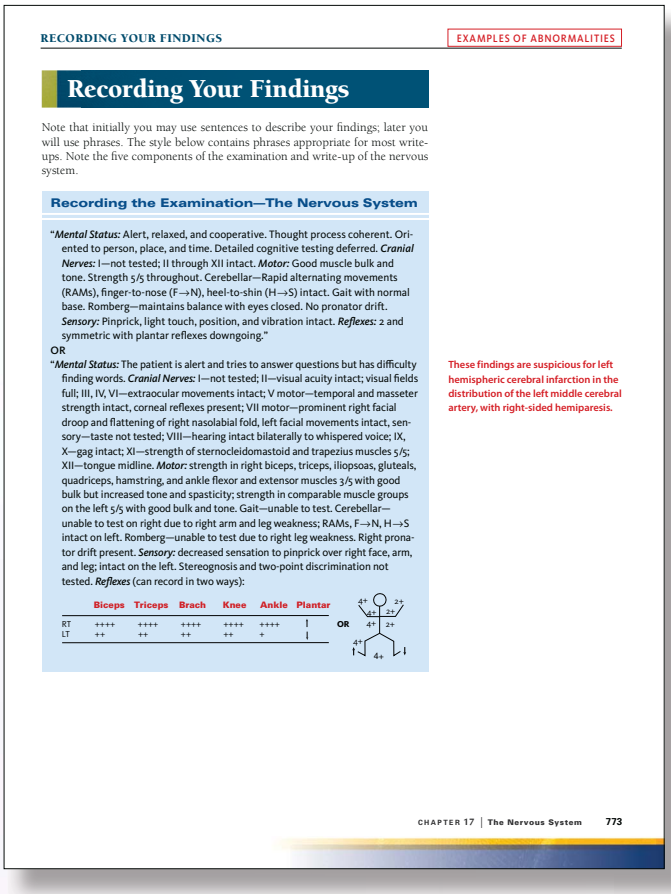
Examination Techniques

The *Techniques of Examination* sections are where you will learn the crucial and relevant examinations you will perform every day. Additional *Special Techniques* offer the examination approach for more uncommon conditions and special circumstances.

Photographs and Illustrations

The art program includes detailed, full-color photographs, drawings, and diagrams, some new or revised, to further illustrate key points in the text. They will enhance your learning potential by providing accurate and realistic representations.

And now, each figure has a figure number and caption to make the figures easier to find and understand.



RECORDING YOUR FINDINGS

EXAMPLES OF ABNORMALITIES

Recording Your Findings

Note that initially you may use sentences to describe your findings; later you will use phrases. The style below contains phrases appropriate for most write-ups. Note the five components of the examination and write-up of the nervous system.

Recording the Examination—The Nervous System

"***Mental Status:*** Alert, relaxed, and cooperative. Thought process coherent. Oriented to person, place, and time. Detailed cognitive testing deferred. ***Cranial Nerves:*** I—not tested; II through XII intact. ***Motor:*** Good muscle bulk and tone. Strength 5/5 throughout. Cerebellar—Rapid alternating movements (RAMs), finger-to-nose (F→N), heel-to-shin (H→S) intact. Gait with normal base. Romberg—maintains balance with eyes closed. No pronator drift. ***Sensory:*** Pinprick, light touch, position, and vibration intact. ***Reflexes:*** 2 and symmetric with plantar reflexes downgoing."

OR

"***Mental Status:*** The patient is alert and tries to answer questions but has difficulty finding words. ***Cranial Nerves:*** I—not tested; II—visual acuity intact; visual fields full; III, IV, VI—extraocular movements intact; V motor—temporal and masseter strength intact, corneal reflexes present; VII motor—prominent right facial droop and flattening of right nasolabial fold, left facial movements intact, sensory—taste not tested; VIII—hearing intact bilaterally to whispered voice; IX, X—gag intact; XI—strength of sternocleidomastoid and trapezius muscles 5/5; XII—tongue midline. ***Motor:*** strength in right biceps, triceps, iliopsoas, gluteals, quadriceps, hamstring, and ankle flexor and extensor muscles 3/5 with good bulk but increased tone and spasticity; strength in comparable muscle groups on the left 5/5 with good bulk and tone. Gait—unable to test. Cerebellar—unable to test on right due to right arm and leg weakness; RAMs, F→N, H→S intact on left. Romberg—unable to test due to right leg weakness. Right pronator drift present. ***Sensory:*** decreased sensation to pinprick over right face, arm, and leg; intact on the left. Stereognosis and two-point discrimination not tested. ***Reflexes*** (can record in two ways):

	Biceps	Triceps	Brach	Knee	Ankle	Plantar
RT	++++	++++	++++	++++	++++	↑
LT	++	++	++	++	+	↓

OR

These findings are suspicious for left hemispheric cerebral infarction in the distribution of the left middle cerebral artery, with right-sided hemiparesis.

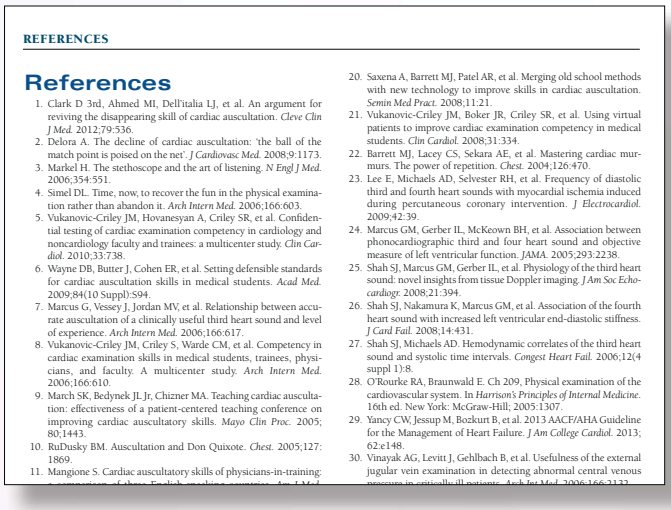
CHAPTER 17 | The Nervous System 773

Recording Your Findings

Constructing a well-organized clinical record must clearly display important clinical information and your clinical reasoning and plan. You will gain this skill and learn the descriptive vocabulary of physical findings in the *Recording Your Findings* section of each of the regional examination and special populations' chapters.

References

Consult the *References* at the end of the chapters to deepen your knowledge of important clinical conditions. The habit of searching the clinical literature will serve you and your patients well throughout your career.



REFERENCES

References

1. Clark D 3rd, Ahmed MI, Dell'italia LJ, et al. An argument for reviving the disappearing skill of cardiac auscultation. *Cleve Clin J Med.* 2012;79:536.
2. Delora A. The decline of cardiac auscultation: 'the ball of the match point is poised on the net'. *J Cardiovasc Med.* 2008;9:1173.
3. Markel H. The stethoscope and the art of listening. *N Engl J Med.* 2006;354:551.
4. Simel DL. Time, now, to recover the fun in the physical examination rather than abandon it. *Arch Intern Med.* 2006;166:603.
5. Vukanovic-Criley JM, Hovanesyan A, Criley SR, et al. Confidential testing of cardiac examination competency in cardiology and noncardiology faculty and trainees: a multicenter study. *Clin Cardiol.* 2010;33:738.
6. Wayne DB, Butter J, Cohen ER, et al. Setting defensible standards for cardiac auscultation skills in medical students. *Acad Med.* 2009;84(10 Suppl):S94.
7. Marcus G, Vessey J, Jordan MV, et al. Relationship between accurate auscultation of a clinically useful third heart sound and level of experience. *Arch Intern Med.* 2006;166:617.
8. Vukanovic-Criley JM, Criley S, Warde CM, et al. Competency in cardiac examination skills in medical students, trainees, physicians, and faculty. A multicenter study. *Arch Intern Med.* 2006;166:610.
9. March SK, Bedynek JL Jr, Chizner MA. Teaching cardiac auscultation: effectiveness of a patient-centered teaching conference on improving cardiac auscultatory skills. *Mayo Clin Proc.* 2005; 80;1443.
10. RuDusky BM. Auscultation and Don Quixote. *Chest.* 2005;127: 1869.
11. Mangione S. Cardiac auscultatory skills of physicians-in-training:
20. Saxena A, Barrett MJ, Patel AR, et al. Merging old school methods with new technology to improve skills in cardiac auscultation. *Semin Med Pract.* 2008;11:21.
21. Vukanovic-Criley JM, Boker JR, Criley SR, et al. Using virtual patients to improve cardiac examination competency in medical students. *Clin Cardiol.* 2008;31:334.
22. Barrett MJ, Lacey CS, Sekara AE, et al. Mastering cardiac murmurs. The power of repetition. *Chest.* 2004;126:470.
23. Lee E, Michaels AD, Selvester RH, et al. Frequency of diastolic third and fourth heart sounds with myocardial ischemia induced during percutaneous coronary intervention. *J Electrocardiol.* 2009;42:39.
24. Marcus GM, Gerber IL, McKeown BH, et al. Association between phonocardiographic third and four heart sound and objective measure of left ventricular function. *JAMA.* 2005;293:2238.
25. Shah SJ, Marcus GM, Gerber IL, et al. Physiology of the third heart sound: novel insights from tissue Doppler imaging. *J Am Soc Echocardiogr.* 2008;21:394.
26. Shah SJ, Nakamura K, Marcus GM, et al. Association of the fourth heart sound with increased left ventricular end-diastolic stiffness. *J Card Fail.* 2008;14:431.
27. Shah SJ, Michaels AD. Hemodynamic correlates of the third heart sound and systolic time intervals. *Congest Heart Fail.* 2006;12(4 suppl 1):8.
28. O'Rourke RA, Braunwald E. Ch 209, Physical examination of the cardiovascular system. In *Harrison's Principles of Internal Medicine.* 16th ed. New York: McGraw-Hill; 2005:1307.
29. Yancy CW, Jessup M, Bozkurt B, et al. 2013 AACF/AHA Guideline for the Management of Heart Failure. *J Am College Cardiol.* 2013; 62:e148.
30. Vinayak AG, Levitt J, Gehlbach B, et al. Usefulness of the external jugular vein examination in detecting abnormal central venous

Contents

List of Tables

CHAPTER 7 The Head and Neck 215

CHAPTER 8 The Thorax and Lungs 303

CHAPTER 9 The Cardiovascular System 343

UNIT 1

Foundations of Health Assessment

CHAPTER 1

Foundations for Clinical Proficiency

The Bates' suite offers these additional resources to enhance learning and facilitate understanding of this chapter:

- Bates' *Pocket Guide to Physical Examination and History Taking,* 8th edition
- Bates' *Visual Guide to Physical Examination* (All Volumes)
- thePoint online resources, for students and instructors: http://thepoint.lww.com

The techniques of physical examination and history taking that you are about to learn embody the time-honored skills of healing and patient care. Gathering a sensitive and nuanced history and performing a thorough and accurate examination deepen your relationships with patients, focus your assessment, and set the guideposts that direct your clinical decision making (Fig. 1-1). The quality of your history and physical examination lays the foundation for patient assessment, your recommendations for care, and your choices for further evaluation and testing. As you become an accomplished clinician, you will continually polish these important relational and clinical skills.

FIGURE 1-1. The importance of establishing rapport.

With practice, you will meet the challenge of integrating the essential elements of clinical care: empathic listening; the ability to interview patients of all ages, moods, and backgrounds; the techniques for examining the different body systems; levels of illness; and, finally, the process of clinical reasoning leading to your diagnosis and plan. Your experience with history taking and physical examination will grow, and will trigger the steps of clinical reasoning from the first moments of the patient encounter: identifying symptoms and abnormal findings; linking findings to underlying pathophysiology or psychopathology; and establishing and testing a set of explanatory hypotheses. Working through these steps will reveal the multifaceted profile of the patient before you. Paradoxically, the skills that allow you to assess all patients also shape the clinical portrait of the unique human being entrusted to your care. The physical examination is more than a means of gathering data and generating hypotheses for causality and testing. It is vital to the "formation of the [clinician]–patient bond, the beginning of a therapeutic partnership and the healing process (Fig. 1-2)."[1]

FIGURE 1-2. The skilled physical examination.

This chapter, revised in this edition, provides a guide to clinical proficiency in four critical areas: the *Health History;* the *Physical Examination; Clinical*

Reasoning, Assessment, and Plan; and *The Quality Clinical Record.* It describes the components of the health history and how to organize the patient's story; and it gives an overview of the physical examination with a sequence for ensuring patient comfort that briefly describes techniques of examination for each component of the physical examination, from the General Survey through the Nervous System. In this edition, the chapter also includes *Clinical Reasoning, Assessment, and Plan,* and *The Quality Clinical Record.* The new Chapter 2, Evaluating Clinical Evidence, provides the analytic tools for evaluating tests, guidelines, and the clinical literature that will ensure best practices and lifelong clinical learning. Chapter 3, Interviewing and the Health History, completes the foundational chapters that prepare you for performing the physical examination. You will learn the techniques of physical examination in Chapters 4 through 17. Each chapter is evidence based and includes citations from the clinical literature for easy reference so that you can continue to expand your knowledge. Beginning with Chapter 4, sections on *Health Promotion and Counseling: Evidence and Recommendations* review current clinical guidelines for preventive care.

The Bates' Guide to Physical Examination and History Taking follows the sequence described below:

- *Chapter 2, Evaluating Clinical Evidence,* discusses the history and physical examination as diagnostic tools, evaluation of the validity and reproducibility of diagnostic tests, health promotion, critical appraisal of the clinical research, and grading criteria for clinical guidelines.

- *Chapter 3, Interviewing and the Health History,* expands on the essential, varied, and often complex skills of building patient rapport and eliciting the patient's story. It addresses basic and advanced interviewing techniques and the approach to challenging patients as well as cultural competence and professionalism.

- *Chapters 4 to 17* are regional examination chapters, which detail the pertinent anatomy and physiology, health history, evidence-based guidelines for health promotion and counseling, techniques of examination, and the written record, followed by tables comparing common symptoms and physical findings and citations from the literature.

- *Chapters 18 to 20* extend and adapt the elements of the adult history and physical examination to special populations: newborns, infants, children, and adolescents; pregnant women; and older adults.

As you acquire the skills of physical examination and history taking, you will move to active patient assessment, gradually at first, but then with growing confidence and expertise, and ultimately clinical competence. From mastery of these skills and the mutual trust and respect of caring patient relationships emerge the timeless rewards of the clinical professions.

Patient Assessment: Comprehensive or Focused

Determining the Scope of Your Assessment

At the outset of each patient encounter, you will face the common questions, "How much should I do?" and "Should my assessment be comprehensive or focused?" For patients you are seeing for the first time in the office or hospital, you will usually choose to conduct a *comprehensive assessment,* which includes all the elements of the health history and the complete physical examination. In many situations, a more flexible *focused* or *problem-oriented assessment* is appropriate, particularly for patients you know well returning for routine care, or those with specific "urgent care" concerns like sore throat or knee pain. You will adjust the scope of your history and physical examination to the situation at hand, keeping several factors in mind: the magnitude and severity of the patient's problems; the need for thoroughness; the clinical setting—inpatient or outpatient, primary or subspecialty care; and the time available. Skill in all the components of a comprehensive assessment allows you to select the elements that are most pertinent to the patient's concerns, yet meet clinical standards for best practice and diagnostic accuracy.

The History and Physical Examination: Comprehensive or Focused?

Comprehensive Assessment	Focused Assessment
Is appropriate for new patients in the office or hospital	Is appropriate for established patients, especially during routine or urgent care visits
Provides fundamental and personalized knowledge about the patient	Addresses focused concerns or symptoms
Strengthens the clinician–patient relationship	Assesses symptoms restricted to a specific body system
Helps identify or rule out physical causes related to patient concerns	Applies examination methods relevant to assessing the concern or problem as thoroughly and carefully as possible
Provides a baseline for future assessments	
Creates a platform for health promotion through education and counseling	
Develops proficiency in the essential skills of physical examination	

As you can see, the *comprehensive examination* does more than assess body systems. It is a source of fundamental and personalized knowledge about the patient that strengthens the clinician–patient relationship. Most people seeking care have specific worries or symptoms. The comprehensive examination provides a more complete basis for assessing these concerns and answering patient questions.

For the *focused examination,* you will select the methods relevant to thorough assessment of the targeted problem. The patient's symptoms, age, and health history help determine the scope of the focused examination, as does your knowledge of disease patterns. Of all the patients with sore throat, for example, you will need to decide who may have infectious mononucleosis and warrants careful palpation of the liver and spleen and who, by contrast, has a common cold amenable to a more focused examination of the head, neck, and lungs. The clinical reasoning that underlies and guides such decisions is discussed later in this chapter.

What about the *routine clinical check-up,* or *periodic health examination*? Numerous studies have scrutinized the usefulness of the annual well-patient visit for screening and prevention of illness, in contrast to evaluation of symptoms, without coming to a clear consensus.[2–10] A growing body of evidence documents the utility of many components of the physical examination, its vital role in decision making, and its potential for savings through decreased testing.[11–15] Validated examination techniques include blood pressure measurement, assessment of central venous pressure from the jugular venous pulse, listening to the heart for evidence of valvular disease, detection of hepatic and splenic enlargement, and the pelvic examination with Papanicolaou (Pap) smears. Various consensus panels and expert advisory groups have further expanded recommendations for examination and screening, which will be addressed in the regional examination chapters.

What about the newer evidence about the physical examination itself and its relationship to advanced diagnostic testing? Recent studies view the *physical examination findings* themselves as *diagnostic tests* and have begun to validate their value by identifying their test characteristics using Bayes' theorem and the evidence-based tools described in Chapter 2, Evaluating Clinical Evidence.[16,17] Over time, "the rational clinical examination" is expected to improve diagnostic decision making, especially as national competencies and best teaching practices for physical examination skills become better understood.[11,18] Meanwhile, the physical examination yields "the intangible benefits of more time spent … communicating with patients,"[18] a unique therapeutic relationship, more accurate diagnoses, and more selective assessments and plans of care.[1,11]

Subjective Versus Objective Data

As you acquire the techniques of history taking and physical examination, remember the important differences between *subjective information* and *objective information,* summarized in the table below. *Symptoms* are subjective concerns, or what the patient tells you. *Signs* are considered one type of objective information, or what you observe. Knowing these differences helps you group together the different types of patient information. These distinctions are equally important for organizing written and oral presentations about patients into a logical and understandable format.

Differences Between Subjective and Objective Data

Subjective Data	Objective Data
What the patient tells you	What you detect during the examination, laboratory information, and test data
The *symptoms* and history, from Chief Complaint through Review of Systems	All physical examination findings, or *signs*
Example: Mrs. G. is a 54-year-old hairdresser who reports pressure over her left chest "like an elephant sitting there," which goes into her left neck and arm.	*Example:* Mrs. G. is an older, overweight white female, who is pleasant and cooperative. Height 5′4″, weight 150 lbs, BMI 26, BP 160/80, HR 96 and regular, respiratory rate 24, temperature 97.5 °F

The Comprehensive Adult Health History

Components of the Comprehensive Health History

- Identifying data and source of the history; reliability
- Chief complaint(s)
- Present illness
- Past history
- Family history
- Personal and social history
- Review of systems

See Chapter 18, Assessing Children: Infancy Through Adolescence, for the comprehensive history and examination of infants, children, and adolescents, pp. 799–925.

As you will learn in Chapter 3, Interviewing and the Health History, when you talk with patients, the health history rarely emerges in this order. The interview is more fluid; you will closely follow the patient's cues to elicit the patient's narrative of illness, provide empathy, and strengthen rapport. You will quickly learn where to fit different aspects of the patient's story into the more formal format of the oral presentation and written record. You will transform the patient's language and story into the components of the health history familiar to all members of the health care team. This restructuring organizes your clinical reasoning and provides a template for your expanding clinical expertise.

As you begin your clinical journey, review the components of the adult health history, then study the more detailed explanations that follow.

Overview: Components of the Adult Health History

Identifying Data	*Identifying data*—such as age, gender, occupation, marital status *Source of the history*—usually the patient, but can be a family member or friend, letter of referral, or the clinical record If appropriate, establish the *source of referral,* because a written report may be needed
Reliability	Varies according to the patient's memory, trust, and mood
Chief Complaint(s)	The one or more symptoms or concerns causing the patient to seek care
Present Illness	Amplifies the *Chief Complaint;* describes how each symptom developed Includes patient's thoughts and feelings about the illness Pulls in relevant portions of the *Review of Systems,* called "pertinent positives and negatives" (see p. 11) May include *medications, allergies,* and *tobacco use* and *alcohol,* which are frequently pertinent to the present illness
Past History	Lists childhood illnesses Lists adult illnesses with dates for events in at least four categories: medical, surgical, obstetric/gynecologic, and psychiatric Includes health maintenance practices such as immunizations, screening tests, lifestyle issues, and home safety
Family History	Outlines or diagrams age and health, or age and cause of death, of siblings, parents, and grandparents Documents presence or absence of specific illnesses in family, such as hypertension, diabetes, or type of cancer
Personal and Social History	Describes educational level, family of origin, current household, personal interests, and lifestyle
Review of Systems	Documents presence or absence of common symptoms related to each of the major body systems

The Comprehensive Adult Health History—Further Description

Initial Information

Date and Time of History. The date is always important. Be sure to document the time you evaluate the patient, especially in urgent, emergent, or hospital settings.

Identifying Data. These include age, gender, marital status, and occupation. The ***source of history*** or ***referral*** can be the patient, a family member or friend, an officer, a consultant, or the clinical record. Identifying the *source of referral* helps you assess the quality of the referral information, questions you may need to address in your assessment and written response.

Reliability. Document this information, if relevant. This judgment reflects the quality of the information provided by the patient and is usually made at the end of the interview. For example, "The patient is vague when describing symptoms, and the details are confusing," or, "The patient is a reliable historian."

Chief Complaint(s). Make every attempt to quote the patient's own words. For example, "My stomach hurts and I feel awful." If patients have no specific complaints, report their reason for the visit, such as "I have come for my regular check-up" or "I've been admitted for a thorough evaluation of my heart."

Present Illness. This *Present Illness* is a complete, clear, and chronologic description of the problems prompting the patient's visit, including the onset of the problem, the setting in which it developed, its manifestations, and any treatments to date.

- Each principal symptom should be well characterized, and should include the seven attributes of a symptom: (1) location; (2) quality; (3) quantity or severity; (4) timing, including onset, duration, and frequency; (5) the setting in which it occurs; (6) factors that have aggravated or relieved the symptom; and (7) associated manifestations. It is also important to query the "pertinent positives" and "pertinent negatives" drawn from sections of the Review of Systems that are relevant to the Chief Complaint(s). The presence or absence of these additional symptoms helps you generate the differential diagnosis, which includes the most likely and, at times, the most serious diagnoses, even if less likely, which could explain the patient's condition.

See discussion of the seven attributes of a symptom in Chapter 3, Interviewing and the Health History, pp. 65–108.

- Other information is frequently relevant, such as risk factors for coronary artery disease in patients with chest pain, or current medications in patients with syncope.

- The *Present Illness* should reveal the patient's responses to his or her symptoms and what effect the illness has had on the patient's life. Always remember, *the data flow spontaneously from the patient, but the task of oral and written organization is yours.*

- Patients often have more than one symptom or concern. Each *symptom* merits its own paragraph and a full description.

- Medications should be noted, including name, dose, route, and frequency of use. Also, list home remedies, nonprescription drugs, vitamins, mineral or herbal supplements, oral contraceptives, and medicines borrowed from family members or friends. Ask patients to bring in all their medications so that you can see exactly what they take.