

Physiologic Basis of Respiratory Disease.

Qutayba Hamid MD PhD MRCP FRCPath, Joanne Shannon MD, James Martin MD DSc. Hamilton, Ontario, Canada: BC Decker. 2005. Hard cover, illustrated, 793 pages plus CD ROM, \$159.

Despite its relatively young age as a science, medicine has grown through a number of phases in which different disciplines have been the focus of research and clinical care. Anatomy, physical diagnosis, organ physiology, cellular physiology, and epidemiology have all been emphasized as key foundations to medicine throughout its evolution. Evidence-based medicine, the latest interest, deemphasizes dependence on pathophysiology by instituting protocols derived from the experience with thousands of patients. While the protocols provide a sense of security to the clinician, the understanding of physiology remains the cornerstone of knowledge when caring for critically ill individuals, especially those with respiratory or hemodynamic compromise. This book by Hamid, Shannon, and Martin is a welcome addition to the medical literature because it revisits the physiology and pathophysiology of respiratory diseases, strengthening the foundation of organ physiology for clinicians and medical-school teachers. It also provides a historical perspective on one of the greatest respiratory physiology laboratories in the world: the Meakins-Christie Laboratories at McGill University.

The book is a collection of works from over 100 authors, who contributed to 64 chapters. The authors are world-class respiratory physiologists who write on their areas of research interest and relate them to the pathophysiology of respiratory diseases. Most of the authors have a tie to the Meakins-Christie Laboratories as prior faculty or trainees. Each chapter is succinctly written, ranging from 6 to 14 pages, and focusing on a specific physiologic aspect. These chapters are organized into 8 sections, covering (1) anatomy, (2) mechanics of breathing, (3) ventilation, pulmonary circulation, and gas exchange, (4) respiratory muscles and control of breathing, (5) airways and lung disease, (6) exercise physiology, (7) sleep-disordered breathing, and (8) clinical respiratory physiology. The chapters are illus-

trated primarily with graphs and drawings that represent the physiologic concepts. In general, the chapters are well referenced but they tend to cite work from the 1970s and 1980s. It is not that recent work was overlooked, but, rather, there has been relatively little "new" research on these subjects.

A CD-ROM is included with the book, and it includes all the book's chapters in portable display format (PDF) files that are easily opened with the Adobe Acrobat program. The CD-ROM is stated to be "dual-platform," which I assume means compatible with Windows or Macintosh computers. There is no indication as to whether it can be read by the Linux operating system. I was able to open all of the chapters on a Macintosh running the OS X operating system. On the disc there is an application named "Startme" that requires the Macintosh OS 9 and the classic mode to run. It also requires an older version of QuickTime and the application did not work for me. The inclusion of the chapters as electronic files allows the reader to use a computer to read the book. Another great advantage would be if the figures from the book could be used in slide presentations (with appropriate credit to the authors). Unfortunately, I was not able to copy and paste figures from the PDF files.

The strengths of this collection are that it does not attempt to be encyclopedic, and the depth of coverage in each chapter is well balanced. There is more detail than in West's classic books *Respiratory Physiology: The Essentials* and *Pulmonary Pathophysiology: The Essentials*, but considerably less detail than in the *Handbook of Physiology: The Respiratory System*, published by the American Physiological Society. Many of the chapters take a quantitative approach, using mathematical formulas to represent the concepts. In general, there are considerably more details than need to be known by the respiratory practitioner.

Though the editors state in their preface that the book may not be evenhanded in the respiratory-physiology subjects it covers, the depth of coverage is highly variable, depending on the subject matter. For example, the chapters on the mechanics of breathing are rich in detail and could serve as primary sources of reference, whereas pulmonary cir-

ulation is only superficially covered and hemodynamics of the right heart and pulmonary vasculature are not addressed at all. It is clear that these topics were chosen more because of the authors' special interests than because of the importance of the topics to respiratory medicine, and the topic-selection reflects the research interests of the Meakins-Christie Laboratories. Given the focus on respiratory mechanics, it was especially disappointing not to see any chapters on the physiology and pathophysiology of respiratory failure and mechanical ventilation. And some chapters appear to have been thrown in without clear ties to respiratory physiology, such as those on lung transplantation and eicosanoids in lung disease. In general, the chapters are rewrites of work published 20–30 years ago. There has been little effort in most of the chapters to rewrite the work in a more contemporary style that might be more accessible to the current generation of clinicians. Also, some of the chapters do not include the most recent research findings on their subjects; the newest works referenced are from the 1980s.

It is tempting to speculate why this book was written. The book's foreword, by Barnes; the preface, by the editors; and the chapter on the history of the Meakins-Christie Laboratories, by Macklem, suggest that the incentive to write the book came from a perceived need to document the broad research performed at Meakins-Christie Laboratories and its impact on respiratory physiology. It also brings together the works of a number of scientists who share a historical link to the Meakins-Christie Laboratories. The book's content does not really fill any conceptual or informational holes in available textbooks. Many of the authors have written similar chapters in other books.

The ambiguity in the incentive for writing this book translates into an uncertainty in the intended readership. The detailed physiology will be of great interest to some respiratory clinicians, but the sections on pathophysiology seem to miss the mark for being of value in caring for patients with respiratory diseases. This book will probably be of greatest interest to the academic respiratory physician/researcher, a teacher of respiratory physiology, or the respiratory therapist who wants a single reference source

for respiratory physiology and pathophysiology. I enjoyed reading the book for its historical information and appreciated the collection as a single repository for all of the great work performed at the fabled Meakins-Christie Laboratories.

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Pulmonary Pathophysiology, 2nd edition.

Juzar Ali MD, Warren Summer MD, Michael Levitzky PhD. Lange Medical *Physiology* series. New York: Lange Medical Books/McGraw-Hill. 2005. Soft cover, illustrated, 317 pages, \$34.95.

Although the back cover bills Lange's **Pulmonary Pathophysiology** as a "handy guide" for students and clinicians, the front cover claim of "Great review for the United States Medical Licensing Examination" (the "boards") more accurately reflects the thrust of this text. In preparation for step 1 of the boards, many medical students feel compelled to stuff all medical facts, great and small, into their heads. This requires students to review what has been forgotten—as well as digest new esoteric topics—and to do so in a hurry.

Pulmonary Pathophysiology does meet the boards-preparation specifications of both brevity and breadth. It reads more like a review rather than a thorough introduction to "bread and butter" topics, while offering at least cursory coverage of unusual diseases. For instance, the text succinctly discusses asthma and chronic obstructive pulmonary disease in 14 pages, but provides an extensive discussion of causes of noncardiac chest pain, including mitral-valve prolapse, Coxsackie-B-induced pleurodynia, and xiphoidalgia. In this respect, better introductory texts to respiratory pathophysiology are available. At the same time, the text provides insufficient details on diagnosis and management to be of much practical use to clinicians. Respiratory therapy and nursing students in need of a review, however, may find portions of it helpful.

The text is divided into 2 parts and 15 chapters. The first part is about symptoms and physical-examination findings and contains chapters on dyspnea, cough, hemoptysis, noncardiogenic chest pain, and lung sounds. The second part is structured according to categories of disease and includes

chapters on obstructive lung disease, parenchymal lung disease, pulmonary vascular disease, respiratory infections, pleural disease, respiratory abnormalities with sleep disorders, respiratory failure, lung under stress, pediatric lung disease, and miscellaneous topics such as transplantation and drug-induced lung disease. A focused discussion of lung cancer is notably absent.

Pulmonary Pathophysiology is meant to complement the 6th edition of *Pulmonary Physiology*, by Levitzky, and the authors assume the reader is well-versed in respiratory physiology, including abnormalities in gas exchange. For instance, the opening chapter, on dyspnea, explains normal ventilation-perfusion, low ventilation-perfusion, dead-space ventilation, and hypoventilation in 7 sentences, without the use of a figure.

At times, terminology is used imprecisely, such as a description of pulmonary embolism causing hypoxemia through creation of high ventilation-perfusion lung units. The majority of the book is written with adequate clarity, but some chapters are hampered by suboptimal organization, difficult prose, and redundancy. For instance, the pathophysiology of acute respiratory distress syndrome is discussed in multiple chapters, although the criteria for its clinical diagnosis are not included. Sprinkled throughout the book are instances where the text conflicts with information contained in a table, figure, or another chapter.

The book contains an abundance of figures, tables, and radiologic images. The figures borrowed from previous publications are excellent, but a few of the original figures are confusing. For example, an algorithm for the evaluation of acute dyspnea incorporates obstructive and restrictive pulmonary function tests but doesn't explain these terms until later in the chapter. Some recommendations, such as that of using the 6-min-walk test to differentiate congestive heart failure from other causes of acute dyspnea, raise questions about the basis of the algorithm. The chapter on dyspnea also contains tables that outline the modified Borg and American Thoracic Society shortness-of-breath scales, but arguably this level of detail is of limited value in the context of a student review or introductory text. The tables are easily legible and for the most part are otherwise functional. The vast majority of the chest radiographs and scan images are of good quality and serve their purpose.

This second edition has added Key Concepts sections that link to specific segments of text. For the most part they highlight important teaching points, but occasionally the generality of the statements limits their utility (eg, "Respiratory failure is common, but the etiology is varied and may be multifactorial."). The new chapter on lung sounds provides a clear, concise bridge between the symptoms-based and disease-based sections. Each chapter also includes 2–4 brief case presentations and 2–4 study questions. The former nicely illustrate the clinical applicability of the preceding material, but the latter often are not clearly written, or place undue emphasis on atypical presentations, unusual diseases, or relatively esoteric facts.

The index is comprehensive and accurate. The text's relatively small size (23 × 15 × 13 cm) and soft cover impart a relatively small additional risk of musculoskeletal injury when tossed into an already hefty backpack.

Pulmonary Pathophysiology is best-suited to students preparing for the boards, and perhaps others early in their training who need to rapidly review a large volume of material. How well it succeeds as a boards-review tool is difficult to assess, in part because the National Board of Medical Examiners is less than forthcoming about what it expects of learners. Nonetheless, the deficits outlined above indicate that there remains substantial room for further improving this text. Writing the ultimate boards-review pulmonary pathophysiology text is, without question, a monumental task, and **Pulmonary Pathophysiology** does many things well. Hopefully a 3rd edition will see the text advance from an adequate to an excellent resource for students.

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Practical Pulmonary Pathology: A Diagnostic Approach. Kevin O Leslie MD and Mark R Wick MD. Philadelphia: Elsevier/Churchill Livingstone. 2005. Hard cover, illustrated, 813 pages, \$275.

There is no dearth of books depicting and illuminating the wonderful but challenging field of pulmonary pathology. For the past generation it had been only Spencer's *Pathology of the Lung*. More recently, seasoned pathologists have been relying on the