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Books, Films, Tapes, & Software

Respiratory Physiology: The Essentials, 7th edition. John B West MD PhD DSc. Philadelphia: Lippincott, Williams, & Wilkins. 2005. Soft cover, illustrated, 186 pages, $36.95.

This is the seventh edition of a book that West initiated in 1974 to accompany the physiology course taught in the first year at the University of California, San Diego, Medical School. The intended use continues to be as an introductory text for medical and allied health students, and it is widely used in this country and elsewhere (translated into 13 languages) as a primary or supplementary resource. It has been updated approximately every 5 years, but as the basic concepts discussed have been well established for 30–50 years or more, the changes are minor and would not warrant replacing an earlier edition. With such a long history it seems appropriate to begin by comparing this edition to its predecessors.

With the 6th edition the printing format changed to a thinner, glossier paper stock and red highlights were added to the formerly black-and-white chapter headings, titles, and figures. The glossier paper has enhanced some of the figures, and the photomicrographs are a bit sharper, but a concomitant reduction in line spacing and use of a slightly smaller, and notably less heavy, font gives an overall effect of distinctly reduced readability (maybe not an issue for the intended trainee audience, but a nuisance for this older reader). Compared to the 193 pages in the 5th edition on my bookshelf, the same content in the 6th edition needed only 171 pages. This has expanded to 186 pages in the current edition, occupying a softbound volume of similar size, but about two thirds the thickness of the earlier versions. The added pages do not reflect new content but do accommodate some reader-friendly additions. Chapters are now prefaced by a list of topics covered and an introductory overview. Boxed insets of bulleted review points are also new and likely to be helpful to the student, but the red-on-pink format is less successful. Study questions have been moved from an appendix in the back of the book to the end of each chapter, and changed from open-ended queries to standard multiple choice format.

The book begins appropriately with a review of structure as it applies to function, describing the gas-blood interface, the conducting airways and alveolar spaces, and the organization of vascular supply, with brief allusions to the efficiency of air and blood flow. Surface tension, surfactant, and particle removal are introduced, with reference to later chapters for more discussion.

Although many texts begin a discussion of respiratory physiology with lung and thoracic mechanics, West prefers to begin with gas exchange. This may reflect his long interest in this topic, but also, as he explains in the preface, the pattern of the first-year course at University of California, San Diego, where he finds the physical principles of pressure and flow to be daunting to the modern student. The chapter on ventilation does present the static lung volumes and the measurement of functional residual capacity via the helium-dilution method or body plethysmography (the latter as daunting as any aspect of mechanics to most students and trainees, in my experience), then focuses on the concept of alveolar ventilation and the measurement of anatomic and physiologic dead space. The usual very clear exposition is marred by a misleading statement: "Another way of measuring alveolar ventilation . . . is from the concentration of CO_2 in expired gas," followed by an equation including "$\%CO_2$" but only later noting that this is the alveolar, not expired, concentration and can be obtained from arterial measurement.

Chapter 3 discusses diffusion in some detail, including perfusion-limited versus diffusion-limited gases, and the partitioning of resistance to gas transfer into its components of membrane diffusion and chemical combination with hemoglobin. The single-breath method for measuring diffusing capacity is described only conceptually. CO_2 equilibration is given brief mention, but a figure from earlier editions, which helped to overcome the common misconception that CO_2 equilibrates much more rapidly than O_2, has been dropped. There are several references, in this chapter and elsewhere (eg, page 58), to expected changes "when the blood-gas barrier is thickened" that tend to reinforce the common idea that this is the major cause of a low diffusing capacity, whereas loss of alveolar-capillary surface area and capillary blood volume are more likely abnormalities.

The chapter on blood flow and metabolism describes pressure and flow relationships in the pulmonary circulation, including the behavior of alveolar versus extra-alveolar vessels and the responses to lung volume change. The discussion of blood-flow distribution elaborates the 3-zone model developed by West, based on the relationship of intravascular and extravascular pressure at the alveolar capillary level, which emphasizes gravitational effects on hydrostatic pressure and flow. Only very briefly acknowledged is a more recent body of evidence that shows considerable heterogeneity of flow within isogravitational planes, and modest redistribution with change of posture or gravitational direction, and which suggests an important role for anatomic variation in more proximal vessels. The important role of hypoxic vasoconstriction is well discussed, with updates in the current edition to new evidence on the chemical mechanism. The Starling law of fluid exchange is presented with estimates of values in the pulmonary circulation, with a brief consideration of lymph flow, and interstitial and alveolar edema.

The chapter on ventilation-perfusion relationships begins with a discussion of alveolar ventilation of the lung as a whole, introduces the alveolar gas equation, then elaborates on 4 causes of hypoxemia: hypoventilation, diffusion, shunt, and ventilation-perfusion inequality. The discussions of shunt and ventilation-perfusion make somewhat awkward forward referral to the following chapter, which presents the hemoglobin-oxygen dissociation curve. Reflecting the author's special interest in this area, this chapter goes into greater depth than others, presenting a detailed analysis of regional gas exchange, from the top to bottom of the lung, and introducing ventilation-perfusion ratio distributions from the multiple inert gas research technique. The effect of ventilation-perfusion inequality on CO_2 exchange, which is often overlooked or oversimplified in introductory texts, is well described here.

Chapter 6 deals with gas transport by the blood, beginning with the shape and behavior of the oxygen-dissociation curve, and comments on carbon monoxide and methemoglobin. The components of CO_2 and HCO_3^- storage and exchange are explained. This chapter also includes a brief discussion of the acid-base status of the blood. The

Henderson-Hasselbach equation is fully derived, which is something of an exception in this book; most of the physiologic equations elsewhere are simply presented in final form. The 4 primary acid-base disturbances and their compensations are described with reference to the Davenport diagram. Blood-tissue gas exchange is addressed, with consideration of capillary density, tissue diffusion, and critical P_{O_2} at the mitochondrial level.

The chapter on mechanics of breathing begins with a brief description of the respiratory muscles; then the pressure-volume curve of the lung is presented, with hysteresis, and compliance is discussed. Students often have difficulty with positive and negative signs when dealing with lung-chest wall mechanics, and Figure 7.3 may add some confusion, because the pressure-volume curve is depicted with negative pleural pressure on the X axis, but the accompanying text states that "this axis also measures transpulmonary pressure," without making clear that the values would then be positive.

Surface tension and surfactant receive detailed attention. The previously described difference in ventilation from top to bottom of the lung and basilar airway closure at low lung volume are well explained with graphic presentations of the vertical gradient of pleural pressure and relative position on the lung pressure-volume curve. The interaction with the chest wall is introduced with the classic 3-component pressure-volume curve. The topic of airway resistance and dynamic compression during forced expiratory flow extends to presentation of isovolume pressure-flow curves that may be beyond introductory readers.

Chapter 8 gives a basic presentation of ventilatory control, including neural aspects, chemoreceptors, and responses to CO_2 and hypoxia. This is followed by a chapter titled "Respiratory System Under Stress," which includes a potpourri of topics, many not typically encountered in a text of this type. Exercise physiology, but not clinical exercise testing, is briefly discussed, followed by a section on high-altitude gas exchange, another long interest of Dr West. Other topics are oxygen toxicity, space flight, diving physiology, decompression sickness, effect of atmospheric pollutants, the concept of liquid breathing, and perinatal respiration from placenta to first breath.

The tenth and final chapter deals with tests of pulmonary function, but with an emphasis that seems ill-suited to the intended reader. After a very brief introduction to spirometry, the flow-volume curve, and measurement of functional residual capacity via nitrogen washout (helium dilution and plethysmography were included in Chapter 2), diffusion is passed over, and the author's interest is reflected in more detailed discussion of tests that reflect ventilation-perfusion relationships, such as the single-breath alveolar plateau, multi-breath nitrogen-washout profile, closing volume, frequency dependence of compliance, and construction of an O_2-CO_2 diagram.

The appendixes include a listing of symbols and equations used in the text (some in more detail), answers to the study questions, and suggestions for further reading. For each chapter 5–7 classic papers, reviews, or books by the pioneers and luminaries of respiratory physiology are listed. Appropriately, most of these are not recent, but a few publications from the past 5 years are included. For more experienced readers who want to better understand the foundation of their specialty, this citation list may be the most valuable component of the book. Finally, a detailed subject index is provided to guide the reader to areas of interest.

In a volume polished over many iterations, one would expect only rare errors, and that is true here. On page 39 a reference that should be to Figure 1.6 in an earlier chapter, has been to Figure 1.3 in at least the last 3 editions. On page 63, the denominator term is missing from the ventilation-perfusion equation, which is correctly shown in the appendix.

West's **Respiratory Physiology: The Essentials** has stood the test of time and will continue to introduce medical, nursing, and respiratory-therapy trainees to the physiologic concepts and relationships that underlie respiratory care practice. It can also serve as a useful guide for those who wish to refresh that knowledge. The focus is normal physiology, with only a few allusions to pathologic alterations, so students in respiratory system courses that encompass both normal function and disease processes of the lungs will need additional resources. West has also produced a companion volume, *Pulmonary Pathophysiology: The Essentials*, now in its 6th edition.

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Respiratory Physiology: A Clinical Approach. Richard M Schwartzstein MD and Michael J Parker MD. *Integrated Physiology* series. Baltimore: Lippincott, Williams, & Wilkins/Wolters Kluwer. 2006. Soft cover, illustrated, 232 pages, with CD-ROM, $37.95.

In the preface the authors state that they have organized the contents of this book to emphasize that breathing depends on more than the lungs; this approach is necessary for understanding the clinical problems that result from malfunctions of the respiratory system. The emphasis is on what the clinical student needs to know (or review) to deal with a patient's problem on hand, although this book is a physiology—not pathophysiology—text. The authors have indeed succeeded admirably in their goals. This book would be appropriate for any student of physiology, but especially those interested in clinical problems.

Chapter 1, "Getting Started: the Approach to Respiratory Physiology," gives an overview of the integrated approach. The authors divide the system into the respiratory controller, the ventilatory pump, and the gas exchanger. This chapter also introduces the book's accompanying CD-ROM, which contains animations and simulations. Material covered in the CD-ROM is marked in the book with a "film" icon, which makes the CD-ROM material easy to find. Each chapter starts with a clear outline, followed by an extensive list of learning objectives. The book's sections are well marked by headers, the level of which is easily discerned because of the judicious use of fonts and color. Where appropriate, "Quick Check" lists summarize major points. Figures and tables are well-placed, well-designed, and clearly marked. "Thought Questions" are interspersed in the text and give the reader a chance to see whether the material just covered is appreciated well enough to integrate into an overall understanding; some of these questions are clinical in nature.

Four sections complete each chapter: the "Putting It Together" sections give clinical vignettes, followed by physiologic explanations. The "Summary Points" are bulleted lists of the major concepts covered in the section. Then a section provides the answers to the "Thought Questions." Concluding each chapter is a section of review questions, the answers to which are at the end of the book. The strength of this approach is

that the material is introduced, presented, and reviewed while giving the reader a chance to think about it, work on simulations, and solve problems, which reinforces the learning. Short of being in a classroom with the authors, this approach is the best and longest-lasting.

Chapter 2, "Form and Function," is much more than a review of anatomy. Following up the description of the concepts of the respiratory controller, the ventilatory pump, and the gas exchanger, the authors detail the components of each and their functional importance, including, in addition to the usual, topics such as bones, pleura, and peripheral nerves.

The mechanics of the pulmonary system are covered in Chapter 3, "Statics: Snapshots of the Ventilatory Pump." In addition to the usual description of lung volumes, there are good descriptions of how lung volumes are measured clinically with spirometry, gas dilution, and body plethysmography. In contrast, Chapter 4, "Dynamics: Setting the System in Motion," covers the concepts of flow, pressure, resistance, compliance, and their application to the lung. The clinical correlations include the flow-volume loop during quiet breathing, forced expiration, and maximal inspiration in normal lungs, in obstruction, and before and after a bronchodilator.

Rather than separating (as some textbooks do) the steps of ventilation, perfusion, the matching of ventilation and perfusion, and gas transport, the authors place those concepts together in Chapter 5, "The Gas Exchanger: Matching Ventilation and Perfusion." In so far as the processes are a continuum, this is a good way to approach them. For example, carbon dioxide is discussed not only in the context of transport, but also by looking at elimination and, more importantly from the clinical stand-point, the causes of hypercapnia. Similarly, the discussion on oxygen includes the physiologic causes of hypoxemia.

The control of ventilation is complex. Chapter 6, "The Controller: Directing the Orchestra," does a superb job of discussing not only the usual role of the brain and the peripheral chemoreceptors; it also integrates volition, and pulmonary receptors in the airways, lungs, and chest wall with the overall response. Ventilatory responses during hypercapnia, hypoxemia, exercise, and respiratory failure are a nice addition to this complex topic and are useful applications for clinical situations that we encounter daily. Chapter 7, "The Controller and Acid-Base Physiology: An Introduction to a Complex Process," provides an excellent discussion on respiratory and metabolic acidosis and alkalosis and their compensation, a topic that has received too cursory a discussion in some basic pulmonary physiology texts. Renal physiology is an integral part of this topic, and it is covered in enough detail to make the material clear. This chapter is enough to teach the clinical student the physiologic basis of blood-gas interpretation.

Shortness of breath is an important symptom of many respiratory diseases. One of the difficulties of dealing with it is that, while we can rate it, grade it, and try to correlate it with other variables, most of us don't really understand the underlying physiologic basis of dyspnea—until now: Chapter 8, "The Physiology of Respiratory Sensations," deals with dyspnea and the subtle differences between cases; for example, being short of breath after having run up the stairs is very different than dyspnea during an asthma attack. The interaction between the lung and the controller are explained for the various respiratory sensations, and asthma is used for a model of multiple sensations. The authors acknowledge that this chapter is borderline between physiology and pathophysiology, but they believe it is an important topic because it can pull together various topics previously discussed in the book, because an understanding of the underlying physiology aids in diagnosing, and because there is a paucity of basic information in physiology textbooks. I agree on all counts.

To demonstrate how the controller, the ventilatory pump, and the gas exchanger work together, the authors discuss exercise, which is the topic of the last chapter, "Exercise Physiology: A Tale of Two Pumps." Exercise also depends on the cardiovascular system, and a succinct but clear explanation of this topic is found here, as well as a discussion of the metabolic demands during exercise and the limits of these systems in preventing us from exercising harder or longer.

The book concludes with a very helpful glossary of terms and formulas, and a detailed index.

The accompanying CD-ROM very cleverly displays the most important principles. It is organized into the same chapters as the book. There are as few as one (spirometry in Chapter 1) and as many as 9 animated figures in each chapter, which are numbered the same way as in the text. The animated figures are referred to in the text, making it easy to determine when it is a good time to view them and play out scenarios (eg, perform a vital-capacity maneuver in spirometry).

The interactive animations are also available on the Lippincott, Williams, & Wilkins *Connection* Web site (http://connection.lww.com), for which the reader is provided an access code. Unfortunately, it is not just a matter of connecting and typing in the access code. A lengthy registration process is required, which asks for information that I didn't think necessary for me to use animations, and thus I was not willing to give. I suspect that the publishing company is afraid that the access code would be used by more than one person, and that is a possibility, but if the Web site is like the CD-ROM, the animations are not stand-alone. Using the animations on the Web may convince some folks to buy the book, which is reasonably priced for a medical textbook. I hope the publishing company will become enlightened enough to change the deterring Web registration, or at least make it less cumbersome: name, e-mail address, and access code should be enough.

This book is part of a series that, following the same approach, will cover cardiovascular, renal, gastrointestinal, and endocrine physiology. I look forward to future monographs in the series.

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Lung Injury: Mechanisms, Pathophysiology, and Therapy. Robert H Notter, Jacob N Finkelstein, Bruce A Holm, editors. (*Lung Biology in Health and Disease*, volume 196, Claude Lenfant, executive editor). Boca Raton, Florida: Informa/Taylor & Francis. 2005. Hard cover, illustrated, 857 pages, $199.95.

Lung injury is a broad category of acute and chronic diseases, characterized clinically by disruption of the normal gas-exchange function of the lung. Much attention and research has focused on acute lung injury (ALI) and acute respiratory distress syndrome, since it was first described by Ashbaugh and co-authors in 1967.[1] However, chronic lung injury, including chronic obstructive pulmonary disease and fibrotic lung

disease, results in a greater health burden and shares many similar pathophysiologic mechanisms.

This book is volume 196 of the *Lung Biology in Health and Disease* series. Its goal is to provide a general overview of all aspects of lung injury, in both acute and chronic phases, with an emphasis on pathophysiology. The book is in 3 sections. The first third of the book focuses on the mechanisms by which lung injury develops, from both clinical/epidemiologic and cellular/molecular perspectives. The middle third of the book focuses on the physiology of lung injury and models used to study lung injury. The final third of the book deals with emerging therapies for lung injury. Each chapter begins with an overview of the topic to be covered and concludes with a summary of relevant information. Although each chapter can only provide a general summary of its topic, the chapters serve as a good starting point for understanding specific aspects of lung injury, and they provide reference lists that can lead to more in-depth reading.

Chapter 1, "Introduction to Lung Injury," provides an overview of lung injury and describes the book's organization and goals. Tables summarize the types of pathology observed in lung injury and the different molecular mediators that have been described in lung injury. The primary value of this chapter is to guide the reader to specific sections of interest.

Chapter 2, "Principles of Lung Development, Growth, and Repair," summarizes current knowledge about lung organogenesis, including alveolarization and development of the pulmonary vasculature. This material is included at the beginning of the book because many of the same processes involved in initial lung development are thought to be important in the remodeling and repair phase of lung injury. Included is a description of the physiology of lung development and an overview of the dynamic roles of external stimuli, hormonal regulation, and transcriptional control in the temporally dynamic process of organogenesis. This chapter is concisely written yet contains a great deal of information about the complex processes of lung development. It has an extensive list of references.

Chapters 3 and 4 discuss the epidemiology and physiologic and molecular pathophysiology of ALI. Chapter 3 provides a nice summary of the known risk factors for ALI, the various mechanisms of alveolar epithelial injury, and an introduction to therapeutic considerations when managing ALI. Chapter 4 reviews cytokine expression in ALI, with an emphasis on chemokines and leukocyte recruitment. Chapters 5 and 6 discuss the pathophysiology and relevant molecular mediators of chronic lung injury. The juxtaposition of these 4 chapters is useful for understanding the relationship between acute and chronic lung injury.

The next third of this book focuses on specific components of the physiology of lung injury and reviews different models of lung injury. Chapters 7–9 cover 3 specific aspects of lung injury: the role of reactive oxygen and nitrogen species, vascular dysfunction, and surfactant dysfunction. All 3 chapters provide a reasonable review of their specific topic; however, Chapter 7 is particularly good, with a nice summary on the generation of reactive oxygen and nitrogen species and a discussion of animal models and clinical studies, which illuminate the role of these molecules in normal biology and lung injury.

Chapters 10–12 review models of lung injury. Chapter 10 summarizes cell-culture models and animal models of lung injury. The first half of the chapter reviews isolation and the use of primary alveolar macrophages, Type II alveolar epithelial cells, and pulmonary endothelial cells. The second half of the chapter reviews animal models of lung injury. A comprehensive reference list is included. This chapter provides an excellent starting point for the biomedical researcher interested in applying these models to the study of lung injury. Chapter 11 reviews the timely issue of genetically modified mouse models of lung injury and repair. In the first half of this chapter, the basic methods used for transgenic mouse generation are reviewed, followed by a discussion of important advances, such as the use of inducible promoters or cell-type-specific promoters. The second half of the chapter gives several specific examples of how transgenic mice have been used to elucidate mechanisms of lung inflammation and repair. Chapter 12 begins with a discussion of lung structure and function and then reviews various methods used to study inhalation toxicology in human and animal models.

The final third of this book reviews therapeutic strategies for ALI, with a focus on results of clinical trials and future directions. Chapter 13 reviews the mechanisms by which ventilation can worsen injury in patients with acute respiratory distress syndrome and may contribute to the development of extrapulmonary multiple-organ dysfunction. Animal studies, clinical trials, ventilation strategies, and adjunctive therapies are discussed. Chapters 14–17 cover anti-inflammatory therapies, surfactant replacement, anti-oxidant therapies, and treatments directed at the vascular compartment in both acute and chronic lung injury. Chapter 18 discusses the potential of gene therapy for treating lung injury and reviews gene-delivery methods and research on gene therapy for several different causes of lung injury.

Chapter 19 explores combination therapy for ALI. This chapter includes a list of agents and scenarios in which combination therapy could be considered, but its primary focus and value is a thorough consideration of the design of combination-therapy studies. Scientists considering participation in such a study will find this chapter a very useful starting point in understanding the complexities involved.

In summary, this book provides a current overview of acute and chronic lung injury. This is a very broad and diverse topic, so this book obviously cannot be a comprehensive source of information for any specific aspect of lung injury. Rather, it serves as a starting point for understanding different facets of lung injury. The book's extensive reference lists are a valuable resource for more in-depth investigation. This book is primarily directed toward individuals in biomedical research and focuses on current concepts and research directions in the field of lung injury. It is not a clinical guide to the management of lung disease. This book will probably be most valuable as a reference for libraries, academic departments, and other such institutions, rather than to individuals who want a narrower focus and greater detail on a specific lung-injury topic.

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REFERENCES

1. Ashbaugh DG, Bigelow DB, Petty TL, Levine BE. Acute respiratory distress in adults. Lancet 1967;2(7511):319–323

Inhalation Toxicology, 2nd edition. Harry Salem, Sidney A Katz, editors. Boca Raton, Florida: CRC/Taylor & Francis. 2006. Hard cover, illustrated, 1,034 pages, $189.94.

There is a surprising paucity of recent inhalational toxicology texts. Phalen's *Methods in Inhalation Toxicology* is nearly 10 years old and self-admittedly unintended as a comprehensive text. The latest edition of McClellan's *Concepts in Inhalation Toxicology,* though excellent, is over a decade old. So it would appear that **Inhalation Toxicology** is perfectly poised to become the standard text in this field. Unfortunately, it falls far short and cannot be recommended as a replacement for either of the above. This is not to say that the book has no merits, for it excels in specific topics, as noted below. Yet as a comprehensive text, it has several major shortcomings in its aim to "provide the practicing professional as well as the aspiring student with a pragmatic textbook." Such vagueness as to the intended audience is reflected in the book's poor organization and inconsistent depth.

The book itself is attractive enough, with a nice cover graphic that highlights the interface between the upper and lower airways. The book's compact dimensions are efficient for a large text and make for easy handling. However, with my copy, after just a few openings a large crack emerged along the front cover crease, making me question its sturdiness.

The organization of the book is a primary concern. Part I is titled "Inhalation Toxicology Methods and Measurements," and Part II is titled "Inhalation Toxicology Methods." This bizarre, redundant structure is even more perplexing when one considers the specific chapters within. Praise goes to the few chapters that cover the fundamental topics one would expect in such a text; Chapter 8, "Toxic Load Modeling," and Chapter 18, "Toxicokinetics," as examples, fairly treat these critical concepts. However, many of the chapters in Parts I and II are extremely specific, without clear justification for their scattered inclusion among the treatments of the (by consequence, nearly hidden) principal conceptual chapters. For example, Chapter 5 is "Low-Level Effects of VX Vapor Exposure on Pupil Size and Cholinesterase Levels in Rats." Besides its highly questionable placement early in the methods section, it would appear to be far afield from the appropriate level of interest of all but the most differentiated of students.

That said, there is some helpful material within this disorderliness, for those with particular interests. For example, the first chapter is dedicated to the process of inhalation risk assessment at the United States Environmental Protection Agency. It does provide a nice outline of the agency's framework, and it incidentally does a nice job of treating fairly difficult but important concepts, such as the No Observed Adverse Effects Level (NOAEL).

Chapter 2, on acute exposure guideline levels, and Chapter 3, "Emergency Response Planning Guidelines," thoroughly discuss these issues, though I wonder why 2 entire chapters are devoted to such specifics that are scarcely mentioned (appropriately) in McClellan's text. A brief look at Chapter 4, "Directed-Flow Aerosol Inhalational Exposure Systems: Application to Pathogens and Highly Toxic Agents," makes the same point in a slightly different way: why focus specifically on pathogens and highly toxic agents before broadly and clearly introducing the topic of inhalation exposure system in general? Some of the chapters are simply inappropriately named. For example, from the title of Chapter 7, "The Use of Large Animals for Inhalation Toxicology," one would not know that most of the chapter is dedicated to phosgene toxicity in pigs.

Part III, "Inhalational Toxicology of Materials," is more logical than Parts I and II, but I nonetheless wonder how the specific materials were chosen. Chapter 27 is a fine outline of issues related to asbestos, but there is no similar overview of silica toxicology.

Part IV, "Inhalational Toxicology of Bioaerosols," is an understandable reflection of contemporary bio-terrorism concerns, but it nonetheless seems somewhat unbalanced to have such extensive treatment of this topic while some basic topics get relatively little coverage.

All that said, the book's language is generally quite readable. There are few typographical errors. For those who are interested in the book because of the many specific topics that are not treated sufficiently elsewhere, the index is fairly extensive. The illustrations are rather basic but generally clear. Surprisingly, however, there is not a single graphic on basic respiratory-tract particle dosimetry. The references are accurate and extensive, though subject to the above limitations regarding breadth of topics covered overall.

In summary, **Inhalation Toxicology**'s greatest strength is its detailed treatment of several highly specific topics within the field. If one happens to be interested in, for example, inhaled ricin, there is an entire chapter dedicated to this. However, as a fundamental text for those wanting a comprehensive treatment of the field, it cannot be recommended. The organization is seriously problematic and does not allow for systematic learning. The time remains ripe for an updated standard inhalational toxicology text.

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Oxford Handbook of Respiratory Medicine. Stephen Chapman, Grace Robinson, John Stradling, Sophie West. *Oxford Handbook* series. Oxford, United Kingdom: Oxford University Press. 2005. Flexible cover, illustrated, 757 pages, $45.

The **Oxford Handbook of Respiratory Medicine** is a pocket-sized book that covers the presentation and management of not only specific respiratory disorders, but symptom complexes as well. It is a welcome addition to the *Oxford Handbook* series, which covers both medical and surgical specialties. The stated intended audience is "specialist registrars" (the United Kingdom equivalent of a person in fellowship training). Indeed, 3 of the 4 authors were specialist registrars at the time of the writing. The book's intent is primarily to be a pocket reference for pulmonary fellows or residents or students with a special interest in pulmonary medicine. With that said, I believe this book would also be a very useful reference for nurses who care for patients with pulmonary disorders or respiratory therapists, either practicing or in training.

The book is laid out into 5 sections. The first section contains 14 chapters. All are fairly short and concise, the longest being 12 pages. The focus is on more generalized symptom complexes such as breathlessness, hemoptysis, evaluation of pulmonary infiltrates based on immune status, and evaluation of breathlessness in postoperative and pregnant patients. I found this section particularly useful, because often this is how, as practitioners, we first encounter the patient: without a known diagnosis, but merely a symptom. The chapters in this section typ-

ically cover assessment (focusing on key history and examination elements) as well as diagnosis and management of a specific symptom. Although the chapters are short, the authors have done a good job referencing other sections of the handbook for more in-depth review of particular diseases and procedures. This limits the duplication of information, to which this type of layout is prone, without sacrificing crucial details.

The second section covers specific disease entities. It is comprehensive, to say the least, consisting of 35 chapters. Common topics, such as asthma, chronic obstructive pulmonary disease, and lung cancer, of course warrant their own chapters, but the handbook does not neglect rarer topics, such as pneumoconiosis, gastrointestinal disease and the lung, and lung transplantation. There are even chapters on altitude, diving, and pediatric lung disorders that are relevant to adult medicine. The chapters are short, the longer ones being 20–25 pages, which was essential for this to remain a quick pocket reference. Obviously some detail and depth must be sacrificed for brevity's sake. However, a very nice feature throughout this book is journal and Web-site references at the end of the chapters, which will help readers get more detailed information. I especially liked the inclusion of journal references, as I found many to be key, recent publications on the topic at hand, though they draw a bit heavily from the British literature. Unfortunately, a section that is glaringly absent is one devoted to mechanical ventilation, both basics and more advanced techniques. Instead, this topic is covered in the critical care handbook in this series. Though its placement there is by no means inappropriate, it obligates the purchase and storage of 2 handbooks for readers whose practice scope is primarily intensive-care-related pulmonary medicine.

The last 2 sections are titled "Supportive Care" and "Practical Procedures." "Supportive Care" is a bit of a hodge-podge section, running the gamut from noninvasive ventilation, to long-term oxygen therapy, to immunosuppressive drugs, to ethics, to palliative care. Although it contains vastly different topics, each chapter covers an important, relevant pulmonary-medicine topic that does not necessarily fit into the previous sections.

The section on procedures is, indeed, fairly practical. Although few readers will ever perform a cricothyroidotomy, the rest of the section is devoted to more common pulmonary procedures, including thoracentesis, chest-tube insertion and management, bronchoscopy, and pleurodesis. The chapters cover the basic procedural information and the indications, contraindications, and potential complications, which, in my opinion, are more difficult to learn than the procedure itself. This section is, however, limited to only pulmonary procedures, so those whose practice involves a large portion of intensive-care patients and who may need to know about invasive hemodynamic monitoring or central venous access will again need to turn to the handbook on critical care.

The appendix is brief but covers key topics likely to be referenced by readers. It includes sections on acid-base balance, blood gases, pulmonary-function testing, and computed-tomography anatomy and pattern of pulmonary diseases. It also contains charts for calculating body mass index and forced expiratory volume in the first second, and converting kilopascals to millimeters of mercury. The latter is crucial to American readers, who will probably reference it often to interpret the blood gas values throughout the book. The inclusion of a section on computed-tomography anatomy is unique and particularly noteworthy, as, in my experience, many practitioners of various backgrounds have difficulty with this subject, particularly when evaluating mediastinal structures. It's as close as one can get to having a radiologist in your pocket.

American readers will find this book a little less useful than their British counterparts. In some cases the information or references given in a particular chapter are very specific to patients and physicians in the United Kingdom. As an example, the section on financial considerations for patients explains potential eligibility for "statutory sick pay" and "incapacity benefits" and gives Web addresses and telephone numbers for United Kingdom government agencies. Similarly, the section on long-term oxygen therapy provides explicit instructions on how—in the United Kingdom—to write the prescription, organize the delivery, and arrange follow-up. Such United Kingdom information is, of course, not applicable "across the pond." This criticism, however, is rather minor, since such United-Kingdom-specific information makes up perhaps 5% of the book.

Overall this handbook is very well organized and laid out. It is easy to use and find information of interest. It concisely summarizes an extremely wide range of pulmonary topics and provides useful and up-to-date references. It would be a useful and fairly economic addition to various practitioners' coat pockets or ward or office shelves.

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Evidence-Based Respiratory Medicine. Peter G Gibson, editor. Malden, Massachusetts: Blackwell Publishing. 2005. Hard cover, illustrated, 593 pages, with CD-ROM, $189.95.

Many of us would like to think that we are practicing evidence-based medicine (EBM), but keeping up to date with the medical literature can be daunting. Not only is there an immense amount of information, but clinical controversies, conflicting evidence, and sheer lack of time and resources can confuse the busy medical practitioner. The result is that in respiratory medicine there is a large discrepancy between what the literature states and current practice patterns. Moreover, many bedside questions are not answerable with the current data. It is in this context that **Evidence-Based Respiratory Medicine** attempts to accomplish several important goals: to dissect the available clinical evidence in a given subject, to summarize the findings collectively, and to educate the reader about what the review of the evidence says or does not say. In the introduction, contributors Rowe and Klassen discuss these aims while emphasizing that such exercises must keep a patient-centered focus. This evidence-based, patient-centered framework is long overdue, and purchase of the resulting text is worthy of consideration.

The book is divided into 6 main parts concerning general aspects of pulmonary medicine. The contributors and editor are affiliated with the British Medical Journal and the Cochrane Database collaboration, and many of the references cited are from the Cochrane reviews. Notably, the book has a major emphasis on obstructive airway diseases, with asthma and chronic obstructive pulmonary disease (COPD) each devoted an entire part. It is not clear if this was intentional, but it may be that there are more data to discuss regarding these diseases.

Part 1 begins weakly, in that the evidence-based approach did not resonate clearly in the beginning; nor is there a consistent focus on the patient and common bedside dilemmas. Much of the focus in the early chapters in Part 1 is on tables that discuss the sensitivity and specificity of symptoms and tests, but a clinical context is not emphasized. The "take-home" points are not elaborated in the text, but, rather, within the brief chapter conclusions.

Part 1 also lacks clear organization. For instance, in the chapter on diagnostic strategies there is a long discussion of the etiology of cough, but the management of cough is not discussed until much later in the text, buried within a brief discussion in Chapter 4.1 concerning bronchitis and sinusitis. On a positive note, the reader can gain an appreciation of the various debates in the literature, can learn to diagnose common diseases (especially asthma and COPD) with a fair bit of evidence-based experience, and can learn a decision-analysis algorithm for the workup of hemoptysis.

The next 2 chapters of Part 1 read more like reviews rather than evidence-based summations of the literature. Perhaps most disappointing was the section on radiology, which is a broad overview of basic radiology interpretation and had little to do with evidence-based medicine. Here I had expected discussions of important clinical radiology controversies, such as the application of positron emission tomography in lung cancer or the utility of high-resolution computed tomography for characterizing interstitial and airway pathology. My expectations therefore were not immediately met, since the majority of this early text read much like other pulmonary medicine texts.

The book's emphasis became clearer in the next several chapters, beginning with a very-well-written summary on the approach to venous thromboembolic disease; the author concisely discussed both traditional diagnosis modalities and newer technologies in development or on the horizon. The subsequent section provides an important understanding of the controversies in lung-cancer screening. I particularly enjoyed the chapters on patient adherence to treatment modalities and on smoking cessation; these were very practical and widely applicable to a variety of care providers. Moreover, these issues are not often discussed in similar texts and therefore improve the utility of Part I.

Parts 2 and 3 are entirely devoted to the care of asthma and COPD, respectively, and they make for exceptional reading. The chapters are clear, well-written, thorough, and pay particular attention to handling important questions, with a patient-centered focus. Nearly every chapter begins with a case scenario, followed by how the literature was approached and dissected to answer the question. After analyzing the literature, the authors return to the case to apply their research to the patient's outcome, at times noting their own opinions. The approach is elegant in that, within each chapter the individual case scenario generates a series of questions, and each question is handled in a similar evidence-based fashion. For those who are trying to understand how to apply basic EBM practices at the bedside, especially with regards to the care of patients with obstructive airway diseases, these sections make for extremely worthwhile reading.

Within Parts 2 and 3, a number of aspects of asthma and COPD care are discussed accurately with attention to EBM—from management of exacerbations, to the approach to out-patient disease management, to discussions of more novel therapies. Particularly interesting were the chapters devoted to nonpharmacologic therapies, the role of asthma education programs, difficult-to-treat asthma, and an entire chapter about the evidence surrounding lung-volume-reduction surgery for COPD. The chapters read smoothly, flowing from one subject to another, and keep the reader involved with their attention to pragmatic clinical questions. Notably absent are guidelines for managing asthma in pregnant women, the diagnosis or treatment of chronic sinus disease (discussed lightly in Part 4), and the role of gastroesophageal reflux disease in relation to asthma. In addition, there was no discussion of recent data on adverse effects of long-term inhaled corticosteroids and their questionable efficacy in patients whose airway symptoms are controlled. Overall, though, I think these sections will serve as valuable references for practitioners who want to gain a better understanding of the asthma and COPD literature from a patient-centered, evidence-based paradigm.

Part 4, which centers on respiratory infections, reverts to the style in Part 1; the chapters in Part 4 don't include case scenarios, the chapters read somewhat technically and overall seem less inviting. Broad aspects of respiratory medicine are addressed, from simple and complicated infections (eg, sinusitis and tuberculosis) to respiratory diseases that have infectious components (eg, cystic fibrosis, bronchiectasis). I particularly enjoyed the chapter on influenza vaccination, as it addressed many of the common questions that concern clinicians, epidemiologists, and health-care policy-makers. Also useful was Table 2 in Chapter 4.5, which gives a cogent summary of the available evidence on therapies for bronchiectasis. On the negative side, the chapter on community-acquired pneumonia is too basic, focusing mainly on vaccination to prevent community-acquired pneumonia. There was little or no mention of the utility of invasive diagnostic testing, antibiotic coverage for hospital-acquired infections, isolation precautions, or the impact of various forms of immunosuppression upon treatment considerations. In another negative note, within the chapter on cystic fibrosis much information is presented, but it is presented out of patient context; the result is that this chapter reads like a reference manual rather than a patient-centered EBM review. Moreover, the organization of this section is not as refined. For example, one chapter discusses the utility of antibiotics in a COPD exacerbation, but I think it would have made more sense to include this section in Part 3 (with other COPD issues) rather than with cystic fibrosis and bronchiectasis therapies. Overall, Part 4 is useful but could have been improved to fit the rest of the text.

Part 5, concerning acute and chronic respiratory failure, treats the reader to important pragmatic questions, with the EBM patient-centered approach found in Parts 2 and 3. I believe Part 5 would have fit more aptly just following the sections on asthma and COPD, for both its content and engaging style. Important evidence is discussed about the potential of pulmonary rehabilitation, noninvasive ventilation in COPD, and the issues surrounding the efficacy of long-term oxygen therapy in patients with COPD. Chapter 5.4, about sleep-disordered breathing, seemed initially to be in an odd location in the book, but it will serve as an excellent resource. I was hoping here to also find chapters concerning mechanical ventilation and lung-protective ventilation strategies in patients with acute respiratory distress syndrome, the management of patients with chronic tracheostomy tubes, and the role of lung transplantation in respiratory failure. Overall, however, I was very pleased with this section and think it will be a useful resource.

Part 6 is a collection of evidence-based reviews on other important aspects of pulmonary medicine for which there are inadequate data to merit a separate section or they simply do not belong elsewhere in the text. Again, a series of thorough and well-referenced reviews fill the pages; moreover, the chapter authors are eminent authorities within their specialties. The section is thus very informative. A number of tables summarize the available evidence, but the emphasis is not on bedside clinical questions, and I found the writing style rather monotonous. I expected discussion about environmental and occupational lung diseases, but these were not included.

In summary, the majority of the book is overall successful in its endeavor to provide an up-to-date, evidence-based, patient-focused perspective on various aspects of respiratory medicine. It does this particularly well in its approach to obstructive lung diseases such as asthma and COPD, whereas other sections are composed mostly of topic reviews that can be found in other textbooks. The content relies heavily on data summarized by the Cochrane Collaboration; this provides academic rigor but can miss recent developments. The book suffers slightly from its occasionally loose organization and lack of a clear and consistent style throughout. The black-and-white text, often with little use of headings and subheadings, made for some very tedious reading at times. The most enjoyable sections use case scenarios to engage the reader, and the book's highlights include some seldom-discussed issues (eg, adherence to therapy, smoking cessation). Thus, overall the book is quite good.

As enjoyable as I found much of this book and feel privileged to have been able to critique it, I am torn as to whether I would spend the $190 to purchase it. The target audience is primarily providers who desire to achieve a certain depth of understanding in their approach to respiratory diseases. For this reason I think it would be an excellent library resource. However, I am guessing many more individuals would probably be numbed by the sheer number of statistics discussed, lengthy tables full of often-conflicting data, and exceedingly dull black-and-white format of the entire text. Nor is the included CD-ROM much help in this regard, since its search capabilities are limited, there are no hyperlinks to selected resources, and the on-screen format of CD-ROM material shares the book's nondescript style and lack of visual appeal. With the advent of online access to most journals and other references, textbooks today need to be exceptional to merit individual purchase. I would like to see a more refined second edition before I made a stronger recommendation to spend the money on this text for one's personal library, though overall the book is quite good and necessary for the field of respiratory medicine.

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