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# Books, Films, Tapes, & Software

**Fundamentals of Mechanical Ventilation: A Short Course on the Theory and Application of Mechanical Ventilators**. Robert L Chatburn RRT-NPS FAARC. Cleveland Heights, Ohio: Mandu Press. 2003. Soft cover, illustrated, 291 pages, $59.95.

As perfectly stated by Robert Chatburn in his preface, most textbooks on mechanical ventilation that we educators use devote but a small fraction to how ventilators actually work. **Fundamentals of Mechanical Ventilation** was written with a goal in mind: lead the reader to expertise with the theory and tools of that art called mechanical ventilation. To do this Chatburn presents the concepts of mechanical ventilation from the perspective of the ventilator. He indicates that his book does not say much about how to use ventilators in various clinical situations, but he is overly modest, since the book is full of very useful clinical applications of theoretical concepts.

The contents are divided into 5 chapters plus 3 appendixes. A very short "Introduction to Ventilation" (Chapter 1) includes a brief description of how breathing takes place. This is followed by "Introduction to Ventilators" (Chapter 2), "How Ventilators Work" (Chapter 3), "How to Use Modes of Ventilation" (Chapter 4), and "How to Read Graphic Displays" (Chapter 5).

Chapters 1 and 2 devote 16 pages (including key ideas sections and self-assessment questions) to describing breathing. A brief overview of minute ventilation, dead space, and gas exchange serves as an introduction to defining positive- and negative-pressure breathing and to describing the 2 classic types of ventilators: conventional and high-frequency. Chatburn wrote these 2 first chapters to direct the reader to the following chapters as he covers the basic concepts of mechanical ventilation.

In Chapter 3 Chatburn emphasizes the importance of "understanding how ventilators work, not just how to turn the knobs." He describes the 4 mechanical characteristics of ventilators: input power, power conversion, control system, and output. He then directs the reader to respiratory care equipment textbooks for details on ventilator design characteristics. This is also the chapter in which Chatburn first introduces a special section called "Extra for Experts," which is specifically directed to the professional "who is in a position to teach mechanical ventilation and particularly for those involved with research on the subject." This chapter is of particular importance, because it gives a practical review of the variables of the mechanical breath: control, triggering, limiting, and cycling. Chatburn includes excellent detail and makes the distinctions between various modes very easy to understand. Table 3–1 illustrates the mode classification scheme published in RESPIRATORY CARE in 2001.[1] Chatburn uses this table as the backbone for detailed descriptions throughout the rest of the chapter. To wrap this chapter Chatburn classifies the ventilator alarms (Table 3–5) according to the event priority level, alarm characteristics, automatic reset, and the alarm event. This is one of the most comprehensive tables on alarms I have seen in a textbook.

Chapter 4 not only provides the reader with a basic approach to conventional modes of ventilation but also describes newer modes and their indications and clinical examples.

In the last chapter, Chatburn does not limit the presentation to a basic understanding of how to read graphic displays. In the section "How to Detect Problems" he provides critical information on ventilatory changes that clinically impact the patient and how these changes can be detected by reading the graphic displays.

Appendix I, "Answers to Questions," includes definitions, answers to true-or-false questions, multiple choice questions, and key ideas. This appendix is a fine compilation and explanation of all topics covered in the 5 chapters. It is the reader's opportunity to review mechanical ventilation in a very concrete fashion, right to the point. Appendix II contains a glossary. Appendix III, "Mode Concordance," shows the correspondence between the names of common modes and their breathing pattern classifications.

There are very few typographical errors; the most noticeable is on the back cover, under "Features." Although the table of contents carries all the headings in the textbook, it would have helped to use numerals as prompts, since it is sometimes difficult to distinguish headings from subheadings. Numbers would also make the content look more organized.

The key ideas of each chapter are nicely boxed and hard to miss. However, some of the "Extra for Experts" sections, such as the one in Chapter 4, do not have clear boundaries and it is hard to tell where they stop. A change in the font or size might be a simple solution to consider for future editions. Though all the figures are clear, 3 of the 4 photos used in the book were not of good quality and were probably not necessary.

In Chapter 3 Chatburn repeatedly named a specific ventilator when describing modes. I would recommend against doing that because it can give the impression of favoritism for a particular machine.

I recommend this book to practicing clinicians in respiratory care and especially to faculty and students in respiratory care programs, who would benefit the most from the "Extra for Experts" sections and the self-assessment questions.

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#### REFERENCE

1. Chatburn RL, Primiano FP Jr. A new system for understanding modes of mechanical ventilation. Respir Care 2001;46(6): 604–621.

**Cardiopulmonary Critical Care**. Thomas L Higgins MD MBA, Jay S Steingrub MD, Robert M Kacmarek RRT PhD FAARC, and James K Stoller MD MSc FAARC. Oxford UK: BIOS Scientific Publishers. 2002. Hard cover, illustrated, 411 pages, $84.95.

Does the world need another critical care textbook? This question is raised by none other than Thomas Higgins himself in his introduction to **Cardiopulmonary Critical Care**, the latest addition to my gaggle of intensive care books. Surveying the crowded shelf, I have to admit I asked the same question upon receiving this book to review. However, as Dr Higgins explains, this book is meant to inhabit a particular "evolution-

ary niche," as a reference text for medical students, residents, nurses, respiratory therapists, and others with episodic exposure to critical care but with little need, time, or money for the much larger tomes available. Having spent the last few months reading through this book, using it to teach in the intensive care unit (ICU), and loaning it to several residents and fellows, I must agree with the authors' premise and I admire their execution.

By design, **Cardiopulmonary Critical Care** is limited to cover only the physiology and management of respiratory and cardiovascular disorders, with a plan to produce later volumes covering other areas of critical care. Intentionally omitted from this volume are ICU aspects of gastroenterology, endocrinology, infectious diseases (except an excellent chapter on nosocomial pneumonia), and neurology/neurosurgery, among others. This at first might seem a crippling limitation for an ICU reference, but in comparison to unwieldy compendiums that can live only on book shelves (and never on the wards) and the portably encyclopedic but often painfully terse *The ICU Book* by Paul Marino the choice to limit this book's scope was wise and effective.

The book starts with several chapters devoted to respiratory and cardiac physiology, then delves into shock, myocardial infarction, acute respiratory distress syndrome, pulmonary embolism, and acid/base disorders, and then broader subjects such as postoperative care in the ICU. Importantly, several chapters address technical aspects of ICU care, such as mechanical ventilation (including lung-protective strategies, weaning, and noninvasive positive-pressure ventilation), vascular access, and hemodynamic monitoring, as well as fluid resuscitation and pressors. Coverage of each subject is generally quite thorough and occasionally even a bit too detailed for use as an easy reference. Fortunately, this over-exuberance is largely confined to the chapters on basic physiology.

In assessing this book overall, a natural point for comparison is the above cited, less current (1998) book by Marino, which targets much the same audience. The strength of Marino's book is its completeness, which often comes at the expense of readability. **Cardiopulmonary Critical Care** takes the opposite approach. I found many of the chapters of this book not only informative but actually enjoyable reading.

Much like Marino's book, **Cardiopulmonary Critical Care** is written at a level accessible to those encountering the ICU for the first time and organized in a fashion that allows those well-versed in critical care to easily focus on individual topics of interest. The authors' approach to each subject is strongly evidence-based, though (fortunately) with an appropriately reductionist view, yielding quick and meaningful interpretation of the literature. For example, the chapters on myocardial infarction, acute respiratory distress syndrome, and nosocomial pneumonia serve equally well as cohesive introductions to these subjects for students and as quick best-practice reviews for those already familiar with the topics.

The chapters on technical aspects of ICU management are outstanding. Subjects such as ventilator management, fluid resuscitation, and hemodynamic monitoring are cogently explained. The chapter on vascular access, though a bit wordy, is the best I've read and presents a series of excellent photographs detailing the relevant anatomy of vascular access.

Given the book's intended portability, its hard cover is a bit odd, and, as one resident remarked, its orange and green cover design looks a lot like an eighth grade math text. Outward appearances notwithstanding, the text is well illustrated, with fairly simple diagrams and tables that allow ready understanding of the material. The text is well (and relevantly) referenced, and the index is quite useful. There are very few typographical errors.

Though **Cardiopulmonary Critical Care** will not satisfy the hardboiled intensivist with sweeping scope and minute detail, it admirably accomplishes that which it sets out to do. It is an excellent resource for respiratory therapists, nurses, residents, and others who seek a thorough yet readable (and portable) reference text for their ICU work and is a strong alternative to *The ICU Book* for the subjects covered. I look forward to reading the planned companion volumes, which will cover other aspects of critical care medicine.

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**Tissue Oxygenation in Acute Medicine**. William J Sibbald MD, Konrad FW Messmer MD, and Mitchell P Fink MD, editors. (Update in Intensive Care Medicine, Volume 33, Jean-Louis Vincent MD PhD, series editor). Berlin Heidelberg: Springer-Verlag. 2002. Soft cover, illustrated, 378 pages, $49.95.

This book is part of the prestigious series of monograms, "Update in Intensive Care Medicine," edited by Jean-Louis Vincent. The book is a collaborative effort of an international group of experts in the field of oxygen transport and tissue oxygenation. Its 24 chapters are grouped into 4 sections: "Physiology of Oxygen Delivery," "Hypoxia and Its Consequences," "Measuring Tissue Oxygenation," and "Blood and Blood Substitutes as Oxygen Carriers." Although there is variability of style among the contributors, the editors have compiled an impressive collection of complementary essays regarding this very important subject.

The first section addresses the basic mechanisms of heart-lung interaction and the effect of changes in intrathoracic pressure on venous return, left ventricular function, and cardiac output. Spontaneous inspiratory efforts decrease intrathoracic pressure, in particular during airflow obstruction, at times resulting in right ventricular overdistention and changes in left ventricular afterload. The concept that blood flow is not distributed equally among organs or even within tissues is also explored in this section. New mathematical modeling techniques, which use fractal analysis, provide the framework of new concepts in tissue blood flow heterogeneity, whereas metabolic indicators of oxidative metabolism can be used to determine the adequacy of cellular oxygen availability in relation to the metabolic requirements of the tissues. These metabolic markers include tricarboxylic acid cycle enzyme activity, the products of adenosine 5′-triphosphate (ATP) breakdown, such as inosine, and measurement of $^{13}C$-enriched glutamate with nuclear magnetic resonance.

Perhaps the least understood component of the oxygen transport cascade is the microvasculature, that vast array of microscopic vessels through which the red blood cells course as they release oxygen from hemoglobin. This section has a particularly lucid discussion on the relationship of tissue oxygen delivery, microcirculatory phenomena, and the local regulation of cellular

oxygen supply. For almost a century the "cylinder" model of August Krogh has been the basis of our understanding of capillary oxygen diffusion. According to that model a single capillary provides oxygen to a surrounding tissue cylinder, and oxygen diffusion results in linear decreases in oxygen content from arteriole to venule. There is the intriguing possibility that diffusion of oxygen into the tissues occurs not just in the capillaries but also across the walls of all the vessels of the microcirculation.

The microcirculation is not a static arrangement of blood-carrying vessels. Instead, it is an active, heterogeneous network that continuously directs blood flow to different areas of tissue, according to metabolic need. The signals that control microvascular blood flow are unknown, but it appears that oxygen sensing is a property of cells that enables them to remain functional under conditions of variable oxygen supply. Evidence is accumulating that a heme protein may be involved in this process. Further, it is now apparent that capillaries are not inert conduits for the diffusion of oxygen into the tissues, but that they have a high rate of oxygen consumption. Moreover, capillary wall metabolism may be a regulator of oxygen transfer to the tissues, a theory that may explain the disastrous consequences of capillary failure in shock.

The next section of the book explores the physiologic consequences of hypoxia. The first 3 chapters of this section offer an excellent review of the various mechanisms by which cells can be deprived of oxygen: decrease in arterial oxygen content (hypoxic hypoxia), decrease in cardiac output (circulatory hypoxia), and decrease in hemoglobin concentration (anemic hypoxia). In particular, the chapter on hypoxic hypoxia provides a remarkably clear discussion of the various metabolic and physiologic mechanisms at play during decreases in $P_{aO_2}$, including diffusion limitation, hypoventilation, shunt, ventilation/perfusion mismatch, and mixed venous $P_{O_2}$. The last 4 chapters of this section explore the role of mitochondrial dysfunction during hypoxia and shock states. The intriguing concept of cytopathic hypoxia suggests that although oxygen may be offered to the tissues by a functioning microcirculation, the cells may be unable to use it. Diseases states, such as sepsis, may affect the cell's mitochondria, preventing these organelles from metabolizing oxygen at a rate commensurate with cellular energy needs. This theory is supported by experimental data that show high tissue $P_{O_2}$ concentrations in sepsis and elevated tissue lactate. Moreover, it is possible that cells may have developed an adaptive response to prolonged periods of hypoxia by detecting hypoxia via oxygen-sensing mechanisms involving the mitochondria and lowering cellular energy utilization during conditions of decreased oxygen supply. A chapter is devoted to the notion that hypoxic states, in particular those followed by reoxygenation, may transform the mitochondria from a life-giving organelle to an instrument of cellular death. This transformation may occur through the process of mitochondrial permeability transition, which increases mitochondrial matrix calcium concentration and eventually results in apoptosis and cell death.

The third section of the book is devoted to the methodology of measuring microvascular perfusion and tissue oxygenation. The section begins with a discussion of the available clinical measures of tissue oxygenation: oxygen delivery, oxygen consumption, and oxygen extraction ratio. Also discussed are the roles of lactate and gastric intramucosal pH. There is an excellent chapter on microcirculatory techniques that describes intravital video microscopy to measure microcirculatory flow in experimental preparations, as well as techniques with potential clinical applications, such as laser Doppler flowmetry and perfusion-sensitive magnetic resonance imaging. Spectrophotometric techniques to measure hemoglobin saturation in arterioles, capillaries, and venules are also described in sufficient detail to be understood by those not well versed in the subject. There is a comprehensive, albeit brief, discussion of several methods available for the direct measurement of tissue oxygen concentration. These methods include polarographic electrodes, optodes, near-infrared spectroscopy, nicotinamide adenine dinucleotide with high-energy hydrogen (NADH) fluorescence, reflectance spectrometry, and Pd-porphyrin phosphorescence.

The last section covers blood substitutes, including hemoglobin solutions, diaporin cross-linked hemoglobin, and perfluorocarbons as oxygen carriers. This section provides sufficient background and historical perspective to understand newer developments in this rapidly changing field.

This is not a book intended for the uninitiated reader seeking a superficial review of oxygen transport physiology. Many of the chapters assume a fair degree of background knowledge by the reader. Moreover, little of the information presented has clinical relevance. Specifically, those interested in respiratory care may be disappointed by few references to lung disease in relation to tissue oxygenation. While providing an excellent background on current understanding of microcirculatory phenomena and the physiologic and metabolic consequences of tissue hypoxia, the book contains little information on the causative relationship of pulmonary dysfunction to arterial and tissue hypoxia. Further, many of the chapters delve into evolving concepts that are in early stages of development, many of which may not survive the test of time.

Given that the initial hard-cover edition was published in 1998, some of the information contained in the book is already dated. On the other hand, for those interested in the mechanisms and consequences of tissue hypoxia, the book provides an excellent platform from which to jump into the current literature.

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**Critical Care Medicine: Perioperative Management**, 2nd edition. Michael J Murray MD PhD, Douglas B Coursin MD, Ronald G Pearl MD PhD, and Donald S Prough MD, editors. Philadelphia: Lippincott Williams & Wilkins. 2002. Hard cover, illustrated, 905 pages, $149.

The transition of a critically ill patient from the operating room to the intensive care unit (ICU) is often a particularly challenging time. Thus, creating a reference book that has that period as its primary focus would also seem to be a challenge. The second edition of **Critical Care Medicine: Perioperative Management** takes on this challenge with a combination of dexterity and efficiency that will make it a valuable addition to the bookshelves of critical care practitioners at many levels.

The editors indicate that new developments in critical care technology and therapeutics motivated the publication of a second edition, and to address those developments they added 5 new chapters, the focus of which is how new information technology and biotechnology can improve care of the critically ill. This text may be useful for any health care provider working

in the postoperative ICU, but it will be most useful to medical students and physicians who require brief overviews on a variety of topics. The second edition maintains the same organization and style of the first edition, with revised and updated chapters.

There is already an abundance of references and handbooks devoted to the care of patients during anesthesia and surgery and in the ICU. I approached this text with a simple question: "Does it provide any benefit over a combination of the specialty texts?" Though some chapters offer no more or new insight than one can obtain in an anesthesiology or critical care textbook, the sum of the chapters does provide a coherent resource for management of the critically ill patient in the perioperative period. Though the focus of the text is the perioperative period, the information and approach are certainly more widely applicable to the care of critically ill patients.

This second edition of **Critical Care Medicine: Perioperative Management** is published by Lippincott Williams & Wilkins for the American Society of Critical Care Anesthesiologists. The book is bound in a simple red leather-like cover with a gold lettered typeface and does not have a dust jacket. I was pleasantly surprised with the durability of both the binding and the cover. During the time I evaluated the book, I frequently subjected it to the abuse of an overloaded briefcase. The cover survived this trauma with only minor blemishes and the corners (often the Achilles heel) remained square and crisp. At 905 pages the book is large, heavy, and probably at the acceptable limit for a single-volume reference. Despite the book's size and weight, the binding has held up well and shows no sign of failure. The paper is heavy stock that is durable and easily handled. One can reasonably expect that this book will remain intact through years of routine use. The typeface is not specified, but it is sans-serif and its size and spacing make for easy reading. The text is completely black-and-white, and figures are presented as either black-and-white or gray-scale images. The quality of some of the figures and flow diagrams could certainly be improved with little effort; some are framed, some are bulleted, and some are presented beneath arrows.

The chapters are organized into 11 sections, the majority of which are based on organs systems. Thus there are sections on "Pulmonary Critical Care," "Renal Critical Care," "Neurologic Critical Care," etc. Additional sections address patient assessment, procedures, pathophysiology, and subspecialty patients. This organization scheme provides a clear structure for the chapters, and one can usually find a subtopic by consulting the table of contents rather than the index. Repetition of certain topics is common in multi-author textbooks, but the editors have done a very good job of limiting the scope of the chapters to narrowly defined subjects. The treatment of pneumonia is well described in the chapter so titled, and that material is not reiterated in the section on infection and immunology. The majority of the chapter authors are anesthesiologists who are recognized experts. Though the perspective of the text does lean toward the anesthesiology brand of critical care, it is not far off center. In most cases the reader will not be able to tell if an anesthesiologist or other specialist wrote a particular chapter.

Key words are presented in a text box at the beginning of each chapter. I found this to be a helpful device that improved the efficiency with which I could read a chapter. Each chapter concludes with a shaded box of "Key Points." Though I think there may be some benefit to this idea, I did not find it very helpful as executed. The Key Points are presented in a narrative format that all too often is a direct restatement of the Summary that immediately precedes the Key Points section. Perhaps a bulleted list would be more distinctive, but I am not sure that these concise chapters need lists of key points. The subject index is easy to use and relatively complete. I found no typographical errors.

I doubt that the addition of the 5 new chapters in this edition would motivate anyone to purchase it. Though they are fine additions to a reference book, only one of the chapters will probably improve the reader's ability to care for the perioperative patient: the chapter entitled "Evidence-Based Medicine," which provides a well reasoned introduction to evidence-based medicine and applies it to clinical examples. A novice can immediately grasp the importance, workings, and limitations of evidence-based medicine in the ICU. In contrast, the chapter "Genomics in Perioperative Critical Care" holds forth a model of genomic-based ICU medicine that is largely speculative at this time. One could just as easily predict that proteonomics will be of greater importance in ICU care, but there is no mention of proteonomics in the book. The chapter "Medical Informatics in the Intensive Care Unit" contains practical information regarding the importance of using information technology. Unfortunately, this chapter relies heavily on descriptions of commercial software products. The typical reader will gain little from this chapter, beyond a lesson in nomenclature and reassurance that ICU information technology is here to stay.

The real strength of this text lies in the chapters that integrate our current understanding of the pathophysiology with the clinical presentation and treatment of the major conditions seen in critical care. In several chapters this is done very efficiently, as in "An Approach to Venous Thromboembolism/Pulmonary Embolism in the Critically Ill." In addition, many chapters offer sound critical evaluations of the literature, in which both the strengths and weaknesses of studies are presented. This is certainly true of the chapter "Acute Lung Injury and Acute Respiratory Distress Syndrome," which does an excellent job of discussing the recent literature in terms of successes and failures. The reference lists have been thoughtfully updated since the previous edition, and when a seminal publication has made a major impact in clinical practice, it is carefully indicated in the text. In certain cases the pace of change in clinical practice has outstripped the author's ability to fully appreciate or predict it. Thus, in the superb chapter, "Management of Life-Threatening Infection in the Intensive Care Unit," Dennis Maki comments on the success of recombinant activated protein C in a clinical trial but did not extrapolate this to today's escalating use of that drug in intensive care.

A relatively short critical care reference text must, of course, make certain concessions, and these will be apparent to the readers of **Critical Care Medicine: a Perioperative Approach**. For example, the space dedicated to the equipment and techniques of mechanical ventilation is relatively limited. Though the chapters present a very well balanced overview, a specialty text is still required to gain a more thorough working knowledge of this subject. The reader might be able to appreciate the meaning of a patient's ventilator settings, but he or she would be ill-advised to go fiddling with the ventilator, even after studying the ventilatory support protocol in the chapter "Basic Principles and New Modes of Mechanical Ventilation." Certain subjects do not lend themselves to new approaches, and so the chapter, "Diagnosis and Management of Ac-

id-Base and Electrolyte Abnormalities," uses clinical examples in a tutorial process. Such a style will either excite or annoy the reader, and this highlights the stylistic inconsistencies common in multiple-author books.

Finally, certain "hot-button" critical care issues are given limited consideration in this text, such as adrenal insufficiency and tight glucose control in the ICU, which are both discussed in the chapter "Care of the Patient With Endocrine Emergencies." The presentation does not capture the importance currently placed on these subjects, perhaps (1) because they do not fit into the idea of perioperative care, (2) because of the chapter structure, or (3) because they were simply not on the "front burner" when the book was being re-imagined. When the third edition is published, we will find out if such topics merit a more complete discussion or if they are simply a passing trend.

**Critical Care Medicine: Perioperative Management**, 2nd edition, is an efficient and timely tool for introducing and reviewing a wide variety of topics in the care of ICU patients in the perioperative period and other periods. At a cost of $149 it should be within reach of a fellow, resident, or student who is spending a substantial fraction of time in a surgical intensive care setting. Allied health professionals will also benefit from consulting this book, but I doubt that its content will motivate them to purchase their own copies. Perhaps they will be able to find the book on the shelves of surgical ICUs, where it will be a welcome addition.

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**Coding Essentials for Respiratory Therapy and Pulmonary Function Testing**. St Paul, Minnesota: Medical Learning Incorporated. 2003. Soft cover, 203 pages, $99.

Respiratory schools train therapists for problems of the cardiopulmonary system but not necessarily in the secrets of the ever-changing process of coding and billing for services rendered in the workplace. **Coding Essentials for Respiratory Therapy and Pulmonary Function Testing** was written by the experts at Medical Learning Incorporated to unlock those mysteries in a clearly written text. The company describes itself as "a nationally recognized consulting, publications, and training company that specializes in providing coding, reimbursement, compliance and educational services for hospitals, physicians, and other health care service organizations." This book provides the newest information from the *CPT 2003: Current Procedural Terminology* book from the American Medical Association (AMA). There are also frequent references to specific back issues of the Center for Medicare and Medicaid Service's National Correct Coding Initiative edits, and the AMA's *CPT Assistant* publication. The book has a soft cover and is bound with spiral wire, which may tend to wear with the frequent handling this manual may receive as a reference. There are no illustrations, but there are several charts and an algorithm flowchart that help clarify the material.

The intended audience includes respiratory care managers, pulmonary function laboratory directors, department administrators, and anyone else who needs to deal with coding issues for respiratory care, pulmonary function testing, and blood gas testing. I thought I was well versed in coding issues from my years in the respiratory field, but I learned many things from reading through this handy manual. Mutually exclusive procedures, comprehensive codes, component codes, revenue center codes, payment status indicators, and modifiers are all explained in detail in the beginning of the book. Throughout the book are helpful references and resources, including Web sites and business phone numbers.

Chapter 1 covers Medicare payment methods for respiratory therapy services. Chapter 2 discusses coding and billing for correct reimbursement. Chapter 3 deals with coding and billing strategies for diagnostic testing. Chapter 4 has information on respiratory therapy and various treatments modalities. Chapter 5 covers miscellaneous other services, such as blood gases, sleep studies, and supply, service, and equipment charges.

Chapters 3–6 delve into the specifics of the respiratory care and pulmonary function codes. This is the only weak area of the book; as I read it, I could tell someone not familiar with respiratory care wrote it. If a second edition is released, I would suggest the authors collaborate with respiratory medical personnel to proofread the text.

The chapters are arranged in numerical test code order. In a future edition it would be helpful to add an index for looking up pulmonary function tests and respiratory therapy codes by name instead of number. Typically, each code has a separate page, but if there is extensive discussion, it may go to 2 or 3 pages. Occasionally, when codes are connected and only differ by physician interpretation or test complexity, then 2 or 3 codes may be logically grouped together. Each code or code group has a test description, as worded in the AMA codebook. The proper revenue center codebook is included, followed by a section of one to several paragraphs called "Intended Use of Code." The authors discuss issues that may be of concern for each code. In some sections there are discussions of fiscal intermediaries' and carriers' statements regarding particular codes. Each code has a billing tip section that discusses medical necessity and other tests that cannot be billed on the same day unless a modifier is used. There are discussions of which tests are usually not covered and why. References to the Correct Coding Initiative edits and fiscal intermediaries are provided. Chapter 6 discusses pulmonary rehabilitation services and the Medicare national coverage policy. This chapter will need to be updated soon, because the National Emphysema Treatment Trial results were released at the American Thoracic Society Conference in May 2003 and Medicare is reviewing pulmonary rehabilitation and lung-volume reduction surgery.

The book includes reference appendices that concisely organize needed information. Appendix A has sample Local Medical Review Policies (LMRPs). Appendix B is a 2-page table of CPT codes, Ambulatory Payment Classification (APC) names, and payment rates—a great resource. Appendix C lists the current Medicare guidelines for respiratory therapy.

Specific issues and problems I found in this book were as follows.

• In Chapter 3 (on pulmonary function billing and coding strategy) there is an algorithm on page 22 that is described as a useful guide that may be considered for medical necessity reviews by Medicare fiscal intermediaries and carriers. This algorithm is not referenced, and I believe there are some flaws in it. The major problem I see is that the algorithm would label as "asthmatic" patients who have a normal methacholine challenge test and elevated diffusing capacity for carbon monoxide.

• The section on bronchospasm evaluation (on pages 29 and 30) could be enhanced by adding the code that most laboratories use to bill for the delivery of methacholine

or other challenge agent (95070) which is, instead, listed in the allergy coding section.

• On page 34, on expired gas collection, the section on quantitative single separate procedure (94250) has an erroneous note in the billing tip section: it refers the reader to an earlier section in the book, but there is no such section.

• Page 35 has the coding for thoracic gas volume (94260) and mentions that this is a component of code 93720, total body plethysmography. This code in the AMA book is listed under vascular, not pulmonary function, testing procedures. My understanding is that this clarification issue lies not with the authors of this book, but with the fiscal intermediaries. It seems that since the vascular study called "total body plethysmography" has the same name as the body-box test conducted during pulmonary function testing, they think that the testing would be redundant if performed on the same day and therefore should be inclusive if the pulmonary function testing laboratory bills for any of the body-box codes, such as thoracic gas volume.

• Page 37 discusses resistance to airflow (94360), and in the "Intended Use of Code" section the authors refer to the Merck Manual, Section 6, Chapter 64, Pulmonary Function Testing, which I looked up because the following statement in **Coding Essentials** was not correct: "The value for airway resistance *that is used in calculating the functional residual capacity* may be inferred from dynamic lung volumes and expiratory flow rates." (Italics mine.) I found that there was a transcription error in referencing the information from the Merck Manual: the italicized portion should not be included.

• Page 40 is supposed to cover breathing response to carbon dioxide and hypoxia, but the "Intended Use of Code" section only covers the hypercapnic challenge, not the hypoxic challenge.

• Page 42 is the end of the section on pulmonary stress testing, and in the billing tip section it is advised to bill with code 94761 (noninvasive ear or pulse oximetry for oxygen saturation; multiple determination) for exercise testing with pulse oximetry to document desaturation or determine oxygen needs.

• Chapter 6 delves into pulmonary rehabilitation, and page 82 indicates that CPT code 97750 (physical performance of test) could be used for billing the 6-minute walk test by all clinicians—occupational therapist, physical therapist, or respiratory therapist—but I believe that code can only be used in a pulmonary rehabilitation setting if a physical therapist is present in the program.

These caveats aside, I highly recommend **Coding Essentials for Respiratory Therapy and Pulmonary Function Testing** to anyone who needs to deal with coding and billing issues in the pulmonary realm. This book should be within fingertip reach of those who deal with billing and coding issues. Comments I found on the American Association for Respiratory Care Listserv suggest that this book is already being referenced and quoted when coding questions arise. The authors have achieved their mission in providing a clearly written, well-organized handbook of coding essentials.

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**The Internet for Physicians**, 3rd edition. Roger P Smith MD. New York: Springer-Verlag. 2002. Soft cover, illustrated, 288 pages, includes CD ROM, $34.95.

The Internet is the latest information frontier: boundless, perpetually expanding, and vastly beneficial to those able to harness its resources. **The Internet for Physicians**, 3rd edition, provides an essential roadmap to this unlimited frontier and attempts to lay a basic foundation for those relatively unfamiliar with the workings of the World-Wide Web. Extensive in coverage yet concise in description, this book can rightly be called a reference piece deserving of a place next to the computer keyboard. Although intended for physicians, the material is general enough to be useful for anyone in the health care profession involved directly with patient care, computers, and the exchange of health-related information.

The book is divided into 10 chapters organized in a logical sequence. The table of contents is concise yet detailed enough that referencing a specific topic is a breeze. Chapter 1 begins with a basic introduction to the origins and capabilities of the World-Wide Web. Written with the non-geek in mind, terms such TCP/IP and ARPANET are explained in a basic, nontechnical manner; for example, TCP/IP means transmission control protocol/internet protocol—"the language used by computers connected to the Internet to talk to each other." In this manner the reader is introduced to the language of the Internet.

Chapter 2 delves further into the basics introduced in the first chapter. The numerous ways of connecting to the Internet directly (eg, via modem) or indirectly (eg, through an intervening network) are presented. Important technical requirements are mentioned, such as the need for an Ethernet card to establish a high-speed connection. The author makes clear his bias for the Macintosh computer early on, in the section "IBM vs Mac: A Matter of Religion," but takes care to keep descriptions of technical processes general enough that users of either Mac or IBM/Windows-based computers will grasp the message. A technical description of Internet addressing, uniform resource locators (URLs), the structure/meaning of domain names, and domain name system (DNS) entries follows. The terms may sound like geek-speak, but the author deftly succeeds in conveying the underlying concepts without losing the reader in a morass of cryptic detail. A useful list of top-level domains and their meanings is also presented, such as ".com" (commercial organization), ".edu" (educational institution), ".gov" (government), ".net" (networking organization), and ".org" (nonprofit organization), for those who have ever wondered what those terms represent. Even more useful is a table of common Internet abbreviations, which I am sure many have encountered in e-mail or Internet forums, such as AFAIK (As Far As I know), FWIW (For What It's Worth), TIA (Thanks In Advance), and YMMV (Your Mileage May Vary). Finally, an absolutely essential explanation of security issues is presented, focusing on viruses, cookies, credit card fraud, secure transmissions, encryption, and firewalls. Important Internet security tips are recommended, including the need for passwords that are not obvious and avoiding password sharing.

With background information and definitions established in the first 2 chapters, the real utility of this book manifests in Chapters 3–10. On a general level Chapter 3 focuses on how to find the information you are looking for. Use of Web portals and search engines (eg, Google, Alta Vista, Yahoo, and Hotbot) is detailed. Tips for effective searches (eg, use of AND, OR, NOT, and use of plus and minus signs) are elucidated at the end of this chapter. Chapter 4

details the process of becoming a presence on the Internet, including choosing a Web hosting service and the use of HTML (hypertext markup language) coding for writing a Web page. Although not a detailed tutorial for creating Web pages, common HTML tabs are shown to give the reader a taste of what can be accomplished with such code (eg, hypertext links, ordered and unordered lists, bolding, space, and italics). Useful tips for effective Web pages are given at the end of this chapter.

Chapters 5–10 are devoted specifically to medical topics. Chapter 5, "Patient Education and Information," elaborates on the recent phenomenon of patients accessing the Internet for medical information. A large repository of consumer-oriented medical Web sites now exists on the Web (eg, WebMD, Discovery Health, and IntelliHealth). When faced with a patient armed with such information during the clinical encounter, the obvious question becomes, how reliable are those sources? Guidance for determining where these Web sites stand in terms of quality is given here; it would behoove any health care provider to be at least be familiar with sources your patients are consulting from their keyboards. At the very end of this chapter is a useful bibliography of medical literature that discusses various aspects of this topic.

Chapter 6, "Patent Care," delves further into topics centered around the clinical encounter. Web sites that focus on diseases and diagnosis assistance are mentioned; the Centers for Disease Control and Prevention Web site has a wealth of authoritative, disease-specific information. Web sites that deal specifically with evidence-based medicine and its effects on medical practice are also presented (eg, The Cochrane Library, Database of Abstracts of Reviews of Effectiveness, and The Cochrane Controlled Trials Register). There are even Web sites that provide information about prescription, nonprescription, and nontraditional therapies available on the Internet (eg, ClinicalTrials.gov and PDR.net). A particularly useful feature of PDR.net is the multi-drug interaction report, which allows you to check for drug-drug interactions. Finally, the chapter ends with the subjects of medical record keeping (either stand-alone or Internet-based) and telemedicine/remote presence.

Chapter 7, "Medical Literature, Publishing, and Informatics," discusses publishing and the Web, including such topics as submitting manuscripts via the Web for peer review, manuscript transferring, and editing. The ever valuable on-line journals and how to access them are discussed. MEDLINE and other literature repositories are touched upon, followed by Web-based textbooks and references such as *Harrison's On-line*. Finally, special on-line resources such as dictionaries and foreign language translators (eg, freetranslation.com) are mentioned.

Chapter 8, "Finding Medical Information," tells you how to effectively find specific medical information on the Web. Use of MEDLINE and PubMed are detailed, along with a brief but extremely useful tutorial on how to conduct productive searches using those search engines.

Chapter 9 deals effectively with the ongoing process of continuing medical education. Direct education such as computer-aided instruction is detailed. Various and sundry continuing medical education sites (both free and fee-based) are listed. Some of these resources I had never known existed until I picked up this book!

The final chapter, "Medical Practices and the Web," shows you how to blend the Internet into your medical practice. The advantages of this process include enhanced efficiency of many of the labor-intensive aspects of daily existence, such as practice management. In addition, practice development/marketing, public and patient relations, and patient interactions via e-mail are described.

Appendix 1 lists sources of additional information to be found in the medical literature. Appendix 2 catalogues sources available on the Web. Authoritative and extensive, the appendixes expand upon the sources mentioned in the previous chapters. Taking up over one third of the volume of the book, the appendices by themselves are worth more than their weight in gold! Finally the book ends with a glossary of terms commonly used in the world of Internet and computers. Again, in nimble manner the author uses plain English without losing grasp of true technical meaning.

In summary, I found **The Internet for Physicians** to be well-rounded and comprehensive in scope, yet written in a nontechnical fashion that even the Internet novice or beginner could easily understand. Nearly every aspect of how the Internet pervades medical practice and the clinical encounter is dealt with authoritatively, accurately, and effectively. Yet the book is small and light enough to be carried with you wherever there is a computer—or just carry the accompanying CD with you and leave the book at home! Not only does this book establish a well-grounded foundation for the Internet newbie in Chapters 1–4, the subsequent chapters provide a rich, all-embracing source of references even the most seasoned "cybersmith" will find enlightening. IMHO (In My Humble Opinion), this book definitely deserves a permanent home next to any health care provider's keyboard!

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