

This edition includes new chapters that I believe improve the text. Pharmacology, cardiovascular complications, noninvasive mechanical ventilation, and long-term ventilation were mentioned in previous editions, but in this edition they receive entire chapters. Though each of these content areas has whole texts devoted to it, as a respiratory care instructor, I find it beneficial to have additional resources for these topics built into this text, despite these new chapters' relative brevity.

Each chapter is loaded with critical-thinking questions, clinical rounds scenarios, and key points, all deriving from a long history of mechanically ventilated patients. An appendix contains the answers, with discussions and rationales. The authors also provide historical perspectives on how current, evidenced-based practices regarding mechanical ventilation and critical care have evolved over the years, and they incorporate many of the American Association for Respiratory Care (AARC) clinical practice guidelines to support their rationales.

A new feature I like as a respiratory care educator is the addition of related questions similar to those on the Certified Respiratory Therapy (CRT) and Registered Respiratory Therapy (RRT) examinations administered by the National Board for Respiratory Care. Though there are many other resources that prepare students and practitioners for these examination questions, I like the way the authors relate them to specific content in each chapter.

One consistent feature and strength of this text that continues to improve with each new edition is the discussion and illustrations dedicated to ventilator waveform graphics. For many clinicians, and especially students, it can be difficult to conceptualize what is happening physiologically in the thorax/lungs by looking at pressure, volume, and flow scalars and loops.

Waveform graphics are introduced early, and illustrations are utilized often throughout the entire text. The authors begin with normal, negative-pressure breathing patterns and then discuss more complex, positive-pressure modes of mechanical ventilation. Another appendix contains multiple waveform graphics exercises to outline different ventilation modes and changes in chest-wall and lung mechanics. I liked the way the authors utilized patient case scenarios/studies to discuss a range of pathologies and lung-mechanics changes. There is discussion of considerations in ventilating patients

with chronic obstructive pulmonary disease, asthma, neuromuscular disorders, acute respiratory distress syndrome (ARDS), and cardiac conditions, just to name a few, that gives some perspective on the differences in ventilation goals and strategies.

This new edition also includes an entire chapter on ARDS, and the challenges in improving oxygenation and ventilation in patients with ARDS. The ARDS Network study regarding smaller tidal volume for lung protection is incorporated into this chapter, and the authors emphasize the importance of clinicians embracing the lung-protection concept when managing patients with ARDS.

Overall, I highly recommend this text for all respiratory therapists, physicians, and nurses who work with mechanically ventilated patients, regardless of the care setting. In a discussion with fellow respiratory care clinicians at the AARC Summer Forum in July 2006, I found there was consensus that **Mechanical Ventilation: Physiological and Clinical Applications** ranks high among educators and managers as the text of choice for learning and referencing any aspect of mechanical ventilation.

As an educator I recently used this text for the first time in courses related to mechanical ventilation and critical patient care, and I found that I spent a lot of time "simplifying" certain concepts and terms from a long list of topics in each chapter, whereas in previous years, when I used other texts, that are a bit more basic and student-friendly, I spent more time "expanding" and "building" on basic mechanical ventilation concepts and terms.

One beneficial option in using **Mechanical Ventilation: Physiological and Clinical Applications** is the availability of a workbook designed to accompany the textbook. The workbook uses additional case studies, review questions, crossword puzzles, and legitimate Internet sites pertaining to specific content within the textbook. I like these additional learning tools, as I believe they broaden students' knowledge on specific content and they reach out to various learning styles.

Mechanical Ventilation: Physiological and Clinical Applications can be overwhelming at times for students and clinicians beginning their quest to understand mechanical ventilation, because of the breadth and depth of the content in each of the extensively referenced chapters. Regardless, I strongly believe that this is a thor-

ough and scientifically sound text that offers a practical, evidence-based approach to understanding mechanical ventilation.

One statement in the foreword epitomizes my sentiments toward this text: "Relatively few texts possess such staying power. As this fourth edition clearly demonstrates, this success requires not only currency and clarity of expression but also relevance that builds on a solid foundation of immutable knowledge." I welcome this text to our curriculum, knowing that our students will begin their careers with a high level of preparedness for understanding and applying basic concepts of mechanical ventilation.

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Ventilator-Induced Lung Injury. Didier Dreyfuss, Georges Saumon, and Rolf D Hubmayr, editors. *Lung Biology in Health and Disease* series, volume 215, Claude Lenfant, executive editor. Boca Raton: Informa/Taylor & Francis. 2006. Hard cover, illustrated, 738 pages, \$199.95.

As a practicing pulmonary and critical care physician and junior faculty member, I must admit that I rarely take the time to read books on subjects in our field. Many of the basic principles that one would normally find in respiratory medicine books I have already learned. For new information, there's an overabundance with which to keep up in the latest journal articles. Is there then a purpose to taking the time to read a book on ventilator-induced lung injury (VILI)? I believe there is.

Ventilator-Induced Lung Injury provides a fresh look at some of the principles behind lung injury associated with mechanical ventilation, and introduces some of the newer advances in the field in the way that journal articles usually do not. As a book, it is not completely up to date, but it does provide a good review of the basic principles of lung injury and of the new science and clinical management of VILI. For that reason, I think it can be a useful resource.

The book aims to "describe the different steps of basic research that allowed the comprehension of ventilator-induced lung injury, their clinical consequences, and the new av-

enues of basic research that again emerged.” I believe it generally meets that goal and also does a good job of exploring some of the pertinent clinical research related to VILI.

The chapters are consistently very readable and concise, and generally well referenced. There is usually good cross-referencing between chapters. Though the book’s spine seemed a little weaker than ideal, the book generally held up well to the wear-and-tear of my review. I found the front cover, which integrated a picture of an “old-school” ventilator and one half of a chest radiograph (that would probably be consistent with acute respiratory distress syndrome if we could see the whole image), a bit anachronistic and strangely reminiscent of my middle-school science textbooks.

The book is divided into 3 sections. The first 2 sections, which cover the basic science underlying our current understanding of VILI, are divided into the acute and subacute manifestations of VILI. Though the chapters in these sections do not consistently follow these divisions, they do provide a very detailed look at the underlying pathophysiology of VILI. The third part of the book, which focuses on clinical research on VILI management, will appeal more to physicians, respiratory therapists, and nurses interested in a deeper understanding of the underlying principles of lung-injury management.

The first section, “Acute Manifestations of VILI,” provides an in-depth look at the basic science underlying lung injury, and the discussion ranges from the molecular to the gross pathology changes to the alterations in pulmonary mechanics that occur in lung injury.

Sections address such topics as stretch and shear forces during VILI, the molecular signaling that underlies pulmonary injury, and the effects of varying tidal volumes and pressures on the physiology and cell membranes, surfactant, and cytokines. There are useful descriptions of mechanical models that summarize current understandings about VILI. The sections on cellular changes in lung injury and vascular interactions in VILI were particularly well done. Part 1 is certainly for those interested in the basic science of lung injury, but it does raise clinical implications and questions for clinicians. For example, does the potential role of de-

formation-induced lipid trafficking in VILI imply a role for the clinical modification of lipids in lung injury? So, while this section explores the basic underlying pathophysiology of VILI, it is nonetheless useful for a fuller clinical understanding of the subject.

The second section, on subacute VILI, examines such topics as the broader role of cytokines, epithelial injury and fluid shifts in VILI, and the effects of hypercapnia on lung injury. The section on “Genomic Insights Into VILI,” though it does not provide a comprehensive look at genomic work in this field, presents an excellent introduction to techniques in genomic analysis and it highlights much of the important work that has been done by the authors of this chapter. As with many of the chapters, I think clinicians without substantial background in this specific aspect of VILI will be able to gain a further understanding of the subject.

Part 3 addresses the clinical implications and treatment of VILI, and this section will most appeal to clinicians of all stripes. This section provides a very forward-thinking view of the clinical management of lung injury. This section reviews some of the most current clinical data on treatment of VILI and some of the challenges and potential solutions to its clinical challenges. This section is most successful when providing frames of references and basic principles for topics, and in this can serve as a useful resource for practicing physicians and for respiratory therapists and nurses interested in the optimal understanding and management of ventilator-induced lung injury.

Also discussed are the use of imaging to assist in the clinical management of acute lung injury, both in its current state and with the provocative possibilities of technologies such as magnetic resonance imaging and positron emission tomography, and the use of gene expression to understand lung injury. Other technologies, such as surfactant therapy, perfluorocarbons in ventilation, and high-frequency oscillatory ventilation, are also discussed. Appropriately, there are several forward-thinking sections on quality and safety, including sections on computer-based protocols for patient management, to overcome the challenges of broadly implementing known efficacious VILI therapies,

and protocols for clinical studies, to appropriately design studies to prevent lung injury.

An illustration of some of the problems of multiple-author books is found in the discussions on the role of plateau pressure and tidal volume in lung injury. The chapter “Randomized Controlled Trials of Tidal Volume Reduction in Patients With Acute Respiratory Distress Syndrome” provides a valuable review of the data on managing acute lung injury with low-tidal-volume ventilation. However, the authors’ conclusion that “patients should continue to be managed with tidal volumes titrated to produce safe plateau pressures (< 32 cm H₂O)” neglects important data reviewed by Hager and Brower in the preceding chapter. They illustrate data that the “safe” plateau pressure has not been established, based on existing data, and that low-tidal-volume ventilation is probably important irrespective of the plateau pressure. Perhaps some of this disconnect is because some of these data had not been published in a peer-reviewed journal prior to the publication of this book. Again, it is impossible for any textbook to be completely current.

Notable omissions in this book include the lack of discussion on the role of steroids and volume status in VILI, both of which are certainly moving targets as well.

In summary, I believe this book does provide a useful and forward-thinking resource for addressing many of the important issues involving acute lung injury. The book thoughtfully frames important issues and fulfills its mission by reviewing lung injury physiology and theory in order to understand very current basic science and clinical challenges. Despite its anachronistic cover, it is a forward-thinking book, with parts that will serve both those interested in the basic science of VILI and the clinical challenges of lung injury.

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