

Sleep in Children: Developmental Changes in Sleep Patterns, 2nd edition.

Carole L Marcus, John L Carroll, David F Donnelly, Gerald M Loughlin, editors. *Lung Biology in Health and Disease* series, volume 223. Claude Lenfant, executive editor. New York: Informa Healthcare. 2008. Hard cover, illustrated, 432 pages, \$199.95.

Sleep and Breathing in Children: Developmental Changes in Breathing During Sleep, 2nd edition.

Carole L Marcus, John L Carroll, David F Donnelly, Gerald M Loughlin, editors. *Lung Biology in Health and Disease* series, volume 224. Claude Lenfant, executive editor. New York: Informa Healthcare. 2008. Hard cover, illustrated, 612 pages, \$199.95.

Sleep medicine, in general, and pediatric sleep medicine, in particular, are relatively new fields. Sleep board accreditation through the American Board of Sleep Medicine (or its predecessor) has been in existence since 1978, with 3,445 sleep specialists being board certified as of 2006, the majority of whom are not pediatricians. Since then, the American Board of Medical Specialists has taken over administering this examination and has begun accrediting sleep fellowship programs. The training of the next generation of sleep specialists will now be more in line with more established subspecialties, such as pulmonology and cardiology. More sleep laboratories are opening, with accreditation becoming the norm. Polysomnogram technologists are also expected to be board certified. Clearly, the field of sleep medicine is on the rise.

There are many textbooks on the subject of sleep medicine, with the accepted standard being Kryger et al's *Principles and Practice of Sleep Medicine*. Few texts are dedicated solely to pediatric sleep disorders. These 2 books, **Sleep and Breathing in Children: Developmental Changes in Sleep Patterns**, 2nd edition, and **Sleep and Breathing in Children: Developmental Changes in Breathing Patterns**, 2nd edition, represent a comprehensive collection of pediatric-focused material covering sleep physiology and clinical sleep disorders. Originally published in 2000 (*Sleep and*

Breathing in Children: A Developmental Approach, volume 147), the editors have elected to update their material because of the wealth of newly published information in the field of pediatric sleep medicine. For this edition the editors chose to split this extensive amount of material into 2 volumes, the first focusing on the neurologic aspects of sleep, and the second concentrating on the respiratory components of sleep. Given the large amount of information presented, this was a wise move and one that leads to improved organization of the material.

The first several chapters of volume 223 focus on the neurologic development of sleep, from infancy through adolescence. Details covered include electroencephalogram development and its analysis, as well as the development of normal sleep-wake cycles. Arousals and temperature control are also discussed. The second half of this volume focuses on several neurologic-based sleep disorders and discusses various non-respiratory-based parasomnias and dysomnias. A chapter each is devoted to several of the more common neurologic-based sleep problems as well as some medical conditions that can have an impact on children's sleep. These include: narcolepsy (yes, it is seen in children), restless leg syndrome and periodic limb movement disorder (no, they are not the same thing), gastroesophageal reflux, and various neurologic conditions. Psychiatric issues are also addressed. Finally, neurocognitive outcomes and tools to assess them are reviewed, along with a chapter reviewing magnetic resonance imaging technology and its potential use in pediatric sleep medicine.

The first several chapters of volume 224 focus on the development and control of respiration, from the fetus through adolescence, with emphasis on its impact on sleep as well as sleep's impact on control of breathing. Upper-airway structures and their muscular control, along with chemoreceptor physiology, are reviewed. There is a separate chapter on craniofacial development and its impact on sleep, as well as a chapter on breathing and sleep in the premature infant. The latter two thirds of the book then focuses on several specific respiratory-related

sleep disorders, including apparent life-threatening episodes and sudden infant death syndrome; the impact of hypoxia and hypoventilation on sleep; and, finally, several chapters on various aspects of obstructive sleep apnea and its sequelae (such as cardiac, inflammatory, endocrine, and neurocognitive complications). A chapter is dedicated to the study of acoustic reflectance. The book then concludes with an outstanding review of the field of pediatric sleep medicine to put the progress made over the last 50 years into perspective.

Many of the chapters in these 2 volumes represent a comprehensive review of their subjects. Several of these chapters (especially the physiology-focused ones) are outstanding and well written, giving the reader an up-to-date review on their topics. The clinical chapters are also well written and easy to follow. The only chapters that are somewhat weak are those whose subject matter is very broad-based. These authors try to review several specific disease processes and wind up with a more superficial review than I suspect they wanted to provide. Two chapters in particular would include the review of neurologic diseases and review of psychiatric illnesses. As an overview, these chapters are acceptable; however, a more detailed reading on these specific illnesses is clearly warranted (something that the authors themselves suggest to the reader). As for the 3 chapters that discuss research tools (neurocognitive testing, functional magnetic resonance imaging, and acoustic reflectance), they present a detailed amount of information; however, more clinical applications would have proven useful. All of the chapters in these 2 volumes are exceedingly well referenced and provide an excellent starting point for further reading.

If a third edition of these volumes is ever contemplated, I would recommend adding chapters focused solely on attention-deficit disorder/attention-deficit hyperactivity disorder, sleep hygiene, insomnia, home sleep studies and monitors, actigraphy, and medication use in pediatric sleep disorders, as these are underrepresented in the current edition. This recommendation would go along with the more detailed chapters on neurologic and psychiatric issues suggested ear-

lier. Also, the volume on breathing during sleep (volume 224) should be broken up into sections with a particular focus (ie, apparent life-threatening episodes and sudden infant death syndrome, obstructive sleep apnea, new technology), rather than just a straight listing of chapters in the table of contents.

The editors of these 2 volumes are leaders in sleep medicine and pediatric pulmonology. They have drawn on some of the world's leading experts on pediatric sleep medicine. These 71 contributors come from a wide range of fields, including sleep medicine, pulmonology, neurology, psychiatry and psychology, physiology, surgery, and dental medicine. Many of the authors represent a "Who's Who" of pediatric sleep medicine, with their research being on the cutting edge of this field.

These 2 texts provide a well thought out and well written update on the emerging field of pediatric sleep medicine, and I hope future editions in this series are planned for this important subject. These volumes are geared more toward the medically oriented specialist in pediatric sleep medicine. A working knowledge of the field would make for a better understanding of the material presented. Because of the focus of the material covered in these texts, I suspect that the majority of the readers of *RESPIRATORY CARE* would have little use for these 2 books. More basic texts would be better a choice for this journal's audience. Beginners in the field of sleep medicine might also be overwhelmed with the material presented. That being said, these volumes would represent an excellent addition to the library of any pediatric sleep specialist or sleep fellowship program.

Richard M Kravitz MD

Division of Pediatric Pulmonary
and Sleep Medicine
Duke University
Durham, North Carolina

The author has disclosed no conflicts of interest.

Overcoming Steroid Insensitivity in Respiratory Disease. Ian M Adcock and Kian Fan Chung, editors. Chichester, United Kingdom: John Wiley & Sons. 2008. Hard cover, illustrated, 304 pages, \$150.

Corticosteroids are the most effective available therapy for asthma at present.

Clearly, patients would be poorly served without them. Yet between 5% and 10% of all asthma patients demonstrate an inadequate response to corticosteroids. Even oral corticosteroids may prove inadequate for some. Problems of steroid resistance may also arise in other inflammatory pulmonary diseases. Such problems are further complicated by the substantial adverse effects corticosteroids demonstrate, especially at the higher doses that may be required in the face of resistance. Corticosteroid resistance presents enormous difficulties for clinicians as well as patients. This book, written by world-renowned scientists, provides the background to help clinicians and researchers understand this critically important subject. It is highly welcome, since this is an area that until now has not been well addressed.

Topics range from the glucocorticoid receptor and its molecular mechanisms of action to inhalation as a drug delivery mechanism. The principal target audience for this book is researchers in varied settings studying either biomedical or clinical aspects of corticosteroid activity and use. Clinicians who wish a more in-depth, molecular-level understanding of the therapies they use and the adverse effects they may see will also find the book as a whole of interest. In addition, the chapter on adverse effects, the two on corticosteroid-sparing strategies, and the one on inhalation therapy may be directly useful to physicians in clinical practice, while the ones on adverse effects and inhalation therapy may be similarly helpful for nurses and respiratory therapists. Such readers should be aware, however, that while the writing style is clear and appropriate for its intended audience, it makes few concessions to those who may be less expert in molecular mechanisms. Likewise, the chapters on the role of macrophage migration inhibitory factor in regulating corticosteroid response and on kinases as potential therapeutic targets in asthma offer little information of direct clinical usefulness, yet will be highly appreciated by basic science researchers.

The most innovative and provocative theme of this book is developed in Chapters 3 and 4. This is the concept that, since the glucocorticoid receptor has numerous isoforms, these isoforms may have somewhat different functions, perhaps affecting different tissues. These isoforms may also have somewhat different selectivities for structural variations in the steroid molecule they

bind. Consequently, it may be possible to develop drugs specific for a given tissue or ones that lack the activities associated with adverse effects. Indeed, one corticosteroid based on this concept has now entered clinical trials.

Chapters 5 through 7 then examine the molecular basis for the lack of corticosteroid response seen in some patients. Chapter 5 describes an uncommon genetic condition in which mutations of the glucocorticoid receptor decrease the body's general sensitivity to corticosteroids. Chapter 6, and especially Chapter 7, develop the idea that similar but more subtle changes may underlie variations in patient response, although Chapter 6 also addresses the possibility that poor response may reflect features of the disease as well as of the patient. Although these chapters focus on asthma, they also address other diseases where corticosteroid resistance may occur. A later chapter explores the pharmacokinetics and pharmacodynamics of corticosteroids and how they may affect an individual patient's response. These chapters provide information that will be very helpful to researchers in the field but, with the possible exception of Chapter 6, are unlikely to prove directly useful to clinicians.

All chapters in this book are well organized and easy to follow, and the authors have done an excellent job of researching, synthesizing, and presenting the vast amount of literature available. The references cited are both comprehensive and up to date; notation of important seminal papers is distinctly helpful. Relevant clinical examples are welcome on the occasions when they appear. Although a certain amount of repetition is inevitable in a multi-author text, the editors have done a very good job of minimizing duplication of material and restricting it to instances where it may usefully emphasize important points.

Despite the general excellence of the book, there are a few minor caveats. The color inserts add an unnecessary expense without, in my opinion, adding much to the usefulness. A few of the chapters lacked sufficient concluding summaries, or concluding summaries altogether, that would have helped solidify the main points in the reader's mind. Chapter 10 would also have benefited from additional tables summarizing the studies cited.

Overall, this book represents a superb presentation of the background and current un-

derstanding of a field with important clinical implications. It concisely and eloquently synthesizes a large body of work into an easily readable format. As such, every asthma researcher—indeed everyone investigating corticosteroids in any disease area, whether a pharmacologist, a basic biomedical researcher, or a clinical researcher—should have this book on his or her bookshelf.

Raju C Reddy MD

Division of Pulmonary and
Critical Care Medicine
Department of Internal Medicine
University of Michigan
Ann Arbor, Michigan

The author has disclosed no conflicts of interest.

The Pulmonary Epithelium in Health and Disease. David Proud, editor. West Sussex, United Kingdom: John Wiley & Sons. 2008. Hard cover, illustrated, 440 pages, \$200.

The Pulmonary Epithelium in Health and Disease consists of 20 chapters that provide a thorough, comprehensive review of the physiology and pathophysiology of the lung epithelium, ranging from the cellular structure and molecular mechanisms to its role in the pathogenesis of lung disease and as a target of therapeutic interventions. This book will provide a valuable reference tool for any reader with a particular interest in lung diseases and epithelial biology.

Despite its apparent simplicity, the lung epithelium is a highly complex tissue that plays a number of essential roles in the lung. Some of these roles include serving as a selective barrier, participating in host defenses, modulating the inflammatory response, and preserving the integrity of the air spaces by decreasing surface tension. The multiple roles of the epithelium are well covered in this book.

The initial chapters are focused on the normal epithelium, and discuss its cellular structure, the molecular adhesion systems, and the mechanisms of epithelial repair. This is followed by chapters discussing the best known functions of the lung epithelium: water and ion transport, the ciliary system, and the production of mucus and surfactant. Next, a series of chapters addresses the role of the epithelium in host defenses, including the epithelial mechanisms of pathogen

recognition, the role of the epithelium in the innate immune response, and the specific interactions of the epithelium with bacterial and viral pathogens. Finally, the book explores the role of the epithelium in inflammatory airway diseases, including the interactions of the epithelium with pollutants and allergens, the role of the epithelium in airway inflammation and remodeling, and the role of the epithelium as a target of therapeutic drugs.

Some chapters stand out. The chapter on pulmonary surfactant manages to convey the complexities of surfactant physiology in a particularly clear way, and the description of how surfactant stabilizes the alveoli by decreasing their surface tension is an example of how a complex physiological concept can be explained with refreshing simplicity. Equally informative and accessible were the chapters on the structure of cilia and the composition of the airway mucus. And the chapter on epithelial adhesion structures provides a concise yet thorough review of the ever increasing set of epithelial adhesion molecules. These chapters provide an outstanding introduction to some of the most important functions of the airway epithelium and are recommended reading to students, post-docs, and people who are entering the field.

One of the most important functions of the lung epithelium, which has been described relatively recently, is its role in the innate immune response. Once thought to be a simple barrier, the epithelium is now known to produce an array of cytokines and other mediators that play a key role in generating an inflammatory response to bacterial and viral pathogens, and this is true for both the airway and the alveolar epithelium. The book provides a good review of the role of the epithelium in the recognition of pathogens by way of pattern recognition receptors (perhaps too good—this discussion appears in at least 3 different chapters) and an outstanding description of the epithelium as a source of anti-microbial molecules. However, in general, the discussion of the epithelium and innate immune responses is focused on the airway epithelium, and perhaps it could have been expanded further to cover more extensively the role of the alveolar epithelium.

For example, in acute lung injury the role of the alveolar epithelium as an inflammatory tissue is being increasingly recognized. While it was previously thought that the

macrophage was the primary source of cytokines in the alveolar spaces, there is increasing evidence suggesting that, instead, the macrophage may serve primarily as a modulator of the inflammatory response by releasing “early” cytokines such as tumor necrosis factor alpha (TNF- α) and interleukin 1 β (IL-1 β), while the alveolar epithelium appears to be the primary source of neutrophilic cytokines, such as IL-8 or, in the mouse, keratinocyte chemoattractant (KC).

Perhaps one of the main weaknesses of this book, dedicated as it is to the totality of the lung epithelium, is that the different “lung epithelia” (large-airway, bronchiolar, and alveolar) are not always clearly differentiated in the discussions, and in many chapters the word “epithelium” is made synonymous with “airway epithelium”; for example the chapter on “epithelium as a target,” which explores the mechanisms linking epithelial damage with disease pathophysiology, completely ignores the alveolar epithelium and its key role in multiple disease processes, including emphysema, pulmonary fibrosis, and acute lung injury. One particular area that might have been covered with some additional detail is the role of epithelial apoptosis in the pathogenesis of lung disease. A growing body of evidence suggests that alveolar epithelial apoptosis, induced by both the receptor-dependent and the receptor-independent pathways, is a key step in the development of pulmonary fibrosis and lung injury. Experimental therapeutic approaches aimed at blocking alveolar epithelial approaches appear to be promising in animal models of acute lung injury and of pulmonary fibrosis. However, a discussion of this topic is notoriously absent from this book. Overall, the airway epithelium is better covered in this book than the alveolar epithelium, and perhaps the title should be modified to read “the *airway* epithelium in health and disease,” rather than the more general title, “the pulmonary epithelium.”

The book is nicely presented. The total number of pages is 440, many of which contain illustrations. There is a good index, and in general it is easy to locate information within the book.

In summary, **The Pulmonary Epithelium in Health and Disease** provides a well updated review of the structure and function of the pulmonary epithelium, with particular emphasis on the airway epithelium. Technicians, students, fellows and physicians involved in lung research and inter-

ested in an overview of the lung epithelium will find a useful introduction to the topic in this book.

Gustavo Matute-Bello MD

Center for Lung Biology
Division of Pulmonary
and Critical Care Medicine
University of Washington
Seattle, Washington

The author has disclosed no conflicts of interest.

Managing in Health Care: Business Strategy. George B Moseley III MBA JD. Sudbury, Massachusetts: Jones & Bartlett. 2009. Hard cover, 344 pages, \$69.95.

This book is a must-read, and should be mandatory education for a much broader target audience than the students toward whom the author directs this work. His goal of educating students entering health care and biotech careers should target *all* levels of management in any health-care entity, beginning with their respective and most senior manager. The author takes simple concepts from traditional business practices, then develops and interlaces them with the health-care industry.

This book is very organized, constructed in a progressive and orderly fashion. The sequential build of strategic planning develops from concept to implementation and monitoring stages, and is well thought out. The description of each stage and factors influencing them, including competing forces, is discussed in such a fashion that it is not very difficult to comprehend for even the casual reader interested in this topic. The author takes exquisite measures to be thorough and to provide examples of each component of business strategy.

Each chapter is a foundation for subsequent topics providing details, examples, and stimulating questions that challenge the reader's comprehension. Preceding each chapter's discussion are helpful learning objectives. At the end of each chapter are study questions and learning exercises that solidify the reader's understanding of the chapter content.

Unlike many business-related books, this particular one is not cluttered with financial presentation and analysis. This is not a book of calculations or exotic formulas, but one that supplements the reader's knowledge of the issues that current and future leaders

must be aware of in the dynamically changing and competitive health-care industry. This is one of the remarkable positives of **Managing in Health Care: Business Strategy**. The length taken to explain the concepts, which the author intricately develops throughout, avoids exposing the reader to complex financial "overload," (which for the intent of this book is totally unnecessary). However, several important formulas are identified, described sufficiently, and interwoven as important principles that one must be attuned to in the development of strategic planning.

A refreshing approach throughout this book is clear demonstration of potential outcomes to specific strategies. If, for instance, initial plan A does not play out as anticipated, then awareness of other possibilities is demonstrated with examples. This book is not only current but well positioned with its constant theme of not accepting the status quo but appreciating the survival necessities of being prepared for the future by developing strategies.

An important feature of this book is that the author details the value of knowing your competing forces and how to be successful by utilizing the power of information. He explains what to analyze, why analyze, and where to obtain your source materials. He utilizes remarkable thoughtfulness in explaining the essential need to not only develop a strategic focus but warns how and why a particular focus can be lost if not properly implemented and monitored. Failure to do so has the ramification of remaining at status quo or worse, and with the probability of losing competitive advantage.

Market analysis is another very important discussion, beginning with the basic but historically overlooked concept of the need to identify with the patient: our customer. He explains the importance of viewing patient specifics in terms of their demographics, economics, lifestyle, sociocultural, geographic, purchase, and usage behaviors. The author discusses the need to identify market trends, specifying and targeting potential customers and the essence of focusing on their behaviors, lifestyles, and needs as a strategy to survive in modern health care.

There is an important analogy explaining when analysis of the targeted market is complete, it may not be prudent to "spread too thin" when the competitive intensity is excessive: the analogy being 20% share of a \$20 million dollar market segment is better than a 2% piece of a \$100 million dollar

market. There may be more attraction to and a greater share of a smaller market with few rivals, with the primary focus to obtain high profit margins. The need to focus on limiting future direction is explained in terms of what a business can succeed in and persuading the reader not to try and be everything for everyone.

One must know the competition and what strategies they are planning, if any. Consider competing in targeted markets not being addressed by your competitor's strategic plan, which would have the probability for success if non-threatening to them. It is also helpful to play out each competitor's possible responses to your strategic plan: a chess match of sorts that can involve multiple players with unpredictable results. The value of pre-implemented planning has the potential for high predictability and probability of success, as explained by the author.

The reader will find an outstanding blend of business concepts that are incorporated into today's modern health-care systems. Efforts are continually made to develop these concepts of strategic business strategies throughout the text. Future focus of health-care entities in the context of developing a business strategy is well defined by 4 essential outlines: the organization's mission, their vision, it's values, and strategic objectives. Several examples of these documents from industry leaders are included, citing both the strengths and weaknesses of each.

The health-care business with a vision is more likely to achieve its objectives. This approach is better than staying on the sidelines and accepting numerous internal and external forces—in essence being controlled by the world around. This book promotes acting instead of reacting to the competitive business environment.

This is a survivor's guide, a planning tool, an aid to compete, and a desktop reference for keeping current objectives on target while paying equal attention to your competitor's position within your market.

Historical, present, and future directions of modern health care are explained in detail, leaving the impression that this industry is not for the faint of heart. It is truly a business, not unlike a business entity in the purest sense; one must embrace all of its intricate components, including knowing your competitors' strategies as well as you know—or should know—your own.

With such a comprehensive discussion on the complexities of the health-care busi-

ness, some readers may be left asking if they truly belong in this industry. However, the information is detailed enough that, if embraced, should sufficiently reveal to the reader the factors necessary to be successful and prepared to make appropriate decisions. This book leaves the reader well versed and aware of the key components to successfully compete. Even with 40 years invested in my career, I was left quite impressed with what I did not consider or had taken for granted before I read the book. My eyes were re-opened, in a sense, to the business of health care and its enormous pressures, both internally and externally. This is not a new realization, but what is unique about the book is the depth and breadth of anal-

ysis captured between these 2 covers in a reasonably short time frame.

In summary, Moseley provides an in-depth look not only at the health-care industry; he provides a more narrow focus on survival within it. This book demystifies, in an enjoyable and clear fashion, the multiple components of health care. Detailed is a methodical discussion about strategy. The author not only outlines each essential component of the strategic business unit, but the cycle that includes information gathering, planning, marketing, and implementation. Probably the most important chapter in this book is the one detailing the vital importance of monitoring during and after the implementation of your strategy. The exam-

ples of what to monitor are very well explained.

I will add to my collection of valued text books this particular one, which will complement a continuing work in progress to maintain a competitive edge in our dynamic environment.

William R Howard MBA RRT

Department of Respiratory Care

Tufts Medical Center

and

The Floating Hospital for Children

Boston, Massachusetts

The author has disclosed no conflicts of interest.