

Sleep Apnea: Implications in Cardiovascular and Cerebrovascular Disease, 2nd edition. T Douglas Bradley and John S Floras, editors. *Lung Biology in Health and Disease* series, volume 231, Claude Lenfant, executive editor. New York: Informa Healthcare. 2010. Hard cover, 448 pages, \$299.95.

It has been 10 years since the first Lenfant edition of **Sleep Apnea: Implications in Cardiovascular and Cerebrovascular Disease**, edited by Bradley and Floras (volume 146, 2000). The current, second, edition is desperately needed for several reasons. First, the ongoing obesity epidemic has brought considerable attention to (particularly obstructive) sleep apnea, both as it affects individuals and as a public health issue. A single resource that describes the mechanisms through which sleep-disordered breathing impacts the cardiovascular system, and that can define the magnitude of these effects in terms of outcomes meaningful to patients would be of great value for clinicians. Indeed, this is one of the goals of this edition, stated by Lenfant, that the current work “ensure a critical synthesis of all the new available data to facilitate the work of practicing physicians.” Second, the last 10 years have witnessed a tremendous amount of research on these very topics. The editors highlight the fact that their first edition was based largely on the results from single-center mechanistic trials, while the current edition now incorporates evidence based on epidemiological and clinical trials. Again, this kind of information is sorely needed by physicians who must help patients make informed decisions about sleep apnea and treatment.

Does the book fulfill its goal? The answer is a qualified yes. The book is excellent in many ways; however, its value in clinical practice is uncertain. The book is excellent overall, due to the editors’ selection of world-renowned researchers who are able to communicate their ideas effectively through their writing. Thus, most of the chapters are informative and worth reading in their own right. In fact, the book is most outstanding where it is arguably the least clinical: when it reviews advanced cardiopulmonary physiology. A couple of chap-

ters in particular deserve mention. For example, Magder’s chapter on “Mechanical Interactions Between the Respiratory and Circulatory Systems” should be required reading for medical students, residents in the intensive care unit, and pulmonary, sleep, and cardiology fellows, because of its clarity and accessibility. It concisely describes and explains commonly encountered and clinically relevant cardiopulmonary interactions. Similarly, Khoo’s chapter on models of periodic breathing clearly explains some very difficult and potentially confusing ideas, such as loop gain. Again, the author successfully integrates these concepts and shows how they help explain clinical problems, such as Cheyne-Stokes respiration in heart failure.

The emphasis of the book has shifted slightly since the 2000 edition, which does bring the book up to date and away from the bench and closer to the bedside. As the editors intended, sections focused on animal model studies relevant to sleep apnea have been removed. Instead, new chapters on the treatment of hypertension in obstructive sleep apnea and treatment of heart-failure patients with sleep apnea have been added. In fact, most of the topics and the contributing authors are new, compared to the 2000 edition. These chapters are timely and well researched and written. For example, I appreciated that Naughton and Arzt, in their chapter, “Treatment of Obstructive and Central Sleep Apnea in Patients with Heart Failure,” present a treatment algorithm for patients with central sleep apnea based on the Canadian Positive Airway Pressure (CANPAP) trial, which failed to show a mortality benefit from continuous positive airway pressure, except in a post-hoc analysis. Although the optimal treatment is not known definitively, the authors’ recommendations seem reasonable based on all the currently available evidence. As long as the quality of the data is acknowledged, I believe that practicing physicians would be eager for expert opinion and guidelines in such murky areas.

Unfortunately, the example above is relatively rare. Although thoroughly researched and well written, the book may not greatly facilitate the work of clinicians because it rarely concretely links new re-

search with the clinical practice of sleep and/or cardiovascular medicine. Because of this, the book’s readership will probably be sleep and cardiovascular researchers rather than general practitioners in either specialty. Additionally, the level of detail in some sections (such as Guyenet’s excellent discussion on brainstem control of the cardiorespiratory system) is beyond that desired by practicing clinicians, or most other health-care providers (such as respiratory therapists and polysomnographic technologists) who focus on sleep medicine. Some of the best sections (such as those mentioned above) will require multiple readings and time for reflection, based on the depth of the material. In some of the most clinically relevant chapters, such as Punjabi’s “Sleep Apnea and Alterations in Glucose Metabolism”—which is bound to be a commonly encountered clinical scenario—guidelines for the practicing physician might have been helpful, while still acknowledging that much work and research remains.

The book consists of 19 chapters, organized into 4 parts. Part I examines the influences of sleep and respiration on the cardiovascular system, but also includes chapters on sleep and glucose metabolism, inflammation, and leptin. The remaining parts are “Sleep Apnea and Hypertension,” “Sleep Apnea, Ischemic Heart Disease, and Cerebrovascular Disease,” and “Sleep Apnea and Congestive Heart Failure.” In general, each of these parts contains a chapter on the epidemiology of the problem, another focused on known or hypothesized mechanisms, and a section on treatment. The tables, figures, and graphs are all clearly presented and easy to understand. The book appears well edited, with few typographical errors. The index is very complete and useful, given the large number of abbreviations used and trials mentioned. One possible criticism is that some of the chapters recapitulate information presented elsewhere. For example, the CANPAP trial is discussed in 3 different sections. Although the volume could have been more concise, some readers may prefer this format if they selectively read only a few chapters. That is, some repetition is probably desirable. Finally, certain topics are heavily emphasized (eg, Cheyne-Stokes respiration) while oth-

ers are barely mentioned (eg, atrial fibrillation).

The second edition of **Sleep Apnea: Implications in Cardiovascular and Cerebrovascular Disease** reflects the great advances made in this area in the last 10 years. However, it also reflects our still incomplete understanding of the impact of sleep apnea on overall health. This edition will bring those interested up to date in this area, and will help to define what needs to be done in the coming years.

Robert L Owens MD

Divisions of Pulmonary and Critical Care
and Sleep Medicine
Department of Medicine
Brigham and Women's Hospital
Boston, Massachusetts

The author has disclosed no conflicts of interest.

Tuberculosis: The Essentials, 4th edition. Mario C Raviglione, editor. *Lung Biology in Health and Disease* series, volume 231, Claude Lenfant, executive editor. New York: Informa; 2010. Hard cover, 400 pages, \$299.95.

Although respiratory therapists and many other healthcare professionals in the United States may see a case of active tuberculosis (TB) only on occasion, TB remains one of the leading causes of death worldwide; approximately 2 million people die of TB annually, while 2 billion people (one third of the world's population), are infected with *Mycobacterium tuberculosis*. The current epidemiology underscores that TB is one of the most important pathogens in the world today. Indeed, in many areas in the United States a devastating global epidemic continues to present local health challenges. International cities are especially vulnerable to TB, while the globalization of economy and society continues and the epidemic of TB in many countries in the world has not been controlled.

Tuberculosis: The Essentials, 4th edition, is an important textbook to review the global issues of TB control. This new edition, edited by Raviglione, discusses the new developments and updates in knowledge since the last one published in 2006. This textbook is part of the National Institutes of Health's *Lung Biology in Health and Disease* series (executive editor Claude Lenfant). This is a multi-author textbook and many authors are internationally distin-

guished experts in the field. The book has a hard cover, 390 pages, and 15 chapters

The book is most suitable for pulmonologists, infectious disease specialists, and public health practitioners involved in the field of TB, especially international TB control. On the other hand, its advanced content may be less attractive for general physicians, respiratory therapists, and other healthcare professionals who do not often encounter the issues related to TB.

There are complete and current reference lists at the end of each chapter. Most chapters contain many tables and figures that highlight important points in the text. The index is comprehensive and accurate.

The first 3 chapters describe the epidemiology and pathogenesis of TB. The authors from the World Health Organization discuss the global TB epidemic, which disproportionately affects many resource-limited countries. There is a well-thought-out discussion on a model of TB pathogenesis and epidemiology, focusing on the risk factors for TB exposure as well as TB progression from latent TB infection, with 348 references. The third chapter updates us on the recent knowledge and new insights of basic science concerning TB pathogenesis.

The next 2 chapters deal with clinical aspects (diagnosis and treatment) of TB management. The chapter on TB diagnosis includes the new technologies, such as microscopic-observation drug-susceptibility (MODS) assay, molecular methods to detect *M. tuberculosis* and its drug resistance, and interferon-gamma release assays (IGRA). However, it emphasizes the importance of clinical suspicion of TB and underscores that the diagnosis of TB is a complex clinical exercise that requires integration of all available information.

The chapter on TB treatment describes the history of the development of TB chemotherapy, the current use of TB medications and regimens (the combination of drugs and duration), the role of directly observed therapy (DOT), and treatment in special situations and extrapulmonary TB. The next 7 chapters discuss the critical issues of global TB control; the interaction between human immunodeficiency virus (HIV) and TB, and drug-resistant TB, especially multi-drug-resistant TB and extensively-drug-resistant TB. The World Health Organization's new Stop TB Strategy recognizes that the epidemic of HIV and the spread of drug-resistant TB are the greatest threats to global TB control. While 15% of new cases of TB

in the world are estimated to occur among people living with HIV, implementation of the "Three I's for HIV/TB" is emphasized: Intensified TB case finding, Isoniazid preventive therapy, and TB Infection control. The chapter on diagnosis and treatment of drug-resistant TB reviews the new challenges that the emergence of multi-drug-resistant TB and extensively-drug-resistant TB have presented and the efforts to control the development of drug-resistant TB and the spread of the disease.

The last 3 chapters of the book review current knowledge and address the key items of TB control on the horizon: new diagnostics, new drugs, and TB vaccine.

There are a few areas that can be improved. First, the typeface may not be the easiest to read, perhaps because of a long sentence line, instead of 2 separated columns. Second, there are some illustrations in which the color prints would have been more beneficial (eg, World Health Organization statistics and graphs, pathology slides) but I understand the cost issue.

In summary, **Tuberculosis: The Essentials**, 4th edition, is a valuable reference textbook for clinicians and policy makers who are interested in global TB control activities. As the research of TB, especially at the global level, has become a dynamic field, this book also provides the research scientists with the updated knowledge and the tools to develop innovative approaches for TB control research.

Masahiro Narita MD

Tuberculosis Control Program
Public Health - Seattle and King County
and
Division of Pulmonary and Critical Care
University of Washington
Seattle, Washington

The author has disclosed no conflicts of interest.

Respiratory Care Exam Review: Review for the Entry Level and Advanced Exams, 3rd edition. Gary Persing RRT. St Louis: Saunders/Elsevier. 2010. Soft cover, 288 pages, \$69.95.

In the fall of every year in my respiratory therapy program, I encourage the seniors to fastidiously review material prior to taking the board examinations for respiratory therapists. When they ask what they should study, I reflect on the breadth and depth of material that one must review to be truly

prepared to pass these rigorous examinations. I would heartily recommend the third edition of **Respiratory Care Exam Review: Review for the Entry Level and Advanced Exams**, a review workbook written by Persing, who is a seasoned practitioner and director of a respiratory care education program.

The layout of the 17 content chapters follows a logical path that leads to the reason why the respiratory therapist is in the room seeing the patient: the therapeutic objective of respiratory care. The objectives include improving oxygenation, delivering inhaled medications, lung re-expansion therapy, mobilizing secretions, or improving alveolar ventilation, to name a few of the tasks we routinely perform. The book and the accompanying Evolve Web site (<https://evolve.elsevier.com>) with the Evolve exam review contained more than 800 questions, both multiple-choice and open-ended. The answer key and rationale to text pretests gave a detailed explanation for why the choice is correct, along with the complexity level of each question. The Evolve site also had 11 clinical simulations, with 167 questions. The author emphasized many excellent tips in the book's preface, such as ways to evaluate one's content-area strength and weakness, the all-important time issue, and environmental issues that may improve practice examination and study habits. The book established what to look for in a patient assessment, and the indications, contraindications, and step-by-step instructions on how to correctly perform each intervention and therapy. There are clear drawings with details on the structure and function of most of the devices and adjuncts we so routinely use in therapy (with exam notes and prompts that include a few things that we might forget to tell students, especially the when, where, what, why, and how to use the device), each of which is thoroughly covered.

The chapters open with pre-test questions, with answers and rationales for the answers at the back of the text; the chapters conclude with post-test questions. The chapter bibliographies include several classic texts as references, but almost all of the citations are from modern texts or journal articles from 2003 to the present. The first 3 chapters cover the essentials of oxygen and medical gas therapy, aerosol and humidity, and assessment of the cardiopulmonary patient. Indications for therapy, modern delivery devices, and devices that primarily served to reflect theoretical issues (such as the cas-

cade humidifier and the Babington nebulizer) are explained. There are well-drawn pictures of many of the devices. Issues of infection control and expert rules of thumb are presented to the student. A great example of the thoughtful presentation of each device is the inclusion of both clear descriptions of and in-depth instruction on the proper use of the metered-dose inhaler, with key points bolded, and emphasis on the all-important timed inflation hold teaching component.

Chapters 4 through 6 discuss management of the airway, special respiratory care procedures, and cardiopulmonary resuscitation. The airway chapter clearly notes differences in the oropharyngeal airways, as the boards will often ask about differences between the Berman and Guedel type of airways. It has excellent diagrams of the laryngeal mask airway, Combitube, how-to notes on laryngoscopy and endotracheal intubation, and adult lip-to-carina measurements. The discussions on opening the airway and inserting airways are up to date, succinct, and the book would serve as a great lab manual, as well as for reviews. The special procedures chapter did a nice overview on bronchoscopy and a discussion on chest tubes and drainage systems, with clear diagrams of 1 to 3 bottle options and Pleur-Evac systems. The cardiopulmonary resuscitation chapter contained the newest criteria with practical applied questions. The pre-course questions are fashioned as short case scenarios, and there are helpful explanations of the answers at the back of the book. The author did a very nice job of looking at resuscitation pharmacology, on pages 80 and 81, discussing trade names, generic names, dosages, routes, and indications.

Chapter 7 covers hyperinflation techniques, chapter 8 reviews bronchopulmonary hygiene, chapter 9 discusses cardiac monitoring, and chapter 10 gives an excellent overview of arterial-blood-gas interpretation. The hyperinflation chapter gives an in-depth analysis of intermittent-positive-pressure-breathing (IPPB) devices and therapy. While it is suggested that IPPB therapy will soon be extinct, every market has its bastion of IPPB; more importantly, the author recognizes that this information continues to be important to the student preparing for the respiratory board exams. The cardiac monitoring chapter is very well done, with a nice review of coronary circulation, basics of electrocardiograms, arrhythmia

recognition and responses, and cardiac pacing. The clever inclusion of hemodynamic monitoring in this chapter connects cardiac electrophysiology to pressure monitoring, pathology and arithmetic formulas, along with waveform interpretation. I have required students to buy hemodynamics textbooks that were not as useful, clear, and relevant as the information in this chapter. The chapter also covers cardiopulmonary stress testing and issues that would be valuable to the future board-certified pulmonary function technologist. Chapter 10, on arterial-blood-gas interpretation, is well done. The author explains the physiology and nuances of shifts in the hemoglobin dissociation curve. The discussion of hemoglobin's behavior regarding temperature, pH, carbon, dioxide, and other influences, as well as quality control, is brief and excellent. The post-test and post-chapter study questions maintain a low level of difficulty but consistently challenge the student to apply the information from a critically literate perspective; that is, to think as they would at the bedside and apply the knowledge in a real patient care setting.

Chapter 11, on ventilator management, is one of the longer chapters, and covers the modal arguments and essentials for single and dual mode ventilation. Important calculations, such as compressible volume loss, are stated and applied, along with alarms, troubleshooting, weaning, and visual cues for waveform interpretation (very important for the board examinations), both with visual displays in airway pressure and capnography. The exam notes in this chapter are important as they mention small but important issues that may serve as pitfalls to the new test taker.

Chapter 12 on disorders of the respiratory system, chapter 13 on neonatal and pediatric respiratory care, and chapter 14 on respiratory medications thoroughly review critical areas for both the budding practitioner and the examinee. The disorders chapter is thorough and looks at the most discussed respiratory diseases, and includes exemplary polysomnograms in the section on sleep disorders. The chapter on pediatrics covers a broad array of diseases and therapy. When reviewing the matrices for the CRT and RRT exams there is a high probability of many questions in this content area, which may concern those not caring for babies on a regular basis. The book did an excellent job covering causes, pathophysiology, radiograph findings (specifi-

cally, frequently used terms that describe the radiograph and associate it with a disease), treatment; the pre-questions and post-questions are superb. The pharmacology chapter is good, and covers the basic medications, and has a very nice update on neuromuscular blocking agents and potential adverse effects. The discussion on inhaled anti-infectives is thorough, and it is important to note that the organism *Pneumocystis carinii*, formerly designated a protozoan, has been reclassified as a fungus and renamed *Pneumocystis jiroveci*. While the workup, drug therapy, and prophylactic care remain essentially the same, the test-taker should be familiar with both names, as they refer to the organism responsible for the lung infection seen in advanced human immunodeficiency virus (HIV) disease in an immunocompromised host.

The pulmonary function and equipment decontamination chapters are well done and include a few definitions that I wasn't familiar with, and the author properly referred to the negative inspiratory force (NIF) by its proper nomenclature, the maximum inspiratory pressure (MIP). Devices used in pulmonary function testing are clearly described, along with proper utilization of each

device for specific tests, although the flow range of the rotating-vane respirometer (3–300 L/m) is not noted. The use of the respirometer in people with normal peak expiratory flow (PEF) is responsible for the destruction of the respirometer, and the range is still the subject of examination questions. The infection-control chapter is thorough and covers all important aspects of disinfection, personal protective equipment, isolation, hand-washing, and the appropriateness of specific techniques in populations or diseases.

I reviewed the index, which is an extensive alphabetical list of topics that allows learners to backtrack to individual topics: an excellent adjunct to classroom and online learning. I then went to the end of the book, where there is an excellent list of many of the confusing abbreviations and acronyms we use in the practice of respiratory therapy. On pages 274 and 275 there are commonly used equations and bedside calculations that will help the budding therapist quantify cardiopulmonary function well beyond the board examinations.

Throughout the book there is a very nice learning tool, the references to the CRT and RRT exam matrices, particularly valuable

to program directors and directors of clinical education. The matrices have changed over time, and I try to track the changes to be sure that an evolving skill or device is taught in depth in my program, and if student achievement is weak in any specific area. The inclusion of the matrix specific data, if properly explained, will assist the student in the quest to master the information, and will strengthen the program when evaluating areas that need improvement in teaching and learning. I think **Respiratory Care Exam Review: Review for the Entry Level and Advanced Exams**, 3rd edition, is a welcome addition to the bookshelf of any program and all students who wish to increase their success on the national board examinations.

**Douglas E Masini EdD RPFT
RRT-NPS AE-C FAARC**

Department of Respiratory Therapy
Armstrong Atlantic State University
and

Department of Internal Medicine,
Mercer University College of Medicine
Savannah, Georgia

The author has disclosed no conflicts of interest.