
As often stated by the various contributors to this book, chronic obstructive pulmonary disease (COPD) is a major health problem that is often underdiagnosed. The focus of this short, concise review of all aspects of COPD is therefore directed to primary care providers, in an attempt to improve diagnosis and management and ultimately improve quality of life for patients with this disease. The book is divided into 12 chapters, each 3 pages in length. Every page has a column of text alongside a column of graphs, photographs, or tables of supporting data. At the end of each chapter, in lieu of a footnoted bibliography, there are 3 to 7 references for further reading.

The first chapter defines the disease and discusses the epidemiology and risk factors associated with it. The 2004 United Kingdom National Institute for Clinical Excellence definition of COPD is presented, as is a differential diagnosis of other conditions associated with airflow obstruction that do not necessarily fall under the umbrella of COPD. Statistics on prevalence and mortality are presented, with the caveat that the data suffer from underdiagnosis and differences in definition. The data on morbidity and economic impact come predominantly from United Kingdom studies, which may limit generalizability for readers from other countries. The section on risk factors is very brief and would benefit from a bibliography for physicians interested in the studies discussed.

Chapter 2 discusses the pathology, pathogenesis, and pathophysiology of COPD. The table that lists the pathologic changes of COPD is succinct and quite good. The section on pathogenesis is excellent; it presents the various cells and mediators responsible for the inflammatory response in the lung in a brief but very understandable fashion. Finally, the section on pathophysiology covers the basics but is almost too basic and seems superficial. This is the only chapter that does not give any references for further reading.

The third chapter deals with diagnosis of COPD. History and physical examination are covered briefly, with the acknowledgment of the limitations of the physical examination. Two of the tables are very useful: one compares and contrasts COPD to asthma; the other presents a differential diagnosis for COPD, including suggestive features and further investigations to help differentiate the various other diseases. The section on spirometry is well done and includes a table of differences in the definitions of COPD severity in various guidelines.

Chapters 4 through 10 deal with all aspects of COPD management. The first of these chapters reviews smoking cessation. Emphasis is placed on the importance of brief interventions in the clinic setting, and there is some scripting of approaches. Behavior-change strategies are reviewed. Some informative tables on the adverse reactions and contraindications to pharmacologic intervention are also presented.

Chapter 5 presents a miscellany of nonpharmacologic management and touches on pulmonary rehabilitation, immunizations, mental health issues, and surgery, all within one very brief chapter. A substantial portion of the chapter discusses pulmonary rehabilitation, including education, exercise training, and nutrition. In the end, however, the authors do conclude that the benefits to quality of life decline with time and there is little or no improvement in medical care utilization, progression of disease, or survival. The section on surgical options is informative and would benefit from more elaboration.

Chapters 6 and 7 review drug treatment for COPD. Chapter 6 is a solid review of short-acting and long-acting bronchodilators, including benefits and adverse effects. The risks, benefits, and unclear role of inhaled corticosteroids are also presented here. A summary of inhaled treatments, along with a treatment algorithm in table form, is quite useful for a quick review. Chapter 7 continues on with oral treatments less commonly used, including theophylline, oral steroids, and mucolytics. Despite the brevity of each section, the possible benefits and important adverse effects are well covered. This chapter does a good job of reviewing drugs that may have marginal benefit to patients with severe COPD and who have maximized the inhaler treatment outlined in Chapter 6.

Chapter 8 discusses the benefits of oxygen therapy, both in the exacerbation setting and as chronic treatment for hypoxia. This section is particularly informative, especially in providing useful guidelines for oxygen use during air travel. It would have been helpful if the Pao2 values were expressed in kPa and mm Hg. The last section revisits inhalers, including metered-dose and dry-powder inhalers and nebulizers. Instructions for patients regarding proper technique for metered-dose inhalers, with and without spacers, are outlined step by step. It would have been useful to have a similar outline of instructions for nebulizer use and maintenance for physicians to review with patients periodically. From an information-flow perspective, the section on inhalers would seem to fit better at the end of Chapter 6, which reviews appropriate treatment with inhalers.

Chapter 9 describes the in-patient treatment of COPD exacerbation. The strength of this chapter is in the tables, which include differential diagnosis of increased dyspnea in a patient with COPD and a list of possible bacterial, viral, and pollutant causes of exacerbation. In the section on recovery there is a subsection regarding assisted hospital discharge. These appear to be multidisciplinary programs that enable a patient with a nonsevere COPD exacerbation to be discharged immediately from the hospital, with studies that support cost savings without higher mortality. Further elaboration of what components are included in a successful assisted discharge care package would have been very helpful.

Chapter 10 covers ventilatory support; the majority of the section discusses noninvasive ventilation. This is one of the most useful and informative chapters in the book. It presents an excellent review of noninvasive ventilation, including indications, mechanics, logistics, and monitoring. Tables provide a quick reference for the benefits of and contraindications to noninvasive ventilation. Invasive mechanical ventilation is covered in 2 paragraphs that mainly focus on the indications to move from noninvasive to invasive mechanical ventilation and
the poorer survival prognosis of patients who require invasive ventilation.

Chapter 11 is a quick overview of long-term care of COPD patients in a primary care setting and a very brief look at palliative care. Again emphasizing the need for early detection, 2 simple questionnaires are presented: one to help evaluate the risk of COPD, and the other to help differentiate COPD and asthma. The second questionnaire is somewhat confusing, because you get more points toward the diagnosis of COPD if you answer “no” to the question “Breathing problems in the past 3 years?” References to studies that support the reliability and validity of these questionnaires would be very useful. Other tables are more helpful in providing a dyspnea score and suggested checklists of issues to review for initial and subsequent clinic visits. As COPD is a chronic and progressive illness, this section would have benefited from providing more information on how to assess quality of life and details on coping strategies to help patients as their disease progresses. The most disappointing section was on palliative care. Elaboration on distracting techniques, coping strategies for both patients and caregivers, as well as end-of-life issues would have been very useful to help primary care providers during this very difficult period of patient care.

The book ends with a chapter on future treatments. Approaching COPD from a variety of angles, including improvement in bronchodilators, better medications for smoking cessation, and treating the inflammatory mediators, the chapter provides a nice overview of treatments for physicians to keep an eye out for in the future.

This concise primer on COPD would be very valuable for respiratory therapists, nurses, medical students, and residents in their early years of training. It can be read in a single sitting and covers all the basics of COPD. The further-reading lists at the ends of the chapters are useful in pointing out important consensus guidelines available to providers. Practicing primary care physicians might find it useful for a quick review of the basics, with perhaps more gleaned from review of pathogenesis, oxygen therapy, and noninvasive ventilation. However, it would not likely be a book that primary care providers would return to over and over, because of the very basic nature of many of the chapters and the lack of a bibliography to further review cited studies.

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Chronic Obstructive Pulmonary Disease
Robert A Stockley, Stephen I Rennard, Klaus Rabe, and Bartolome Celli, editors.

This is a comprehensive book on chronic obstructive pulmonary disease (COPD) and is edited by 4 acknowledged international scholars. The editors’ objective is that the text “will provide both background and an update necessary for physicians/scientists/health care workers with an interest in COPD.” The editors embarked upon a project to meet the need for a comprehensive textbook that covered normal and abnormal physiology, the latter being particularly related to patients with COPD, and to address a spectrum from basic to clinical science that was missing. The original editors, Rennard and Stockley, asked 2 world-renowned clinician translational scientists, Celli and Rabe, to join them in the task. The book succeeds quite well in accomplishing its mission. The book is organized into 7 major sections, each of which is subdivided into multiple chapters. The sections include “Pathogenesis,” “COPD and Allied Conditions,” “Host Defenses and Inflammation,” “Pathogenesis,” “Clinical Considerations and Complications,” “Current and Future Treatment,” and “Pharmacotherapy: Developing Therapies.” This effort does effectively achieve its goal of an excellent blend of both the basic science and the clinical science of COPD. The book is 892 pages, with a comprehensive index.

The reference list is quite good, although there appears to have been a delay in the publication of the book, since some of the more recent articles that are important to this field were not included. The chapters on pharmacoepidemiology of COPD (Chapter 65) and Guidelines (Chapter 67) do include more recent references. Figures and tables are also extensively used and are quite effective. Although in the preface the editors talk about the book providing background and an update for physicians/scientists/health care workers who have an interest in COPD, in my view, clinicians, nurses, and respiratory caregivers such as respiratory therapists will benefit the most.

The first section, on pulmonary physiology, is well done by expert writers, and the information will be particularly useful to respiratory clinicians and therapists. Basic structural/function relationships, muscle physiology, circulation, and gas exchange are intertwined with the physiology of breathlessness, exercise limitations, and cardiopulmonary exercise testing in COPD, in cough, as well as sleep.

Section 2 contains valuable information on a number of relevant allied conditions such as cystic fibrosis, bronchiectasis, obliterative bronchiolitis, and asthma. The relationship of these problems to COPD is explored. These sections are practical and timely. Included in this section are particular interesting and useful chapters to clinicians, including the natural history of COPD, clinical presentation and evaluation, and monitoring and outcomes.

Section 3 is devoted to host defenses and inflammation, and the section discusses timely issues such as mucociliary clearance, mucosal immunity, pulmonary surfactant, and the role of macrophages, eosinophils, neutrophils, lymphocytes, cytokines, leukotrienes, and mesenchymal cells. In addition, there are chapters on airway epithelial defense, repair and regeneration, cigarette smoking, emphysema, and lung endothelium.

Section 4 is on pathogenesis, with thorough chapters on lung development, animal models, proteases and COPD, oxidants, cigarette-smoke-induced disease, air pollution, viruses, bacteria, and genetic factors. In addition, interesting chapters on alpha-1 antitrypsin deficiency, body weight, and lung connective tissue are included.

Section 5 will be particularly useful to respiratory therapists, nurses, and clinicians, for it is practical, with chapters on aerosols and delivery systems, gastroesophageal reflux, upper-airway disease, pulmonary embolism, lung cancer, infection, mechanical ventilation, and comorbidity. These chapters also quite successfully achieve their goals and are very well written.

Section 6 is somewhat of a mix of current and future treatments, with chapters devoted to primary care, pulmonary rehabilitation, social support, long-term mechanical ventilation, and other therapies.
ventilation, smoking cessation, oxygen therapy, and surgical therapy. In addition, there are some very good chapters on pharmacotherapy, including chapters on anticholinergic, β2 agonists, corticosteroids, phosphodiesterase 4 inhibitors, antibiotics, antioxidants, and mucolytics, each written by acknowledged experts in the field. There are some useful chapters on end-of-life and palliative care. Also, economic burden, pharmacoepidemiology, and social and behavioral impacts of COPD are comprehensively covered. COPD guidelines are extensively reviewed by Calverley, who has been involved in their development.

Section 7 is perhaps the most exciting section. It includes pharmacotherapy and developing therapies such as protease inhibitors, retinoids, and chemokines. These give us a nice insight into possibilities for future respiratory drugs.

Overall, the editors succeeded in accomplishing their mission. I don’t think that this will be a major resource for scientists who focus on selected aspects of COPD biology. However, it could be an extremely helpful and very useful resource for those who practice and those involved in translational research, all trying to improve the management of patients who suffer with COPD.

Pulmonary Disorders of the Elderly: Diagnosis, Prevention, and Treatment

Pulmonary Disorders of the Elderly is the creation of authors who have the collective experience of over 250 years in treating patients with pulmonary and cardiac disease. Written primarily for physicians, it is a small textbook that contains crucial information to help older adults avoid preventable pulmonary disease and guide therapeutic interventions for those already diagnosed with chronic or acute lung disease.

There are 15 chapters altogether, presented in a logical sequence. Chapter 1, “The Aging Lung,” sets the stage for subsequent chapters. Understanding age-associated physiologic change in lung function is a key ingredient in caring for elderly pulmonary patients. The information about aging lungs is artfully presented. An explanation for age-associated functional change is offered when known. Physiologic change related to structural alteration is presented accurately and succinctly. The author provides technical information without belaboring the point. A delightful surprise at the end of the first chapter (and in each subsequent chapter) was the bibliography/reference section. Looking to see if references were current, I was immediately drawn to a 1993 publication date. My concern dissipated when the citation ended with the following quote from the author: “An authoritative chapter on the subject. Although more than a decade old, most of the information is still relevant.” From that point on the book ceased being a medical compendium and became a personal message to all who care for older adult patients. I was excited to read more.

The 2nd chapter deals with the 2 most frequent presenting symptoms: dyspnea and cough. The author’s common-sense approach, which involves more reliance on a good history and physical examination initially to narrow down the potential cause of the symptom, is refreshing. An outline, in table format, lists specific observational findings related to dyspnea, and pairs them with potential diagnoses. Another table gives added meaning to the “look, listen, and feel” approach to patient assessment, with a discussion of percussion, palpation, and auscultation. A third table presents a step-wise approach to patient evaluation and factors in the diagnostic tool, the cost of the procedure ($ through $$$$$), potential risk to the patient, and the need for a consultation. Acute versus chronic symptoms are discussed with suggested causes and potential solutions. The 2006 American College of Chest Physician guidelines are generously added to the text, interspersing the current approaches to treatment with tried-and-true therapeutic interventions. This, from the collective wisdom of renowned physicians, serves to set this book apart from others.

Chapters 3 through 12 each cover an individual disease process. Though not written in a “cookie cutter” manner, most follow a similar format, starting with the disease process and progressing through etiology, diagnosis, treatment, and summary. The majority of chapters have very instructive tables, which range in content from recommended drugs and dosages to common appearance of parenchymal abnormalities on imaging studies to differentiating asthma from chronic obstructive pulmonary disease (COPD) in the elderly. Many chapters include algorithms for helping to make treatment decisions. Three chapters are devoted to pneumonia, referred to as “the friend of the aged” by Osler in his 1901 edition of The Principles and Practice of Medicine.

Chapters 3 through 7 cover various forms of infectious disease. This is fitting, as “infection is exceeded only by atherosclerosis as the most frequent cause of death in people 85 and older.”

Chapters 8 through 10 are important in their coverage of venous thromboembolism, interstitial lung disease, and congestive heart failure, respectively. The risk of developing any of these conditions greatly increases after age 50. The terminology in these chapters is up to date, and the suggested therapeutic interventions include newer drugs. Current recommendations for prophylaxis and the use of video-assisted thoracoscopic lung biopsy to establish a diagnosis of interstitial lung disease are covered. A figure that subdivides patients with heart failure into 4 categories, based on perfusion/congestion status, is presented for guiding therapy. The recommendations for nonpharmacologic therapy in congestive heart failure are specific, and the section on pharmacotherapy discusses an important consideration when treating any disease process in elderly patients: avoidance of polypharmacy!

In Chapter 11 the authors point out that since about 10% of the population is believed to have COPD and another 10% are probably asthmatic, it is possible that 1 in every 5 patients seen by a primary care physician may have airway disease. The fact that asthma and COPD are so common in older adults gives added importance to this chapter. One major concern voiced by the author is that elderly patients with asthma, COPD, or emphysema are often misdiagnosed or never diagnosed, and symptoms of dyspnea, cough, and wheezing are attributed to aging. In addition to a discussion of prevalence, diagnosis, treatment, and prognosis, Chapter 11 includes a chart to help differentiate asthma from COPD in patients over age 40. Newer medications are discussed, and a short paragraph on future trends, including drug categories under investigation, adds to this text. Of interest, visiting nurses are mentioned as being a
source of help for elderly patients with asthma, whereas respiratory therapists are not. Perhaps this is an oversight regarding the value of home care respiratory therapists in educating patients on their disease process, and in discussing action plans for asthma and COPD.

Chapter 12 brings home the reality of lung cancer as the most common fatal malignancy in both men and women. The author is quick to address the lack of any current recommended screening for early detection of lung cancer in the United States. As a result, most patients diagnosed with lung cancer present in advanced stages of the disease. In contrast, it is noted that in Japan the standard of care for all smokers over the age of 45 is screening for early lung carcinoma, which results in a much higher survival rate at 5 to 10 years after treatment. The section that covers diagnosis includes a helpful algorithm for the workup of a solitary pulmonary nodule. Staging and TNM (tumor, node, metastasis cancer staging system) descriptors are covered, and there are brief paragraphs on mesothelioma, sarcomas, and secondary lung cancer. A comprehensive discussion on cancer treatment is not part of this chapter. Rather, it is recommended that an interdisciplinary team composed of a pulmonologist, oncologist, thoracic surgeon, and radiation therapist make decisions on potential therapeutic interventions.

Home treatment of chronic disease, covered in Chapter 13, is a comprehensive overview of long-term oxygen therapy. Specifics on how to prescribe oxygen, the requirements for Medicare reimbursement, and the benefits of oxygen therapy during exercise are presented. Different oxygen systems and delivery devices are explained, along with indications for and limitations of each. The chapter ends with a challenge to continue improving respiratory care for older patients while reducing cost and adding to the legacy of the long-term oxygen therapy pioneers.

The final 2 chapters, on progressive respiratory impairment and end-of-life concerns, round out the book. Both chapters are a testament to the wisdom and compassion of the authors, who are practicing pulmonologists who have worked in critical care medicine for over 40 years. Chronic respiratory insufficiency (most commonly a result of COPD, congestive heart failure, and various comorbidities) cannot be cured. Thus, patients and their families must be educated and encouraged to focus on an improved quality of life. These chapters provide “how to” advice on approaching a variety of difficult topics and conversations with patients. The overarching theme of this chapter is to provide patients with comfort, control, freedom, and peace. As a final message, the authors suggest the term “decisions at the time of transition,” instead of the somewhat depressing term “end-of-life decisions.”

Overall this book was easy to read and contains a wealth of information on common disease processes in the elderly. Though designed for physicians, it would be one of those “frequently thumbed through” books on the shelf of any respiratory therapy department. I found it interesting that the authorship of the individual chapters was not revealed to the reader, but this did nothing to detract from the information presented. My only concern with this publication is its failure to mention the profession of respiratory care or pulmonary rehabilitation, which was most notably absent in the chapters on COPD and home care. We are indebted to the many outstanding pulmonologists who over the years have nurtured and trained us to care for their patients with pulmonary disease, and we need to expand our role in caring for the elderly. Education about and understanding of the subtle and not so subtle changes in our older pulmonary patients will serve us well, now and in the future.

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Obstructive Sleep Apnea: Pathophysiology, Comorbidities, and Consequences.


Lest anyone doubt that obstructive sleep apnea (OSA) has “arrived” and is now taking its place at the table of 21st century medicine, the arrival of volumes 3 and 4 of the Informa series on sleep disorders should dispel those doubts. Previous volumes in this series have covered pediatric and neuropsychological problems in sleep. The latest 2 volumes have OSA as their sole topic. Volume 3 is concerned with pathophysiology, comorbidities, and consequences, and volume 4 is about diagnosis and treatment. These 2 volumes join a growing list of textbooks about sleep medicine more generally, yet it is noteworthy that 2 volumes are needed to contain the rapidly growing basic and clinical science that is rapidly accruing on OSA. This is a remarkable achievement for a disorder that really came into clinical consciousness only 30 years ago. In fact, some might argue that sleep apnea still has not come into the full consciousness of physicians, as it is still commonly overlooked by clinicians. These 2 volumes are virtually alone as texts specifically about sleep apnea. I suspect they will not be alone for long.

The 2 volumes are edited by Kushida, from Stanford University’s world-renowned sleep medicine program, who was an excellent choice for this task and has assembled many noted authorities in the field as his chapter authors.

The first chapter of Volume 3 is an overview of the history of sleep apnea. It is a thorough and detailed tour through sleep apnea in literature and the subsequent history of OSA from the 1870s and Broadbent’s perhaps first description of OSA to the present day. Sleep apnea is also perhaps the only disease whose prototypical patients come from the world of Shakespeare and Dickens. I am referring to the characters of Falstaff, from several of the Bard’s histories, and Joe the fat boy from Dickens’ The Posthumous Papers of the Pickwick Club. Despite early descriptions of the disease from the 1870s, it was not until the mid-20th century that Gastaut, in France, and others, put together the clinical observations known for some 70 years with the abnormal upper-airway closures and reopenings that we now understand as the basic pathophys-
iology of the disease. The first large case series of OSA patients was published by Dement and Guilleminault in 1977. In 1981, Sullivan published his initial description of continuous positive airway pressure (CPAP) therapy, in *The Lancet*. Thus the mainstay of sleep apnea therapy is only 27 years old.

Though the history of the disorder is interesting, the mark of a useful textbook is how it helps you learn new material for the first time or review previously learned concepts. To put this to the test, I read 3 chapters on subjects that I consider interesting and important in sleep apnea, and another 3 chapters on more established areas of this field. I then looked up specific information about several sleep apnea patients I have recently seen in my own practice.

The first of the chapters I focused on concerned familial and genetic factors in OSA. Written by Patel, from Case Western Reserve University in Cleveland, and Tishler, from Harvard, this chapter expertly covers not only the work on the genetics of sleep apnea and its intermediate phenotypes such as obesity, craniofacial structure, and ventilatory control, but also genetics from a methodological standpoint, and explains the different scientific approaches to studying the genetics of a disorder, from familial aggregation to candidate gene selection and linkage analyses. Unexpectedly, there are several excellent subsections on genetic disorders other than sleep apnea that are nonetheless related to it and important in their own right. Thus, excellent discussions of the genetics of sudden infant death syndrome, Prader-Willi syndrome, and congenital central hypoventilation syndrome are found as well in this chapter.

The second chapter I examined closely was on the neural substrates of sleep apnea. The brain is the next great frontier in our understanding of the consequences of sleep apnea. The chapter by Colrain and Trinder reviews the literature about the central and autonomic nervous systems in this still small but rapidly growing part of our overall understanding of OSA. Functional magnetic resonance imaging and positron emission tomography studies are beginning to illustrate the areas of the brain involved in memory and other key functions. In the section on the interactions between sleep apnea and the autonomic nervous system, Colrain and Trinder aptly discuss heart rate and blood pressure variability measures and baroreceptor sensitivity in OSA. Catecholamine testing in urine or plasma—a more traditional method of autonomic nervous system measurement—is covered less completely.

The third topic of particular interest is so-called complex sleep apnea. This chapter first discusses bi-level positive-pressure therapy in relation to CPAP, and its role in hypercapnic patients, as well as the role that it may or may not have in improving adherence to positive-pressure therapy. The author then segues into a discussion of complex sleep apnea or the problem of central apnea emerging during the positive airway pressure titration of patients with obstructive sleep apnea. This is a subject of considerable controversy at this time. The author, Gay, correctly states that complex sleep apnea is “increasingly recognized but not a new clinical problem.” His discussion of this subject is brief and focuses on treatment issues, including the relative merits of conventional bi-level pressure therapy for complex sleep apnea versus newer adaptive servo ventilators that augment ventilation during the apneic phase of the respiratory event and decrease support during the hypopneic phase. Several studies have demonstrated efficacy. However, larger and more comprehensive studies are still needed, as Gay points out. Finally, whether any therapy at all is needed for the central apneas that compose complex sleep apnea remains controversial.

Of the chapters I reviewed on the more established aspects of sleep apnea, I particularly enjoyed the one on control of breathing during sleep. These fascinating concepts have been neglected in the education of pulmonary and sleep medicine fellows. However, understanding how the brain regulates breathing during wakefulness and sleep, including the transition between the 2 states, is crucial to a full understanding of the OSA pathophysiology. I thought the chapters on health-related quality of life and treatment of OSA with CPAP therapy were also strong.

How useful were the 2 volumes in the clinic, for teaching fellows, and for looking up the answers to questions? Here, I give them a mixed review. The first of 3 questions had to do with the measurements made on a lateral cephalometric radiograph. The chapter on surgery for sleep apnea has a brief section on cephalometry, but not a diagram of the landmarks to guide the reader in actually making the measurements. The second question I had related to the interaction between OSA and symptoms of depression. In this case I found a nice discussion in the chapter entitled “Other Sleep Disorders.” I am not sure sleep apnea and depression should be placed in that particular chapter, as opposed to elsewhere in the sleep-apnea-oriented chapters, but at least it was present and was well done. The final clinical question I encountered was the use of modafinil for persistent sleepiness in the setting of adequate use of CPAP therapy in OSA. This topic was briefly covered in 2 chapters: one on adjunctive therapy in OSA, and the other on medications used in OSA.

Overall I enjoyed these 2 texts on sleep apnea. With only a few weak spots, they cover the burgeoning field of sleep apnea very well. One final gripe: the images in the book are mostly black-and-white reproductions of figures and graphs. Both volumes, however, have a central section of color plates, where all the color images for that volume are collected. This may be a necessary evil for the publisher, but it is a nuisance to have to flip to the center of the book to see a color image instead of having it in situ in the appropriate chapter where it belongs. This aside, I strongly recommend these 2 volumes to sleep medicine clinicians, sleep fellows, and pulmonary fellows or practicing physicians interested in OSA.

**REFERENCES**


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