

**Principles and Practice of Sleep Medicine**, 4th edition. Meir H Kryger MD, Thomas Roth PhD, and William C Dement MD PhD. Philadelphia: Elsevier Saunders. 2005. Hard cover, illustrated, 1,517 pages, with continually updated online version, \$259.\*

When I first received this volume of **Principles and Practice of Sleep Medicine** for review, I used it as a reference on 5 separate occasions within the first week. However, I found it interesting that my use of the book during that week was not for questions related to sleep disorders or somnopharmacology, but on topics that arose during our house staff rounds in the intensive care unit. This illustrates the comprehensiveness and scope of the topics in this edition.

The first edition of **Principles and Practice of Sleep Medicine** was published in 1989, when the disciplines of sleep physiology and sleep medicine were still in their infancy. It was the first systematic reference for the field of sleep medicine, and it was about half the length of the 4th edition. At that time we had a very limited understanding of circadian biology and the basic mechanisms and neurophysiology of sleep, and therapeutic interventions such as continuous positive airway pressure were relatively novel. Knowledge of the control of the sleep-wake cycle and related sleep pathophysiology has increased greatly, and sleep medicine has emerged as a distinct field of study. The 3rd edition of **Principles and Practice of Sleep Medicine** was published in 2000, and it emphasized the interdisciplinary nature of the field of sleep medicine. Since then the field has continued to advance rapidly, and National Institutes of Health funding for sleep-related research has increased annually. The 4th edition, published 5 years after the 3rd, includes a comprehensive summary of recent advances.

The 4th edition is divided into 2 parts: "Principles of Sleep Medicine," which consists of 6 sections that address the basic science of sleep, and "Practice of Sleep Medicine," which is dedicated to the clinical aspects of sleep medicine. The initial 47 chapters address normal sleep and its variations, including acute and chronic sleep deprivation. There are also some unique chapters on the phylogeny of sleep regulation in mammalian and nonmammalian sleep. The chapters on the neurophysiology of sleep and waking states are extensively illustrated with electroencephalograms and anatomic schematics. The section on the physiology of sleep covers the cardiovascular, respiratory, gastrointestinal, immunologic, endocrine, and thermoregulatory systems in sleep-wake cycles. These sections endeavor to correlate the physiologic features with clinical applications, and each chapter includes highlighted clinical pearls.

The section on chronobiology covers new information about circadian rhythms and the anatomy and physiology of the circadian clock. The functional neuroanatomy and neurochemistry of the clock, which is located in the suprachiasmatic nucleus of the hypothalamus, has been an active subject of research. The clinical importance of this minuscule structure was recently realized, and knowledge about the effect of light on the circadian pacemaker is now being used for therapeutic purposes. More recently, the molecular model of the circadian pacemaker and its periodicity due to oscillating protein synthesis was clarified. This process, initially described in *Drosophila* species, has now also been elucidated in the mammalian suprachiasmatic nucleus. The steps in that discovery are well-described and summarized in an overview of the 10-step process to build a circadian pacemaker.

Circadian biology is now being applied to human performance, alertness, and behavior. The circadian variation of temperature and endocrine function has several clinical applications, and these principles are now being applied to shift work, time-zone variations for airline workers, and artificial 24-hour cycles in space shuttle missions. These principles have shed light on the decline in performance caused by sleep deprivation and the importance of work-hour reg-

ulation, such as in medical residency training.

Somnopharmacology is covered in 5 chapters on mechanisms of action, wake and sleep-promoting medications, and drugs that disrupt both sleep and wakefulness. It is vitally important that sleep clinicians understand somnopharmacology and, soon, chronopharmacology, in which medication administration based on circadian principles will be the standard of care.

The final portion in the basic-science section of this text addresses the neurobiology, circadian aspects, and psychological aspects of dreaming. The last chapter in this section, "Why We Dream," reviews newer models that postulate the purpose of dream sleep and its function in the processing and consolidation of memory.

The clinical part of this book consists of 11 sections and 78 chapters that review the most current diagnostic and therapeutic measures in sleep medicine. The initial approach to the patient with disordered sleep and the cardinal symptoms of sleep disorders are discussed, followed by a review of clinical tools and tests in sleep medicine. This chapter includes 2 useful tables: one lists the most current topical practice parameters and reviews; the other addresses the value of historical or questionnaire-derived, referenced diagnostic information for obstructive sleep apnea.

A section on circadian rhythm disorders includes sleep disruption from jet lag and shift work, and there is a chapter dedicated to managing work schedules with circadian principles. Insomnia is a condition that physicians and other health-care workers encounter daily, and this book's section on insomnia is comprehensive and reviews the behavioral and psychological treatments of primary and secondary insomnia. The chapter on pharmacologic treatment of primary insomnia includes the newer chemical classes of benzodiazepine receptor agonists.

The section on neurologic disorders includes 2 chapters on narcolepsy. Recent advances in the genetics, diagnosis, and treatment of this disorder are reviewed in detail, and there is a discussion on hypocretin-1 measurement in cerebrospinal fluid as a diagnostic adjunct in patients with cataplexy. There are chapters on idiopathic hypersom-

\* The Journal published a previous review of the hard-copy version of this edition (DePaso WJ. *Respir Care* 2006;51[12]:1475). The heading of the previous review was in part incorrect: the online version was not yet available (and thus was not covered); the hard-copy version alone was \$179.

nia, and on sleep disorders in Parkinson disease, Alzheimer disease, stroke, epilepsy, movement disorders, and neuromuscular disorders. This section contains 2 particularly helpful tables: one contains pharmacologic recommendations and dosing schedules for sleep disorders in various neurologic conditions and dementias; the other lists the clinical features in epileptic phenomena and potential overlap with normal sleep phenomena and nonepileptic sleep disorders.

A section on parasomnias includes chapters on parasomnias unique to rapid-eye-movement sleep versus non-rapid-eye-movement sleep, bruxism, nightmares, and disturbed dreaming in some medical conditions, and a chapter on violent parasomnias, which have become important in forensic and medico-legal situations.

The section on sleep-related breathing disorders is extensive and includes a surprisingly detailed overview of the major classes of pulmonary disease. I have used this section repeatedly as a resource for topics not necessarily related to sleep medicine. The chapter on central sleep apnea has an outstanding review of the physiology of respiratory control, which I have found to be a useful reference for issues that arise in the intensive care unit. Another chapter that contains material essential for intensive care management is on the anatomy and physiology of upper-airway obstruction, which is extensively illustrated. The chapter on the management of chronic respiratory failure with noninvasive ventilation is also comprehensive and useful. The chapters on the clinical evaluation of and the medical and surgical treatments for obstructive sleep apnea are updated, and a chapter on oral appliances for management of sleep-disordered breathing (which is now associated with a designated Practice Parameters publication) is also included.

The section on cardiovascular disorders and sleep has also been a frequently-used resource, as it contains the most recent information on sleep-related cardiac risk and cardiac arrhythmogenesis during sleep, and comprehensive information on coronary artery disease and systemic and pulmonary hypertension in obstructive sleep apnea. The chapter on heart failure contains useful tables of data compiled from prior studies, and includes information on the prevalence of sleep-related breathing disorders in patients with systolic heart failure, as well as survival data in patients with heart failure.

There are 8 chapters on other medical disorders, such as sleep and fatigue in patients with cancer, chronic fatigue syndromes, chronic pain, gastrointestinal disorders, and women's issues such as sleep disturbances in pregnancy and menopause. The last clinical section of this text is an inclusive series of chapters on sleep and psychiatric disease. This section also includes a chapter on medication and substance abuse and their effects on sleep architecture, as well as their contribution to some underdiagnosed sleep conditions.

The last section in this book consists of a comprehensive series of reference chapters on methodology, including evaluation and monitoring techniques for different diagnostic requirements. There is also an excellent chapter on current information and recommendations on light therapy (also associated with a Practice Parameters publication). Although this chapter would have also been well placed in the section on chronobiology, it is an organized reference on the modes of light delivery and recommendations for light treatment of specific disorders. The last chapter in this series reviews the current knowledge in chronobiologic monitoring techniques, which are currently indirect and rudimentary. However, this field will probably continue to make rapid advances; the molecular basis of the circadian clock is now being clarified, and it is possible that direct measurement of gene transcription or translation products that are temporally related to the circadian pacemaker will be feasible in the near future. The sections on circadian biology that are now very current in this text, I predict, will have fascinating updates when the 5th edition is released.

As an extra bonus, this textbook has an associated Web site that can be accessed with a code provided with each book. There are several items of interest in this site, which is extensive and can be considered a stand-alone resource. The text chapters are available in a "printer-friendly" format, and have a "scrapbook" feature that allows the reader to take notes and enter these in the computer while reading the chapters. Additional features of the Web site include: a section of classic articles from the literature, dating back more than a century; an image library that can easily be downloaded for slide presentations (in ZIP or PowerPoint formats), with a "lightbox" feature; a comprehensive drug database; the complete list of Standards of Practice articles in sleep medicine from the American Society of Sleep Med-

icine and National Guideline Clearinghouse; and patient educational brochures for use in clinic. There are case studies with self-assessment questions and short-answer essays, which are invaluable for boards review. Links to the POCKETConsult Web site are available through the **Principles and Practice of Sleep Medicine** Web site, which allow updates in pharmacology and sleep medicine topics to be downloaded to a handheld computer. Clinical updates on various topics are posted, on the average, every week. Other features at the Web site include interviews with William Dement and Nathaniel Kleitman, and a link to Meir Kryger, one of the authors, who encourages readers to contact him with requests for topic updates and any other recommendations or comments.

In summary, this text is wide-ranging in its coverage of all sleep medicine issues, but it goes beyond this discipline, in that it provides a thorough overview and a detailed mechanistic description of the normal and abnormal physiology in many other conditions in internal medicine, pulmonary disease, critical care medicine, neurology, and psychiatry. The editors have done a commendable job with this series of complex topics and their organization in this comprehensive text.

**Paula G Carvalho MD**

Division of Pulmonary and  
Critical Care Medicine  
Veterans Affairs Medical Center  
Boise, Idaho  
and  
University of Washington  
Seattle, Washington

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**Sleep: A Comprehensive Handbook.** Teofilo L Lee-Chiong MD, editor. Hoboken, New Jersey: John Wiley & Sons. 2006. Hard cover, illustrated, 1,096 pages, \$175.

This volume is, in general, well written and informative. The editor accurately defines the difficulty in producing a textbook that satisfies both the specialist who wishes to know "more and more of less and less" to general practitioners who find themselves limited by knowing "less and less of more and more." The editor concludes the preface with, "This textbook is not meant to be the culmination of our knowledge of the