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Normal Human Sleep: An Overview 551
Max Hirshkowitz

This article discusses normal human sleep. Landmarks leading up to the understanding of human sleep, electroencephalographic definitions, and general characteristics of normal human sleep are presented. Actuarial laboratory data, for both night 1 and night 2, are provided with an explanation of how they are compiled. Finally, the mechanisms governing sleep and wakefulness are reviewed. This information is critical to understanding abnormal sleep associated with sleep disorders.

Identification and Management of Insomnia 567
Michael J. Sateia and Wilfred R. Pigeon

Insomnia is a common medical problem with significant health and quality of life complications. Rates of detection in clinical settings are poor. Available treatments have not been effectively applied. More consistent inquiry about the problem, a systematic approach to assessment, and improved dissemination of available treatments allows physicians to assist their patients more effectively with these sleep disturbances.

Narcolepsy and Other Disorders of Excessive Sleepiness 597
Merrill S. Wise

Narcolepsy is a neurologic disorder characterized by abnormal boundary control between wakefulness and sleep, which results in chronic sleepiness and symptoms caused by intrusion of rapid eye movement sleep physiology into wakefulness. Symptoms are potentially disabling and most patients are challenged throughout their lives with psychosocial accompaniments that affect many aspects of life. Recently investigators have made significant progress in understanding the molecular genetics and pathophysiology of...
narcolepsy. Treatment is directed at control of symptoms through a combination of medication and behavioral changes. Management requires a comprehensive approach including education and emotional support for patients and their families; close monitoring of response to treatment and for emergence of other sleep disorders; and careful follow-up to identify academic, vocational, or safety issues. Future directions for therapy may use specific hypocretin agonists or primary prevention strategies.

Obstructive Sleep Apnea Syndromes 611
Christian Guilleminault and Vivien C. Abad

Obstructive sleep apnea (OSA) syndromes afflict various age groups. OSA is reported to be more prevalent in middle-aged men compared with women in the United States, but the true prevalence may be higher, because OSA syndromes are underdiagnosed. This article reviews the history of sleep apnea, discusses the clinical presentation of OSA-hypopnea and upper airway resistance syndrome, and presents the pertinent physical examination findings and the results of sleep laboratory testing. Associated significant comorbid conditions and treatment options are reviewed.

Circadian Rhythm Sleep Disorders 631
Kathryn J. Reid, Anne-Marie Chang, and Phyllis C. Zee

Circadian rhythm sleep disorders are characterized by abnormal timing of the major sleep period that results in complaints of insomnia and excessive daytime sleepiness. Evidence suggests that these disorders result from alterations in the circadian timing system and potentially in the sleep homeostatic process. Some of these disorders are familial in nature and may be the result of alterations in the function of circadian clock genes. Treatments are limited for these disorders because of a lack of practical diagnostic tools to assess circadian function, and randomized controlled clinical trials. Further studies of the pathophysiology of circadian rhythm sleep disorders are necessary for the development of improved treatments.

Restless Legs Syndrome and Periodic Limb Movement Disorder 653
Anil N. Rama and Clete A. Kushida

Restless legs syndrome and periodic limb movement disorder are common neurologic entities that may be associated with insomnia and excessive daytime sleepiness. Considerable research has been directed toward elucidating the basic mechanisms and optimizing the management of restless legs syndrome and periodic limb movement disorder. This article reviews the clinical features, epidemiology, hereditary transmission, pathophysiology, management, and treatment strategies for both disorders.
Parasomnias
Mark W. Mahowald

Parasomnias are defined as unpleasant or undesirable behavioral or experiential phenomena that occur predominately or exclusively during the sleep period. Recent clinical and polygraphic analysis has revealed that they are the result of a large number of completely different conditions, most of which are diagnosable and treatable. The parasomnias may be conveniently categorized as primary (disorders of the sleep states per se) and secondary (disorders of other organ systems, which manifest themselves during sleep). This article focuses on the most common parasomnias: disorders of arousal, the rapid eye movement behavior disorder, and nocturnal seizures.

Sleep and Medical Disorders
Richard B. Berry and Susan M. Harding

Sleep disturbance is a common problem in many medical disorders. Impairment of sleep may worsen symptoms in these disorders or even worsen the prognosis. This article reviews the effects of sleep and sleep disorders on selected medical disorders including hypertension, congestive heart failure, coronary artery disease, arrhythmias, asthma, chronic obstructive pulmonary disease, gastroesophageal reflux, renal disease, infectious diseases, selected endocrine disorders, and the fibromyalgia syndrome.

Sleep in Women Across the Life Cycle from Adulthood Through Menopause
Margaret L. Moline, Lauren Broch, and Rochelle Zak

A significant body of literature has endorsed the view that the sleep of women differs in many respects from that of men. Beyond gender differences, however, are questions about sleep within cohorts of women. For example, in adult women ages 20–45 years, there are women with regular menstrual cycles, women taking oral contraceptives, pregnant and lactating women, and women entering menopause. Given that each of these states is associated with a unique hormonal environment, it is important to determine whether there are clinically significant differences in the sleep of women in these phases of life. This article presents what is known currently about the sleep of women from adulthood through menopause and provides recommendations for evaluation and treatment.

Diagnosing and Treating Sleep Disorders in the Older Adult
Liat Ayalon, Lianqi Liu, and Sonia Ancoli-Israel

Although the sleep of adults becomes lighter with age, disturbed sleep is not an inevitable part of aging. The sleep difficulties seen in the older adult are often a result of medical illness, medication use, circadian rhythm disturbances, specific sleep disorders, and
behavioral problems. Treatment of these disorders should always begin with identifying the etiology, followed by a combined treatment of behavioral therapy and, if indicated, pharmacologic therapy.

Medications and their Effects on Sleep
Asher Qureshi and Teofilo Lee-Chiong, Jr.

Medications can appreciably affect the states of sleep and wakefulness by producing daytime somnolence or insomnia. In addition, their use can give rise to nightmares and abnormal behaviors during sleep. These effects can be a primary therapeutic effect of the drug or be an adverse reaction. Knowledge of the common sleep effects of drugs is important in selecting therapy and averting adverse events. This article concentrates on three main effects of drugs: (1) hypersomnolence, (2) insomnia, and (3) abnormal behaviors in sleep or parasomnias.

Sleep Deprivation: Health Consequences and Societal Impact
Mary A. Carskadon

The impact of sleep deprivation can be incurred at many levels, including individual, family, community, and nations at large. In general, the societal impact falls within the spheres of transportation safety, health, and education. This brief article highlights certain recent findings and concerns.

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