Introduction
New Developments for Treating Sleep Disorders

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Estimates of the prevalence of insomnia vary as a function of the specific diagnostic questions asked of the patient, as well as the duration and severity criteria used in the studies to define a case of insomnia. Prevalence estimates range from 10% to 50% of the adult population. The lower prevalence rates are derived from studies that require the insomnia to be chronic and to be associated with daytime consequences. For example, one study[1] examined the 6-month prevalence of "trouble falling asleep, trouble staying asleep, or waking up too early." In addition, respondents had to have this problem for at least 2 weeks, it had to significantly interfere with the patient's life, and it had to have not been the result of medical or psychiatric illness, medication, or drug or alcohol use. Finally, to meet criteria for insomnia, the respondent had to have sought professional help or taken medication for the sleep problem. With this definition, 10% of the respondents met all of the criteria for insomnia. Estimating the 1-year prevalence of simply "difficulty with sleep," 36% of respondents responded positively.[2] Of these individuals, 9% reported that their sleep problems occur on a frequent or regular basis. Finally, a World Health Organization study carried out in 14 countries found that 15% of patients in a primary care setting experienced 2 or more weeks during the past month of trouble falling asleep nearly every night.[3] Based on these and other epidemiologic studies, it can be concluded that 10% to 15% of the adult population have chronic insomnia and an additional 25% to 35% of the population have transient or occasional insomnia.

Some data suggest that the prevalence of insomnia is increasing with time. The National Sleep Foundation estimated the prevalence of difficulty sleeping in a national representative sample both in 1991[2] and 1995.[4] In the 1995 study, the prevalence was 49%, up 13% from the 1991 estimate. This increased prevalence needs further corroboration. Investigators have speculated that the aging of the population, the increase in the frequency of nontraditional working hours (e.g., night shift, rotating shift), and the increase in work-related stress all contribute to the increasing prevalence of insomnia.

Epidemiologic research has also identified specific groups that are at increased risk for insomnia. Both female sex and older age are associated with increased rates of reported sleep difficulty. Virtually all of the investigations cited above indicated that women are about 1.3 times more likely than men to report insomnia-like sleep problems. This sex difference, however, is generally small or nonexistent before the age of 40. Studies that include samples spanning a wide age range find that the elderly (those older than 65 years) generally had prevalence rates of sleep difficulty approximately 1.5 times higher than those of individuals 65 years and younger. Studies specific to older adult populations provide consistent data. A study[5] of a rural community sample, with subjects aged 66 to 97 years, showed that approximately 50% had at least one complaint of insomnia-like symptoms occurring "sometimes" or "usually." When the estimate was restricted to those stating they "usually" have one of the complaints, prevalence fell below 20%. Another study[6] used interviews to examine sleep problems in 3 community cohorts of subjects older than 65 years. In that study, 42.7% of the sample reported sleep difficulty "most of the time."

Aside from chronicity, insomnia can also be classified by etiology as well as the specific nature of the sleep symptom. Studies[7,8] attempting to identify the relative prevalence of insomnia disorders have consistently reported that insomnia secondary to a psychiatric disease is the most common diagnostic entity, accounting for complaints in 30% to 50% of patients. However, both of these are clinic-based studies. Since only a minority of insomnia sufferers seek medical attention, the relative prevalence of insomnia disorders in the general population has yet to be determined systematically. Studies have attempted to look at the prevalence of the specific symptoms of insomnia, i.e., difficulty falling or staying asleep or awakening too early, and found mixed results. The lack of consistency of these data can be attributed to 2 factors. First, many patients have more than one problem or have a general dissatisfaction with the quality of their sleep. Second, even among patients who have a specific sleep problem, we do not know the stability of this problem over time. It has been reported that younger indi-

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Presented at the symposium "New Developments for Treating Sleep Disorders," which was held March 24, 2000, in Chicago, Ill., and supported by an unrestricted educational grant from Wyeth-Ayerst Laboratories.

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viduals have more difficulty with sleep initiation, while the elderly have more difficulty with sleep maintenance. However, systematic work relating different symptoms to specific diagnostic categories is needed. For example, it is possible that difficulty with periods of prolonged wakefulness (regardless of time of night) may be associated with circadian rhythm disorder, psychiatric disorder, or behavioral problems. On the other hand, frequent nocturnal awakenings may be associated mostly with medical disorders (e.g., those associated with pain and dyspnea).

Regardless of the type of insomnia, compelling evidence suggests that insomnia is underrecognized, underdiagnosed, and undertreated[2,9,10] and occurs despite the increased data on the negative consequences of insomnia and the availability of effective treatments.

This symposium and its supplement are intended to further highlight the new research developments in the understanding of insomnia and its treatment. As a first step in achieving this goal, it is important to gain an appreciation for normal sleep. Sleep is an active process. It can best be understood by defining the fluctuations in a series of neurotransmitters, including serotonin, norepinephrine, histamine, acetylcholine, and γ-aminobutyric acid. The benzodiazepine receptor complex is the site of action of most sleep-promoting medications. The article by Dr. Mendelson presents an up-to-date review of neurotransmitters and sleep, as well as the neurotransmitters involved in insomnia pharmacotherapy.

On a more clinical level, the article by Dr. Erman presents an overview of sleep architecture. In addition to understanding normal sleep architecture, appreciating change in sleep staging throughout development and aging can provide insight into the function of various sleep stages. For example, understanding the relation between decline in deep (stages 3 and 4) sleep and increase in insomnia would lead to a better understanding of insomnia pathology as well as treatment, such as the clinical implications of the differential effects of benzodiazepine receptor agonists that do and do not suppress stages 3 and 4.

Regardless of insomnia type, comprehensive sleep, medical, and psychiatric assessments are critical in evaluating patients presenting with insomnia. The article by Dr. Doghramji offers a primary care perspective for insomnia patients. It provides a structure for the differential diagnosis of insomnia and also defines the key elements of a sleep history and a sleep diary needed to identify the various sources of insomnia. In doing so, the article provides a structure for both pharmacologic and nonpharmacologic treatment approaches. The article by Dr. McCall provides an approach for treating an insomnia patient from a psychiatric perspective. Insomnia is a cardinal symptom of many psychiatric disorders, and the interrelationship of insomnia and psychiatric disorders is complex. Recent data demonstrate that insomnia is associated with an increased risk of psychiatric disorders.[11,12] Further, for patients with depression, the coexistence of insomnia increases the risk of negative outcomes.[13] The increased risk of depression is only one of the negative consequences of insomnia. Dr. Benca's article addresses the relation between insomnia and psychiatric disorders, medical disorders, health care utilization, increased accidents, cognitive impairment, and overall quality of life. Importantly, this article also addresses the impact of treatment on these parameters. Finally, Dr. Richardson's and my article defines further research initiatives in understanding insomnia and its treatment. We identify 3 areas for future work: understanding the mechanism of insomnia, the adverse outcomes seen in insomnia, and the mechanism of actions of benzodiazepine receptor agonists in terms of their effects on sleep and waking function.

In summary, insomnia is a common disorder that is associated with significant impairments. Despite the availability of safe and effective treatments and the demonstrated negative consequences associated with insomnia, its continued lack of recognition, diagnosis, and treatment is unacceptable. It is the aim of this supplement to heighten awareness of insomnia, thereby improving the quality of life of a significant segment of our population.

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