

Sleep Health Newsletter™

Spring 1999

David P. White, M.D., Editor

Dear colleague,

Welcome to the inaugural issue of the *Sleep Health Newsletter™*.

As editor, I am committed to making this newsletter an informative, timely and easy-to-read publication focused on the latest innovations -- both diagnostic and therapeutic -- in the field of sleep disorders.

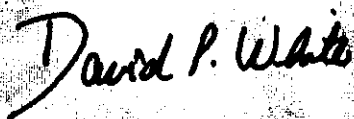
Each issue will contain three sections: (1) An original feature article authored by an experienced physician in the field of sleep medicine; (2) A case study; and (3) Selected abstracts from the recent medical literature pertaining to sleep disorders.

The intent of this newsletter is to help primary care physicians and other healthcare professionals stay up-to-date on the latest diagnostic techniques and therapeutic regimens that may benefit their patients with sleep disorders.

If you have suggestions about what subjects future quarterly issues ought to contain, or if you would like to order extra issues of this newsletter, or perhaps add a colleague's name to our mailing list, we encourage you to do so by calling 617-332-0101, ext. 17, and ask to speak with Assistant Newsletter Editor, Steve Danehy, of Ronald Trahan Associates, (RTA) Inc.

I certainly hope that this newsletter will be helpful to you in diagnosing, treating and supporting your patients with sleep disorders.

Sincerely,



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"An Overview of Sleep Disorders"

Author: Giora Pillar, M.D., Ph.D.

Although interest in sleep and dreams has existed since the dawn of history, it has only been in the last 20 to 30 years that physicians have recognized sleep disorders with any frequency and only in the last 15 to 20 years that sleep laboratory evaluations have been commonly available. There were two main breakthrough discoveries in the sleep field that have drawn these changes: one was the discovery of specific changes in brain electrical activity during sleep (Hans Berger, 1928), and the other was the discovery of REM sleep (Aserinsky and Kleitman, 1953). These led to the current recognition of 5 stages of sleep; stage I: drowsiness (wake-sleep transition); stage II: light sleep; stage III/IV: deep (slow-wave) sleep, and REM sleep (Rapid Eye Movement sleep, in which most of the dreams occur). In addition, very important studies have shown that sleep is a necessity of life, and prolonged total sleep deprivation results in death when studied in animals. Rats die after 3-4 weeks of total sleep deprivation, although the cause of death remains unclear. The effect of chronic partial sleep deprivation (either in the form of diminished sleep time or due to sleep disorders) is the subject of ongoing studies. However, it seems relatively clear that sleep deprivation results in decreased performance (both cognitive and physical) and diminished emotional stability. Whether chronic sleep loss affects physical health is unclear at this time. However, it is quite clear that quality of life deteriorates secondary to sleep disorders. As a result, primary care physicians should make every effort to identify and treat sleep disorders as this can have a substantial impact on the well being of the affected individual.

Currently, in approaching the patient with a sleep disorder, most complaints can be grouped into one of three general categories: excessive daytime sleepiness (hypersomnolence), inability to initiate or maintain sleep (insomnia), and undesired events during sleep (parasomnias).

1. EXCESSIVE DAYTIME SLEEPINESS (Hypersomnolence)

A normal individual obtaining adequate sleep should be able to maintain wakefulness during the day with little to no difficulty. When such an individual consistently falls asleep when not actively stimulated or in passive situations (watching television, reading, theater, driving), this likely represents a clinical problem. It should however be distinguished from fatigue, which is seen in many medical disorders (hypothyroidism, Addison's disease, anemia, heart failure, rheumatic disorders or any chronic illness condition).

cont. on pg. 2

David P. White, M.D.

Dr. White is an Associate Professor of Medicine at Harvard Medical School, past President of the American Sleep Disorders Association (ASDA) and, through his position at Boston's Brigham & Women's Hospital, the Medical Director of Sleep HealthCenters® LLC.

An Overview of Sleep Disorders Giora Pillar, M.D., Ph.D.

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People with hypersomnolence, as opposed to fatigue, often fall asleep unintentionally. Once excessive sleepiness has been confirmed, the first thing to be ruled out should be inadequate sleep time (chronic insufficient sleep), which can be determined from the history. Most people require at least 7 hours of sleep per night and often closer to 8. If the patient is sleeping less than this, total sleep time should be increased either before other diagnoses are considered or while other possibilities are being explored. Severe depression and drugs causing sleepiness should also be excluded by a careful history. If sleep time seems adequate, sleep disorders from the hypersomnia group should be suspected. These include sleep apnea syndrome, narcolepsy, primary CNS hypersomnolence, periodic limb movements of sleep, and some more rare forms of hypersomnolence such as post-traumatic hypersomnolence, periodic hypersomnolence (Kleine-Levin Syndrome, idiopathic recurring stupor), or post-infectious hypersomnia. However, only sleep apnea will be briefly discussed here.

Obstructive Sleep Apnea Syndrome (OSA), which is the most prevalent of these disorders (affecting approximately 4% of adult males and 2% of adult females), is characterized by the recurrent collapse of the pharyngeal airway during sleep which generally requires arousal to re-establish airway patency and resume breathing. Thus, the patient suffers from both sleep fragmentation (frequent arousal) and the recurrent hypoxemia and hypercapnea resulting from the respiratory pause.

As a result, the potential adverse consequences can be both decreased neurocognitive function (sleepiness) and possibly an increase in cardiovascular complications (systemic and pulmonary hypertension, cor pulmonale, arrhythmias, myocardial infarction and stroke). Therefore, it is important to recognize these patients, and subsequently diagnose and treat them. The treatment of obstructive sleep apnea includes weight loss, maximizing nasal patency, avoidance of alcohol or sedatives near bedtime, and

more intensive approaches such as nasal CPAP, dental appliances and upper airway surgery. Treatment of OSA has been shown to improve both quality of life and may reduce medical complications.

2. INABILITY TO SLEEP (Insomnia)

When considering insomnia, patients are generally classified into acute and chronic cases. The acute form is often a normal response to physical or emotional stress and is amenable to a brief course of a hypnotic medication in addition to behavioral measures. Chronic insomniacs, on the other hand, experience longstanding difficulties falling asleep, frequent awakenings with trouble returning to sleep, or early morning awakenings. As their sleep at night is ineffective, these patients are often groggy during the day and actually suffer from a chronic state of fatigue, which is associated with decreased cognitive performance, mental and behavioral changes, and lower quality of life. About 7-10 percent of adults complain of chronic insomnia with a higher prevalence in women compared to men. This disorder also increases with age. Causes of chronic insomnia vary, and may be secondary to psychological or psychiatric disease, medical problems, drug induced, or a product of poor sleep hygiene, circadian rhythm disorders, environmental factors or (as in most of the cases) a combination of these. Each case of insomnia should be individually evaluated, diagnosed and treated accordingly.

3. PARASOMNIA

(Undesired events during sleep)

The parasomnias are undesirable events which occur exclusively during the sleep period, or which are exacerbated by sleep. Although there are many specific parasomnias, only a few of the more common ones will be discussed here. Sleep terrors, sleep walking and confusional arousals are generally grouped as disorders of arousal. Sometimes sleep talking is included in this group as well. These events generally occur out of deep non-rapid eye movement sleep (Stages 3 and 4) and, thus, take place in the first third of the night when these sleep

stages are most common. The patient is believed to be in a state between sleep and waking with some behavioral and EEG characteristics of each. The events occurring during sleep walking and sleep talking are obvious in the names. Sleep terrors on the other hand are characterized by the sudden arousal from sleep with intense fear manifested by heightened sympathetic activation (tachycardia, hyperpnea, etc.). Once fully alert, the patient is generally amnesic to the sleep event. Disorders of arousal tend to be familial, and frequently worsen following sleep deprivation.

REM behavior disorder, in contrast to the disorders of arousal, evolves out of REM sleep and, thus, tends to occur in the later third of the night when REM sleep is most common. One of the principle characteristics of REM sleep is skeletal muscle paralysis (atonia), the neurophysiology of which has been reasonably well characterized. In patients with REM behavior disorder, the atonia of REM sleep is absent and, thus, the patient can move about presumably in response to events occurring in a dream or nightmare. Such movements can, on occasion, be quite violent.

In summary, the field of sleep medicine, hardly recognized a few decades ago, is growing rapidly with the recognition of numerous sleep disorders and their consequences. Currently in many centers the practice of sleep medicine is still multidisciplinary involving general internists, pulmonologists, neurologists, psychiatrists/psychologists, pediatricians, ENT-surgeons and more. In the future, however, sleep medicine will likely have its own specialists that will fully integrate these multiple disciplines thereby simplifying access to appropriate care. ■

Dr. Pillar is a Fulbright Scholar and a Fellow in the Sleep Disorders Program at Brigham and Women's Hospital in Boston. Dozens of his studies have been published in peer-reviewed journals such as *American Journal of Respiratory and Critical Care Medicine* and *Journal of Applied Physiology*.

Case Study: Obstructive Sleep Apnea

Insomnia/Hypersomnolence Case Robert Fogel, M.D.

Initial Evaluation:

A 37 year old female was referred by her Primary Care Physician for poor sleep quality as well as unrefreshing sleep and increased daytime somnolence over the past 5 years.

The patient had a long history of anxiety associated with sleep due to past childhood experiences where she was put to bed and remained awake for several hours. Her routine sleep schedule was variable, and she went to bed anywhere from 10:30 PM to 3:00 AM. She had no difficulty with initial sleep onset, falling asleep within 10 minutes. She arose anywhere from 5:00 AM to 9:00 AM, and ended up getting approximately 6-7 hours of sleep per night. She stated that she snored but this was not excessive.

When she woke up in the morning she complained of a dry mouth and occasionally a sore throat. Her sleep was unrefreshing and she found it difficult to get out of bed due to "exhaustion." She also knew she was kicking during sleep, and once woke up in the morning on the floor without actually being aware that she got up out of bed in the middle of the night.

During days the patient, in general, did not nap, but could fall asleep quite readily while inactive. She also stated that she found it hard to remain awake while driving long distances. She consumed 1 cup of coffee and 2 cups of tea per day. Her current weight was 340 pounds with some recent fluctuation.

Past Medical History:

1. Hypothyroidism
2. Depression
3. Irritable Bowel Syndrome

Medications:

1. Thyroxine
2. Prozac

Past Surgical History:

- Deviated septum repair
- Cholecystectomy

Physical Examination:

Obese female in no apparent distress. Exam was notable for prominent tonsils and an enlarged and elongated uvula with a crowded oropharynx.

Discussion 1:

This case exemplifies the multidisciplinary nature of sleep medicine. The patient's sleep problem appeared to be multifactorial. Sleep apnea was suspected given the anatomy of her oropharynx, dry mouth in the morning, and daytime somnolence. However, other causes of daytime fatigue needed to be considered in the differential diagnosis. This included hypothyroidism, poor quality sleep due to either an irregular sleep-wake schedule or possibly periodic limb movements of sleep. In addition, the patient could have a component of psychophysiological insomnia as she had some anxiety related to bedtime, and, finally, the patient's depression could also be contributing to her symptomatology.

Therefore, it was recommended that she undergo a polysomnogram (PSG) to rule out sleep apnea as well as other primary disorders of sleep such as PLMS. In addition, PSG might provide data regarding her depression as people with inadequately treated depression frequently demonstrated a short REM-onset latency with increased amount of REM sleep and REM density.

The patient was instructed extensively on how to improve her sleep hygiene. This included the use of strict sleep-wake schedules. In addition, should she be unable to sleep, she was to go into another room and either read a book or watch television until she became drowsy and then again return to bed. She was also advised to avoid caffeinated beverages past 12:00 in the afternoon.

Polysomnography revealed that evidence of severe obstructive sleep apnea (OSA) with 66 apneas plus hypopneas per hour of sleep associated with moderate oxygen desaturation. Nasal CPAP at a pressure of 7 cm of water abolished all disordered breathing and was associated with improved sleep architecture.

At initial follow-up one month after initiating CPAP she was doing dramatically better. Even though she was using CPAP reg-

ularly, she did complain of frequent nocturnal awakenings during which she occasionally removed the mask. As it was felt that she was not obtaining the maximal benefit of CPAP therapy, Trazodone was added to help her adjust to this therapy.

At a second follow-up visit 2 months later she was very happy with her sleep, no longer sleepy during the day, and she stated her mood had improved substantially. She is currently on CPAP 7cmH₂O plus Trazodone 50mg at bedtime, free of sleep complaints.

Discussion 2:

This case demonstrates the multifactorial nature of many sleep complaints. In this case, severe sleep disordered breathing was associated with a component of insomnia. The limb movements she initially complained of were associated with the apnea and were not an independent disorder. Hypothyroidism and depression did not appear to be contributing to daytime somnolence in this case. Initial difficulty tolerating CPAP is common, in this case, probably due to a superimposed insomnia. Once it was controlled with Trazodone, sleep quality dramatically improved and her somnolence resolved.

While in this case diagnosis and effective therapy were accomplished relatively quickly, this is obviously not always the case. Optimal CPAP compliance is frequently difficult to achieve, and the treatment of insomnia is often prolonged and difficult. Examples of such cases will be presented in future issues of this newsletter. ■

Dr. Fogel, a graduate of the Columbia University College of Physicians and Surgeons, recently concluded a clinical fellowship in Pulmonary and Critical Care Medicine at Massachusetts General Hospital. He now serves as a Fellow in the Sleep Disorders Program at Brigham and Women's Hospital in Boston.

The Sleep Health Newsletter is published by Sleep Health Centers[®], LLC as an educational service to healthcare professionals. The Editor invites submissions of original work for consideration in future issues. Manuscripts of 1500 words or less should be mailed to Assistant Newsletter Editor, Steve Danehy, c/o RTA, 2345 Washington St., Newton Lower Falls, MA 02462.

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Sleep Health Newsletter™

Abstracts of Note ...

SLEEPINESS - NORMAL AND PATHOLOGIC

Dose-response Relationship Between Sleep Duration and Human Psychomotor Vigilance and Subjective Alertness

Megan E. Jewett,¹ Derk-Jan Dijk,¹ Richard E. Kronauer,² and David F. Dinges³

(1) *Circadian, Neuroendocrine and Sleep Disorders Section, Division of Endocrinology, Department of Medicine, Harvard Medical School, Brigham and Women's Hospital, Boston, Mass.*; (2) *Division of Engineering and Applied Sciences, Harvard University, Cambridge, Mass.*; (3) *Unit for Experimental Psychiatry, Division of Sleep and Chronobiology, Department of Psychiatry and Center for Sleep and Respiratory Neurobiology, University of Pennsylvania School of Medicine, Philadelphia, Penn.*

Summary: Although it has been well documented that sleep is required for human performance and alertness to recover from low levels after prolonged periods of wakefulness, it remains unclear whether they increase in a linear or asymptotic manner during sleep. It has been postulated that there is a relation between the rate of improvement in neurobehavioral functioning and rate of decline of slow-wave sleep and/or slow-wave activity (SWS/SWA) during sleep, but this has not been verified. Thus, a cross-study comparison was conducted in which dose-response curves (DRCs) were constructed for Stanford Sleepiness Scale (SSS) and Psychomotor Vigilance Task (PVT) tests taken at 1000 hours by subjects who had been allowed to sleep 0 hours, 2 hours, 5 hours or 8 hours the previous night. We found that the DRCs to each PVT metric improved in a saturating exponential manner, with recovery rates that were similar [time constant (T)≈2.14 hours] for all the metrics. This recovery rate was slightly faster than, though not statistically significantly different from, the reported rate of SWS/SWA decline (T≈2.7 hours). The DRC to the SSS improved much more slowly than psychomotor vigilance, so that it could be fit equally well by a linear function (slope = -0.26) or a saturating exponential function (T=9.09 hours). We conclude that although SWS/SWA, subjective alertness, and a wide variety of psychomotor vigilance metrics may all change asymptotically during sleep, it remains to be determined whether the underlying physiologic processes governing their expression are different.

Key words: Sleep; dose-response curve; cognitive performance; alertness; model; psychomotor vigilance; sleep homeostasis

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Winter 2000 David P. White, M.D., Editor

Dear colleague,

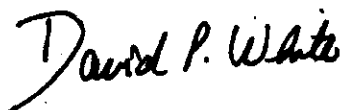
Our latest issue of the Sleep Health Newsletter™ focuses on the most common of all sleep disorders, chronic insomnia. The feature article centers on the symptoms of insomnia, as well as its prevalence, diagnosis, causes and treatments. Our case study highlights the treatment of a 68-year-old woman who has had difficulty sleeping since her late 20's. The topic of insomnia among the elderly is also examined in this quarter's featured abstract.

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"Chronic Insomnia"

Author: Atul Malhotra, M.D.

Insomnia is a complaint of unsatisfactory (inadequate amount or quality) sleep, associated with daytime anxiety, mood alterations or difficulty with concentration. Insomnia is the most common sleep complaint, with up to one-half of all North American adults reporting these symptoms within the last year. Insomnia is two to three times more common in women and at least two times more common in those over age 65. Patients may complain of difficulty falling asleep, frequent or prolonged awakenings during sleep, early morning awakenings or non-restorative sleep. As insomnia represents a symptom, appropriate therapy demands a specific diagnosis. For both diagnostic and therapeutic purposes, insomnia can be divided into short term (several days to weeks) and chronic (longer than one month). This discussion will focus on chronic insomnia.

The differential diagnosis of chronic insomnia includes depression/anxiety disorders, Restless Leg Syndrome (RLS), conditioned insomnia, poor sleep hygiene, and certain medications. Medical conditions such as pain, asthma, gastro-esophageal reflux disease, etc., are also often associated with difficulty maintaining sleep, which often persists until the underlying medical condition has resolved. In addition, circadian rhythm abnormalities such as advanced sleep phase syndrome (ASPS) and delayed sleep phase syndrome (DSPS) as well as shift work lead to an inability to sustain sleep. Primary insomnia is a diagnosis of exclusion. Chronic insomnia is classically divided into initiation insomnia and sleep maintenance insomnia according to the chief complaint, but this distinction is somewhat artificial as individuals may go through periods of both.

Depression and anxiety are both extremely prevalent (up to 15% lifetime risk) in the general population as well as among those with medical illness and may account for up to one-half of all chronic insomnia. Depression may be missed without careful questioning (e.g., suicidal ideation, decreased appetite, guilt, etc.). Effective treatment with an SSRI (e.g., fluoxetine, sertraline, paroxetine), cognitive behavioral therapy or anxiolytic medications (e.g., clonazepam) usually normalize subjective sleep complaints, although polysomnographic abnormalities may remain.

Restless Legs Syndrome (RLS) is a prevalent cause of chronic insomnia, but was the subject of a recent SleepHealthCenter Newsletter, and will not be discussed further here.

Conditioned insomnia (also known as psychophysiological insomnia) refers to the inability to sleep as a result of anxiety about difficulty sleeping.

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David P. White, M.D.

Dr. White is an Associate Professor of Medicine at Harvard Medical School, past President of the American Sleep Disorders Association (ASDA) and, through his position at Boston's Brigham & Women's Hospital, the Medical Director of Sleep HealthCenters® LLC.

Chronic Insomnia Author: Atul Mulhotra, M.D.

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The initial insomnia is triggered by an acute stress that is perpetuated by an increasing focus on the inability to sleep well. Individuals with conditioned insomnia tend to become progressively more concerned about their inability to sleep, thus creating a vicious cycle. Effective treatments include both stimulus control therapy and hypnotics as required. The alleviation of exaggerated concerns regarding the effects of insomnia is crucial. Limiting time in bed and inducing mild

sleep deprivation (sleep restriction) is a commonly used treatment which allows these individuals to fall and stay asleep more easily. Sleep specialty consultation is often recommended.

Poor sleep hygiene is also a common cause of chronic insomnia. This term is used to describe individuals with social behaviors or habits which contribute to poor sleep quality. They should be offered simple instructions to gradually adjust their lifestyles to promote better sleep.

Certain medications can contribute to insomnia. Pulmonary medications such as corticosteroids, theophylline and, potentially, beta-adrenergic stimulants, can contribute to an inability to sleep. About 20% of patients taking SSRIs will report treatment-emergent insomnia. Lowering the dose or adding a sedative-hypnotic may be of value, whereas switching to another SSRI is usually not helpful. A careful medication history can help avoid unnecessary investigations for sleep-related complaints.

Medical illnesses commonly contribute to poor sleep quality. For example, pain is an extremely prevalent cause of difficulty sleeping. Among pulmonary patients, poorly controlled asthma can commonly present with nocturnal dyspnea, and should not be mistaken for a primary disorder of sleep. Similarly, reflux is more common in

the supine posture and can present with nocturnal symptoms, but is often indistinguishable from other causes of insomnia based on history alone. Cheyne-Stokes respiration (periodic breathing in a crescendo-decrescendo pattern) can cause repetitive arousals from sleep, particularly among

Sleep Hygiene Recommendations for Insomnia

1. Remove alarm clock from bedroom
2. No caffeine or stimulants after 12 noon
3. No daytime naps
4. Fixed bed time and wake time
5. Don't lie awake in bed for more than 20 minutes
6. No bed activities other than sleep and intercourse
7. Worry time - assign daytime period to make a list of stressors/concerns
8. Goal 7-8 hours of sleep per night
9. Hypnotic as required after 2-3 nights of poor sleep

those with reduced left ventricular ejection fraction and congestive heart failure. These awakenings, which typically occur at the peak of hyperpnea, often respond to

afterload reduction, CPAP therapy, oxygen, and/or theophylline. Multiple other medical conditions may contribute to sleep disturbances as well.

Primary insomnia remains a diagnosis of exclusion. As the name suggests, the cause of this condition is completely unclear. Polysomnography can be helpful in some cases to exclude underlying causes and to determine objectively the patient's quantity of sleep, e.g., in cases of a disparity between the documented sleep and the amount of sleep reported by the patient (sleep state misperception). Primary insomnia patients are treated with behavioral therapies and hypnotics, but response can be variable. Although benzodiazepines may be necessary in these patients on occasion, their chronic use has been associated with an increased risk of motor vehicle accidents. Sleep specialist consultation is recommended for primary insomnia.

ASPS (advanced sleep phase syndrome) and DSPS (delayed sleep phase syndrome) are circadian rhythm abnormalities of unknown etiology. ASPS is typically a condition of older individuals who habitually go to bed early and wake up early. Conversely, DSPS commonly occurs in teenagers and presents with a history of going to sleep late and waking up late. The role of genetic versus behavior as a cause of

these disorders remains unclear. Treatment for these conditions should be reserved for those who perceive their sleep habits as unpleasant or undesirable. While data are somewhat sparse, ASPS can be treated with bright light exposure at night, and the avoidance of bright light in the morning. DSPS, conversely, can be treated by avoiding light at night, and promoting bright light exposure in the morning. Melatonin at night may be helpful in DSPS as a mild hypnotic and to shift the circadian cycle earlier.

Insomnia is a common complaint among patients visiting primary care physicians as well as sleep specialists. An organized approach to these patients can greatly improve patient satisfaction and reduce the need for long term or inappropriate hypnotic therapy.

Dr. Malhotra earned his degrees at the University of Alberta, in Edmonton, Canada. He is a board certified specialist in the study of pulmonary medicine and board eligible in sleep medicine and critical care medicine. He is currently a pulmonary/critical care fellow at Brigham and Women's Hospital in Boston.

Cynthia Dorsey, Ph.D., is a Clinical Psychologist at McLean Hospital in Belmont, Massachusetts, and Instructor in the Department of Psychiatry at Harvard Medical School. She has been board certified in Sleep Medicine since 1991 and is a past board member of the American Academy of Sleep Medicine. Through her position at McLean Hospital, she is Director of the Sleep HealthCenter® in Bedford, Massachusetts.

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Case Study: Insomnia Cynthia Dorsey, Ph.D.

Initial Evaluation:

A 68-year-old woman was referred for treatment of chronic insomnia, which began intermittently in her late 20's after the birth of her first child. Her insomnia increased in the context of stressful life events, including caring for her ailing parents, her own surgery for breast cancer, death of a friend, etc., and in more recent years, her sleep had become gradually more disrupted with no obvious precipitating events. At the time of her initial consultation, she routinely experienced difficulty initiating and/or maintaining sleep at least 2-3 nights per week, resulting in a total of only 3-5 hours of total sleep time, followed by fatigue the subsequent day. It sometimes took "hours" to fall asleep or to return to sleep after having awakened.

She kept a regular sleep-wake schedule with a usual bedtime of 12:00-12:30 a.m. and a usual final waketime of 8:00 a.m., but tended to lie in bed awake in the morning for up to an hour. She later napped for a half an hour each afternoon. When she awakened during the night, she tended to get up to use the bathroom, and lie in bed until she was able to return to sleep, if possible. She does not smoke or drink caffeinated beverages. She rarely drinks alcohol.

When asked what went through her mind as she lay in bed during these long periods of wakefulness, the patient responded that she experienced a lot of anxiety and "fear" specifically about her ability to fall asleep or return to sleep after awakenings and about the potential consequences of her sleep disruption. "I am a worrier." She tried to meditate, listen to relaxing music tapes, and read in bed, often to no avail.

She denied symptoms suggestive of primary physiological sleep disorders, such as obstructive sleep apnea syndrome, narcolepsy, or periodic limb movement disorder. She expressed a lot of frustration at her initial interview, complaining that she has "tried everything" for her insomnia, ranging from various herbal remedies, to hypnosis, to relaxation therapies, etc. She wanted to avoid use of hypnotic medications.

Past medical history: 1. Fibromyalgia
2. Hypoglycemia

Physical examination: A physical examination performed by the patient's primary care physician was normal.

Discussion 1:

This patient demonstrates in some ways a classic progression of chronic insomnia over time. Although her insomnia began in her 20's, possibly associated with the sleep disruption and stress related to having young children, it became much more severe during times of stress. The more frustrated she became about her insomnia, the harder she tried to

sleep, the more difficult it became to fall asleep.

Unfortunately, the coping mechanisms often used to deal with the gradual impairment of sleep quality sometimes result in exacerbation of the problem and lead to psychophysiological (conditioned) insomnia. This patient attempted to make up for her sleep loss by lying in bed resting when she awakened in the morning and by taking a compensatory nap later during the day. According to her own admission, these naps and periods of prolonged wakefulness in bed simply led to her frustration and anxiety about not sleeping and heightened her efforts to "try" to sleep, which compounded the problem.

Behavior therapy, involving several specific treatment techniques (e.g., "stimulus control technique") can be effective in reversing maladaptive coping behavior and "reconditioning" behavior and bedroom environment to elicit sleep rather than anxiety and worry. These techniques generally involve avoidance of time awake in bed to lead to more natural, less forced onset of sleep and to condition behavior to a more automatic sleep process. An associated cognitive element involves instruction to the patient on how to think differently about sleep and the consequences of sleep loss. There are sometimes unrealistic expectations about amount or quality of sleep needed and a "catastrophization" regarding the negative impact of sleep loss on next-day functioning.

It was recommended that the patient undergo short-term behavior therapy to treat the psychophysiological element of her insomnia. She began by completing a daily sleep diary to document her baseline sleep-wake schedule and to evaluate any subsequent therapeutic response.

Follow-up: On follow-up 2 and 4 weeks later, the patient was responding well to cognitive-behavior therapy. She was motivated to pursue this type of treatment, both due to her desire to avoid hypnotic medications and her desperation at not having found other effective alternatives for treatment. She completed behavioral assignments consistently and experienced benefit both from the immediate restriction of her time in bed and adjustment of some of her inaccurate thoughts about potential consequences of sleep loss. She continued to experience 1-2 "bad nights" during a week, but awakenings were shorter in duration and she felt more relaxed during the day and more able to cope with sleep loss. She left on a trip to her summer home for several months.

The next follow-up contact was several months later when she telephoned the office feeling "overwhelmed" by a number of consecutive nights of poor sleep soon after her return to her winter home. She was unable to consistently follow behavioral recommendations in this different environment and had become extremely frustrated by this cycle of poor sleep. It was recommended that she consider short-term use of a hypnotic to break this cycle. She initially resisted this idea but eventually followed up and

was prescribed 5mg. of Ambien, which she took for five nights. This was a great relief to her. At the next follow-up session she reported that she was in a "better frame of mind" to continue to pursue behavior therapy for insomnia. During this session she admitted to other issues in her life including a greater sense of loss related to discovering that several of her friends were dying from cancer, her daughter was ill, and she had recently become involved in a course of very involved, painful dental work. She cried in the office, admitted to some decrease in appetite and weight loss, but attributed her depressed mood to sleep loss only. It was recommended that she consider psychotherapy and possibly treatment with anti-depressant medication. She was unwilling to consider treatment with an anti-depressant but did follow-up with a psychotherapist.

During the next follow-up session three weeks later, the patient was feeling more positive about her ability to manage her insomnia. She continues to experience 2-3 "bad nights", but these now involve shorter and less frequent awakenings affording her usually close to 6 hours of total sleep time. She has been following through diligently with behavioral recommendations. She also has had improvement in her ability to cope with feelings of fatigue, irritability, etc., following a night involving sleep loss. She is happy with her improvement in sleep quality, although she would ideally like to increase her total sleep time to 7 hours to feel optimally alert during the day.

Discussion 2:

It is likely that the increased stress and losses in the patient's life, often associated with aging, precipitated an episode of depression, leading to increased sleep disruption. There is a very close, often reciprocal, relationship between depression and insomnia. About half of chronic insomnia cases are attributable to a primary psychiatric disorder, usually depression or anxiety. Depression, as well as insomnia, increases in frequency in older individuals. This patient was unwilling to consider treatment with an antidepressant, but it is likely that improvement in her mood with pharmacotherapy could result in further improvements in sleep. In coexisting depression and insomnia, the choice of monotherapy (use of a sedating antidepressant) or polytherapy (a less sedating agent together with a hypnotic) is a difficult one and tends to be based upon the individual case. If sleep disruption were to continue after her mood and sleep habits improve, a diagnostic polysomnogram might be considered in this older individual. Although she did not have obvious symptoms of sleep apnea or periodic limb movement, these disorders are more prevalent in older individuals.

Abstract of Note ...

Insomnia in the Elderly: Cross-Sectional Comparisons of Polysomnographic Data

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Introduction: Epidemiological studies and population-based surveys have consistently shown that up to 50% of people over the age of 65 experience sleep disturbances; research also suggests that sleep disruptions are associated with poor physical health and depression (Monjan & Foley, 1996). The purpose of the current study was to measure sleep, by polysomnography, of elderly insomniacs who contacted sleep medicine centers seeking treatment for their insomnia, and to examine the effect of age on sleep patterns among insomniacs.

Method: Sleep patterns of 55 elderly patients were assessed by one-night 7-channel polysomnography (30 women and 25 men, mean age = 70, sd = 7.08, range = 60-87 years old). The results of the polysomnographic data were compared to comparable sleep data of 93 normal (noncomplaining) healthy elderly as reported by Vitiello et al. (1997) and to 37 younger (40-60 yrs) insomniac patients.

Results: (1) Sleep patterns of elderly insomniacs: Comparisons of all the objective sleep parameters of elderly insomniacs with non-complaining elderly showed worse sleep among the insomniac patients (see Table 1). (2) Effects of age: Cross-sectional comparisons of elderly insomniacs with younger adult (middle-aged) patients who contacted the sleep center with similar complaints and motivations for treatment, showed that older patients slept less

SLEEP PARAMETERS	normal elderly (non Vitiello, 1997) N=93	elderly insomniacs (eldins) (N=55)	middle-aged insomniacs (midins) (N=37)	normal vs. eldins (93/55)	eldins vs. midins (55/37)
Time in Bed (TIB in min)	459	421	420	n.s.	n.s.
Sleep Latency (SLAT in min)	15	61	43	***	n.s.
Total Sleep Time (TST in min)	385	250	290	***	*
Total Wake Time (TWT in min)	75	114	85	***	*
Sleep Efficiency (SEF in %)	83.8	59.1	70	***	**
No. of Awakenings (no)	8.3	12.9	15.6	**	n.s.
REM Sleep (in %)	16.1	10.0	13.7	***	**
Stage 3-4 Sleep (SWS in %)	10.7	14.4	15.3	**	n.s.
*P<.05 **P<.01 ***P<.001					

time, were awake during the night for longer periods of time and thus their sleep efficiency was significantly lower (see Table 1).

Table 1: Comparisons of PSG sleep data of elderly insomniacs with non-complaining elderly and middle-aged insomniacs. Among elderly insomniacs age was found to be significantly correlated with increasing sleep disruptions, as measured by polysomnography: increase in TIB ($r=.30, p<.05$) and in TWT ($r=.35, p<0.01$), and reduction in SEF ($r= -.25, p<0.05$) and in REM sleep ($r= -.36, p<0.01$).

Conclusions: Polysomnographic data suggest that older insomniacs who seek treatment suffer indeed from objectively worse sleep than comparable non-complaining elderly. The comparisons of older insomniacs to middle-aged counterparts, and the correlations between sleep parameters and age found within the elderly insomniac group, both indicate that advancing age tends to exacerbate insomnia in older people.