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Sleep disorders and their effects on individual and family functioning: the role of the social worker

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DOI: <https://doi.org/10.31979/etd.8hdg-ndww>
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**SLEEP DISORDERS AND THEIR EFFECTS ON INDIVIDUAL
AND FAMILY FUNCTIONING: THE ROLE OF THE SOCIAL WORKER**

A Thesis

Presented to

the Faculty of the School of Social Work

San Jose State University

In Partial Fulfillment of the Requirements

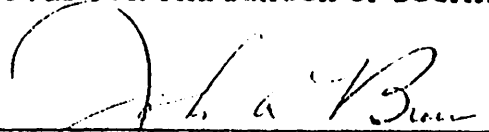
for the Degree Master of Social Work

By

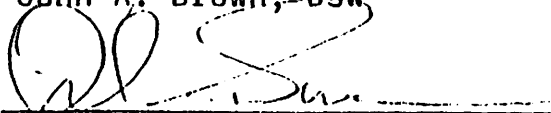
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August 1986

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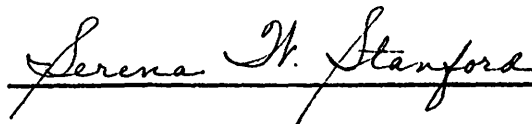


Al Swanson



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APPROVED FOR THE UNIVERSITY



Acknowledgements

I would like to express my appreciation to my committee members, Dr. John Brown, Linda Gasner, and Al Swanson for their support and many helpful suggestions in the preparation of this thesis. I am particularly grateful to, and wish to acknowledge with the deepest thanks, Wesley Seidel, for his continuing encouragement and for standing by me.

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Chapter 1

Introduction

Purpose of the Study

The purpose of this thesis is to orient social workers to the role they might play in the field of sleep disorders. Information will be presented in an attempt to illustrate the effects of sleep-wake disorders on the client, both on the individual and family levels. This is an area which is increasingly receiving professional attention.

Problem Statement

Disturbed sleep and less than adequate wakefulness are inestimable sources of human misery in our society. Numerous individuals have had their chances for predictable psychosocial functioning, satisfying family life and occupational achievement destroyed or irreparably altered by the symptoms of sleep and arousal disorders. Inasmuch as social workers work with people who have sleep disorders, they will need requisite knowledge and skills for effective intervention.

Rationale for Study

It is important to identify the role of the social worker in working with sleep disorders, particularly in view of the fact that this is an area of recent development and the social worker's role has not yet been clearly defined.

An increasing need exists for the social worker to become educated in the field of sleep-wake disorders. One out of every four persons is affected by sleep disorders which may cause or interact with psychosocial problems. An excellent possibility exists that dissemination of appropriate information in this area will be translated into practical benefits for the client in the form of more effective diagnosis, treatment and management of their problems. When people list their major personal concerns, sleep is often at or near the top. For this reason, knowledge of sleep-wake disorders deserves the attention of social workers. Discoveries in this area significantly promise to improve the quality of life and provide further insight into the fundamental nature in which the human functions.

Significance of the Study to the Social Work Profession

and the School of Social Work

It is a universally accepted fact that all people sleep and that sleep disorders have been found in people throughout the world. The field of social work has not yet benefited from or contributed to the expansion of

knowledge in the area of sleep-wake disorders. A major effort is needed to develop the proper approach to and integration of these problems into the social worker's knowledge base. The past decade has witnessed a rapid expansion of knowledge about sleep disorders. Over one hundred accredited sleep disorders centers and several hundred smaller facilities have been established since 1976. Clinical services are now available in many areas of the country and recognition by medical insurance carriers has been achieved. The field of sleep disorders is now included in the curriculum of most medical schools. Therefore, social workers will encounter clients with sleep disorders and are in need of knowledge and skills for effective intervention in this problem area.

Objectives of the Study

The objectives of this thesis are:

1. To assess the effects of sleep disorders on the psychosocial functioning of both the individual and the family.
2. To identify the role of a social worker in the field of sleep-wake disorders medicine.
3. To provide knowledge which will enable the social worker:
 - a. to recognize and identify symptoms
 - b. to make appropriate referrals

- c. to carry out intervention strategies
- d. to make a knowledge contribution to the profession as the area of sleep disorders medicine will, in all probability, become a future source of employment for social workers, and social workers will be working with clients who have sleep disorders.

Location of the Study

Research for this study was done at the Stanford University Sleep Disorders and Research Center. Established in 1972 as the first of its kind in the world, the Stanford Sleep Center continues to provide world leadership and to set the standard for similar enterprises or institutions. The Sleep Center is an academic program housed within the Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine.

The Stanford Sleep Disorders Clinic and Research Center has three primary functions: (1) patient care, which focuses on diagnosis and treatment of sleep disorders; (2) teaching and training of medical students, residents and various other health professionals in the area of sleep disorders medicine; and (3) carrying out research for the purpose of advancing knowledge of basic sleep mechanisms, functions and the vast area of sleep pathology.

The Sleep Center at Stanford occupies approximately ten thousand square feet of space in eight separate locations on or near the Stanford University campus. In addition, a large research program is housed each summer in the Lambda Nu Fraternity House (Sleep Camp), with a square footage of twelve thousand feet. Over thirty salaried clinicians, scientists and staff are employed by the Center, as well as twenty-five hourly part-time employees.

The Sleep Disorders Clinic annually diagnoses and treats over eight hundred patients. There are currently more than ten ongoing research programs which produce over thirty scientific publications yearly. An estimated fifty different experiments are presently being conducted. These include areas such as schizophrenia, depression and alcohol which are studied in collaboration with the V.A. Hospital Laboratory in Palo Alto. A separate seven-bedroom Laboratory of Nychthemeral Pharmacology, located on the campus, studies insomnia, normal sleep, chronobiology, psychopharmacological drugs, development of ambulatory monitoring devices, jet lag, shift work, and environmental disturbances of sleep.

Sleep studies of heart-lung transplant patients are ongoing at the Stanford Medical Center's critical care unit. Sleep in relation to nocturnal penile tumescence, urology, pediatrics, ear/nose/throat and cardio-pulmonary functions are also being examined. Narcolepsy, including

aspects such as coping skills, counseling, genetics, drug research, neurochemistry and neurophysiology are studied. Research programs dealing with aging, Alzheimer's disease, sleep apnea, sudden infant death, respiration and lucid dreaming are also in progress.

Animal studies take place at the Sleep Center's animal laboratory, which also houses the world's only colony of narcoleptic dogs. Another facet of the Stanford Sleep Center is its sleep disorders training program, the only one offered in this country. Physicians and health professionals from all over the world enroll in two-week intensive courses offered at Stanford.

A Teaching Nursing Home project, an extensive computerized data base, and publication of the internationally circulated journal of clinical and basic sleep research, Sleep, are also components of the Stanford Sleep Disorders and Research Center. On the national level, Stanford's Sleep Center has been the leader in areas of policy formulation and standardization through conception of Project Sleep (a nationally funded governmental program) and The Association of Sleep Disorders Centers.

The annual budget of the Stanford University Sleep Disorders and Research Center is approximately \$2,600,000 (\$1,600,000 research and \$1,000,000 clinical). The Sleep Disorders Clinic generates 60% of the total income for all the psychiatry clinics combined. Support for the various activities comes from patient care income, federal grants, foundation and

industry grants, gifts and donations. Approximately 15% of the Sleep Center budget is expended solely in the service of fund-raising.

The Stanford Sleep Center was founded and is directed by William C. Dement, M.D., Ph.D. At Stanford since 1963, Dr. Dement, professor of Psychiatry and Behavioral Sciences, is recognized internationally as the pioneer and authority on basic and clinical sleep research. He has been primarily responsible for the establishment of sleep disorders as a major discipline in American medicine.

In the early 1950's, with colleagues at the University of Chicago, Dr. Dement discovered that sleeping human volunteers revealed episodes of rapid, jerky, synchronous eye movements. His research revealed that such eye movements occurred only in association with a particular stage of brain wave activity and this phenomenon appeared with regularity every ninety minutes throughout the night. He distinguished these periods from the remainder of sleep and coined the term "rapid eye movement" (REM) sleep, which indicates the state of dreaming.

In addition to Dr. Dement's research and contributions to the understanding of normal sleep in man and animals, the effects of aging, and numerous sleep disorders (e.g., sleep apnea, narcolepsy and insomnia), he has also been a leader in educating the public and medical profession on sleep research through innumerable courses and lectures in every major U.S. city.

He has authored over 400 scientific papers and the book, Some Must Watch While Some Must Sleep (1976).

In 1976 Dr. Dement became the first president of The Association of Sleep Disorders Centers and currently still holds that office. He also serves as editor of the journal Sleep, and advises numerous other scientific journals and professional associations.

Dr. Dement's most recent honors include the 1984 Distinguished Psychiatrist Award from the American Psychiatric Association. He was selected as a fellow of the American Association for the Advancement of Science in 1984. Other numerous honors include the Intra-Science Foundation Medal, The Thomas W. Salmon Medal from the New York Academy of Science, The Distinguished Service Award from the University of Chicago Alumni Association, and the Hofheimer Prize from the American Psychiatric Association. Dr. Dement is also a member of the Institute of Medicine of the National Academy of Sciences.

Definition of Terminology

The sleeping brain functions in a manner vastly unlike that of the waking brain. The time-honored myth--that during sleep the brain slows down and vital life support processes such as breathing, temperature control, and circulation remain the same whether awake or asleep--is not true. Most

of the central nervous system-related physiological functions such as cardiovascular and respiratory functions change qualitatively during sleep, as do other physiological functions such as hormone secretion, genito-urinary and gastroenterological processes. Although these physiological functions during wakefulness may be within normal limits, a minor disturbance during sleep may produce severe pathological impairment. Such sleep related problems give rise to a variety of complaints, including complaints of disturbed nighttime sleep and impaired daytime functioning.

Sleep disorders are classified into four basic classifications.

1. Disorders of Initiating and Maintaining Sleep (DIMS)--the

Insomnias

2. Disorders of Excessive Somnolence (DOES)

3. Disorders of the Sleep-Wake Schedule

4. Dysfunctions Associated with Sleep, Sleep Stages, or Partial

Arousals--the Parasomnias

The diagnostic classification of sleep and arousal disorders can be found in the appendix. Definitions of commonly used terminology include the following, taken in part from the journal Sleep (1979).

Alpha rhythm--An electroencephalographic pattern indicative of the awake state in humans; present in most, but not all, normal individuals; most consistent and predominant during relaxed wakefulness, particularly with reduction of visual input. The alpha frequency has a range in each individual. The low end is exhibited in drowsiness or sleep and the upper end with alertness. The frequency range also varies with age; it is slower in children and older age groups relative to young and middle aged adults.

Arousal--An abrupt change from a deep stage of non-REM sleep to a lighter stage, or from REMS to awake, with possible awakening as the final outcome. An arousal may be accompanied by increased muscle tone, heart rate and body movements.

Association Of Sleep Disorders Centers (ASDC)--The professional organization for promulgating standards and accrediting sleep disorders centers throughout the world.

Awakening--A full arousal, a return to the polysomnographically defined awake state (valid when it coincides with a reasonably alert state of consciousness).

Baseline--The normal or typical state of an individual or of an investigative parameter before experimental manipulation.

Bedtime--The time one tries to fall asleep as opposed to the time when one gets into bed.

Cataplexy--A sudden, dramatic decrement in muscle tone and loss of deep reflexes leading to muscle weakness. Paralysis, or postural collapse; often precipitated by an outburst of emotional expression such as laughter, startle, or physical exercise; one of the tetrad of symptoms of narcolepsy. Respiration is not compromised during cataplexy.

Circadian Rhythm--An innate, daily fluctuation of physiological and behavioral functions, including sleep-waking: generally tied to the 24 hour day-night cycle but sometimes to a measurably different (e.g., 23 or 25 hour) periodicity when light/dark and other time cues are removed.

Conditioned Insomnia--A form of chronic insomnia caused by the development during an earlier experience of sleeplessness of a negative association between characteristics of the customary sleep environment and sleeping.

“Deep” Sleep Stage--Common term for non-REM stages 3 and 4 sleep.

Delayed Sleep Phase--A condition that occurs when the clock hour at which sleep normally results is moved back in time in a given 24 hour sleep-wake cycle. This results in a delayed occurrence of sleep within the 24 hour cycle and denotes a chronic sleep schedule disturbance.

DIMS--Difficulty in maintaining sleep.

DOES--Disorders of excessive somnolence.

Dyssomnia--Any disorder of sleep or wakefulness *per se* : not a parasomnia.

Early morning arousal (EMA)--Premature morning awakening.

EDS--Excessive daytime sleepiness.

Electroencephalogram (EEG)--A recording through the scalp of the electrical potentials from the brain, and the moment-to-moment changes in these potentials. With the EMG and the EOG, the EEG is one of the three basic variables used to score sleep stages and waking. Sleep recording in humans utilizes surface electrodes to record potential differences between brain regions.

Electromyogram (EMG)--A recording of electrical activity from the muscular system; in sleep recording, synonymous with resting muscle activity or potential. The chin/cheek EMG, along with EEG and EOG, is one of the three basic variables used to score sleep stages and waking. Surface electrodes measure activity from the submental or masseter muscles. These reflect maximally the changes in resting muscle activity. The chin/cheek EMG is tonically inhibited during REM sleep.

Electro-oculogram (EOG)--A recording of the voltage changes resulting from shifts in position of the eyeball. Along with the EEG and EMG, the EOG is one of the three basic variables used to score sleep stages and waking. Surface electrodes are placed near the eyes to record the

movement (incidence, direction and velocity) of the eyeballs. Rapid eye movements in sleep indicate a certain stage of sleep (REM sleep).

Excessive daytime sleepiness or somnolence (EDS)--A subjective report of difficulty in maintaining the awake state, accompanied by a ready entrance into sleep when the individual is sedentary; may be quantitatively measured by use of subjectively defined rating scale of sleepiness.

Fragmentation (pertaining to sleep architecture)--The interruption of any stage of sleep due to appearance of another stage or waking, leading to disrupted NREM-REM sleep cycles. Sleep fragmentation connotes repetitious interruptions of sleep by arousals and awakenings.

Hypersomnia--Excessive or prolonged sleep, sometimes associated with difficulty in awakening or sleep drunkenness.

Hypnagogic imagery (hallucinations)--Vivid sensory images occurring at sleep onset but particularly vivid with sleep-onset REMS periods. A feature of narcoleptic REMS naps.

Hypnagogic startle--A "sleep start" or sudden body jerk, observed normally just at sleep onset and resulting in at least momentary awakening.

Insomnia--Difficulty in sleeping may refer to difficulty initiating and maintaining sleep and various gradations and types of sleep loss.

Internal arousal insomnia--A form of chronic insomnia resulting from excessive mental activity; induced by too conscious effort to sleep and

underlying apprehension that all attempts will fail.

Microsleep--A period lasting up to a few seconds during which the polysomnogram suddenly shifts from waking characteristics to sleep, and external stimuli are not perceived; associated with excessive daytime sleepiness and automatic behavior, which are symptoms of DOES.

Movement arousal--A body movement associated with arousal or awakening; a sleep scoring variable.

Multiple sleep latency test (MSLT)--A daytime series of measurements of the interval from "lights out" to sleep onset, used to quantify excessive daytime sleepiness. Patients are allowed a fixed number of opportunities to fall asleep during their customary waking period. Long latencies are helpful in distinguishing physical tiredness or fatigue from true sleepiness.

Muscle tone--A term used for resting muscle potential or resting muscle activity.

Myoclonus--Muscle contractions in the form of jerks or twitches. In sleep related (nocturnal) myoclonus, the jerks are primarily of the legs and have a characteristic frequency of 20-40 seconds.

Nightmare--A dream anxiety attack, not a sleep (night) terror.

Nocturnal dyspnea--Respiratory distress, minimal during the day but becoming quite disturbing in sleep.

Nocturnal penile tumescence--Penile erections normally exhibited during REM periods.

Nocturnal sleep--Indicative of the typical nighttime, or major sleep period dictated by one's circadian rhythm of sleep and wakefulness; the conventional time for sleeping.

Parasomnia--Not a disorder of sleep or wakefulness *per se*; rather, an event happening during sleep, or induced or exacerbated by sleep, such as sleepwalking; not a dyssomnia.

Polysomnogram--The continuous and simultaneous recording of the physiological variables during sleep, i.e., EEG, EOG, EMG (these are the 3 basic stage scoring parameters), EKG, respiratory air flow and events, lower limb movement, and other electrophysiological variables.

Polysomnographic (as in recording, monitoring, or tracings)--
Describes a paper or FM tape recording of a polysomnogram.

Premature morning awakening--Early termination of the sleep period in a sleep-maintenance DIMS due to inability to return to sleep after the last of several awakenings. Typifies the failure to accomplish a normal length of nocturnal sleep because of interference at the end rather than the commencement of sleep. The DIMS characteristic of depressed individuals.

REM--Rapid eye movement.

REMS--Rapid eye movement sleep.

REM sleep latency--The period of time in the sleep period from sleep onset to the first appearance of stage REMS.

REM sleep rebound or recovery--Lengthening and increase in frequency and density of REMS periods. REMS rebound follows REMS deprivation once the inhibitory influence is removed.

Restlessness (referring to a quality of sleep)--Persistent or recurrent body movements, arousals and brief awakenings in the course of sleep.

Sleep Architecture--The non-REM/REM sleep stage and cycle infrastructure of sleep understood from the vantage point of quantitative relationships of these components to each other.

Sleep Cycle--Synonymous with non-REM/REM sleep cycle.

Sleep Efficiency (or sleep efficiency index)--The proportion of sleep in the period potentially filled by sleep; that is, the ratio of total sleep time to time in bed.

Sleep Hygiene--The conditions and practices that promote continuous and effective sleep. These include regularity of bedtime and arise time, conformity of time spent in bed to the time necessary for sustained and individually adequate sleep (i.e., the total sleep time sufficient to avoid sleepiness when awake); restriction of alcohol and caffeine beverages in the period prior to bedtime; employment of exercise, nutrition, and environmental factors so that they enhance, not disturb, restful sleep.

Sleep Latency--The period of time measured from "lights out," or bedtime, to the commencement of sleep.

Sleep Log (Diary)--A daily written record of an individual's sleep-wake pattern containing such information as time of retiring and arising, time in bed, estimated total sleep period, number and duration of sleep interruptions, quality of sleep, daytime naps, use of medications, alcohol or caffeinated beverages, nature of waking activities and other data.

Sleep Mentation--The imagery and thinking (and emotion) experienced during sleep. Sleep mentation consists of individual representations--but usually combinations of--images and thoughts. Imagery is vividly expressed in dreams during REM sleep in all the senses in approximate proportion to their waking representations. Mentation is experienced generally less distinctly in non-REM sleep, but it may be quite vivid in stage 2 sleep, especially toward the end of the sleep period.

Sleep Onset--The transition from awake to the sleep state. Normally, wake is followed by non-REM stage 1, but in certain conditions such as infancy and narcolepsy, stage REM sleep may be entered directly. Most polysomnographers accept EEG slowing, reduction and eventual disappearance of alpha activity, presence of EEG vertex spikes, and slow rolling eye movements (the components of non-REM stage 1) as sufficient for sleep onset. Others require appearance of stage 2 wave forms.

Consciousness has been shown to be lost as alpha activity fragments.

Sleep Onset REM Period--An atypical beginning of sleep by entrance directly into stage REM sleep.

Sleep Pattern (24 hour sleep-wake pattern)--An individual's clock hour schedule of bedtime and rise times as well as nap behavior; may also include time and duration of sleep interruptions.

Sleep Stage Demarcation--The significant polysomnographic characteristics that distinguish the boundaries of the sleep stages. In certain conditions and with drugs, sleep stage demarcations may be blurred or lost, making it difficult to identify certain stages with certainty or to distinguish the temporal limits of sleep stage lengths.

Sleep Stages:

non-REM--The other major sleep state apart from REM sleep, comprising sleep stages 1-4, which signify increasing "depth" or physiological intensity of sleep.

Sleep Stage 1 (non-REM stage 1)--A stage of non-REM sleep that ensues directly from the awake state. Its criteria consist of low-voltage EEG, alpha activity less than 50%, and slow rolling eye movements. Stage 1 usually assumes 4-5% of total sleep. This is a transitional stage between full wakefulness and sleep.

Sleep Stage 2 (non-REM stage 2)--Usually accounts for 45-55% of total sleep time and is characterized by sleep spindles and K-complexes in the EEG. This stage is the first *bona fide* sleep stage. Mentation during this period consists of short, fragmented thoughts.

Sleep Stage 3 (non-REM stage 3)--Deep non-REM sleep, often combined with stage 4 to make up what is called delta sleep.

Sleep Stage 4 (non-REM stage 4)--The deepest non-REM sleep. Somnambulism, sleep terror, and sleep related enuresis generally begin in stage 4 or during arousals from this stage.

Sleep Stage REM--The stage of sleep (i.e., state of central nervous system) found in all mammals studied, including man, in which brain activity is extensive, brain metabolism is increased, and vivid hallucinatory imagery (dreaming) occurs in humans. It is also called "paradoxical sleep" because in the face of this intense excitation of the central nervous system and presence of spontaneous rapid eye movements, resting muscle activity is suppressed. Stage REM is usually 20-25 % of total sleep time.

Sleepiness (somnolence, drowsiness)--Difficulty in maintaining wakefulness such that the individual falls asleep if not actively kept aroused. Not simply a feeling of physical tiredness or listlessness.

Sleep Talking--Talking in sleep takes place either during stage REM, at which time it represents a motor breakthrough of dream speech, or in the

course of transient arousals from non-REM sleep. Full consciousness is not achieved and no memory of the event remains.

Sleep-Wake Shift--When sleep, wholly or partially, is moved to a time of customary waking activity, and waking is moved to the habitual sleep period; common in jet lag and shift work.

Snoring--A noise produced primarily with inspiratory respiration during sleep owing to vibration of the soft palate. Many snorers have partial obstruction of the upper airway, and may in time develop obstructive sleep apnea.

Total Sleep Period--A period of time measured from sleep onset to final awakening. In addition to total sleep time, it is comprised of the time taken up by arousals and movement time until wake-up.

Total Sleep Time--The amount of actual sleep time in a sleep period, equal to total sleep period less movement and awake time. Total sleep time is the total of all REM and non-REM sleep in a sleep period.

Tumescence (penile)--Hardening and expansion of the penis: penile erection. Commonly referred to as nocturnal penile tumescence (NPT) in a sleep recording.

Twitch (body twitch)--A very small body movement such as a facial grimace or finger jerk, not usually associated with arousal.

Wake Time--The total time that is scored awake in a polysomnogram occurring between sleep onset and final wake-up.

Abbreviations

ASDC	Association of Sleep Disorders Centers
CNS	Central Nervous System
DIMS	Disorders of initiating and maintaining sleep
DOES	Disorders of excessive somnolence
EEG	Electroencephalogram
EMG	Electromyogram
EOG	Electro-oculogram
non-REM	Non-rapid eye movement sleep
NPSG	Nocturnal polysomnographic recording
NPT	Nocturnal penile tumescence
REM(s)	Rapid eye movements
SIDS	Sudden infant death syndrome

Chapter 2

Literature Review and History of Sleep Disorders Medicine

Although direct observation of sleep has been a possibility for thousands of years, there is relatively little folklore, medical tradition or knowledge recorded about sleep and its disorders which have troubled mankind.

Hypnos, the Greek god of sleep and Thanatos, the god of death were twin sons of Nyx, the goddess of night. "Hypnos lived in a dusky valley in the land of the Cimerians, through which Lethe, the river of forgetfulness flowed. Hypnos brought to both men and gods, sleep--frequently sending his sons Morpheus, Icelus, and Phantasus to appear in dreams" (Hamilton, 1961, p. 106). Lucretius wrote in 44 B.C. of restlessness in the sleep of animals. He speculated that this might indicate dreaming, but failed to confirm his hypothesis by making similar observations in his fellow man.

Why do we sleep? What function does sleep serve? Perhaps the vulnerability of early man and animals during darkness gave rise to need for a protective state. Perhaps the need to be protected from real and psychic fears of the night gave rise to the state of sleep. During darkness man is less able to cope with environmental elements, and when asleep, we are not alert to worldly dangers. Perhaps for these reasons, the need to cluster in a safe place evolved. Dement (1976) has speculated that the origin of family life

itself may have evolved from this need to cluster and sleep in a protected area; the troop of baboons sought refuge and slept in its tree; the pack of wolves in its den; primitive man in his cave; modern man in his bedroom. “Having constructed a safe place to sleep, man is able to use the word ‘home’” (Dement, 1976, p. 78).

Despite the complex sociological and anthropological implications of sleep, centuries of scientists have consistently chosen to scrutinize the waking state of man and animal, while dismissing sleep as a time of meaningless activity. Only as a context for dreaming was sleep noted as a physiological state deserving of attention.

The significance of dreams has been recorded throughout history. Assyrian and Babylonian clay tablets dating as far back as 5000 B.C. reveal dreams and their interpretations. In hopes of promoting dreams, the Egyptians built temples where people could sleep and dedicated themselves to the god of dreams, Serapis.

The Bible and Talmud have numerous passages referring to dreams. Dreams were perceived as an extension of reality for many primitive cultures. Good and bad dreams were classified by the East Indians in the Vedas, written prior to 1000 B.C. The ancient Chinese believed that the soul, when involved in dreaming, could wander from the body during sleep. They took care to never abruptly awaken a sleeping person. Although

dreams have fostered wars, peace, politics, and accomplishments of creativity, until the relatively recent scientific study of sleep, the frequency, occasion and stimuli of dreams has remained unknown.

The evolution of sleep in higher organisms is thought to provide an efficient manner of adjustment to cyclic environmental changes resulting from the earth's rotation. By minimizing the need for food (caloric conservation) and maximizing safety, sleep ensures our survival. Today, however, researchers are still seeking a more satisfying answer to the question of why we sleep, other than a desire to prevent sleepiness.

The centuries-old myth that sleep is a period of passivity, quiescence or inactivity has been shown not to be true. Traditionally, medical examinations have been made only during daytime or periods of wakefulness. The young but growing field of sleep disorders medicine has changed this. The nighttime examinations of sleep patterns is essential to understanding and treatment, for example, of such disorders as sleep apnea, insomnia and narcolepsy, which relate primarily to sleep but have side effects of daytime fatigue.

The brain operates differently during the behavioral state of sleep than during the waking state. The unique mechanisms of sleep, itself, can give rise to a variety of pathologies--the true sleep disorders. Such diseases may be life threatening and manifested only during sleep. Life support systems

such as breathing, body temperature and circulation may present as normal while awake, yet be greatly impaired during sleep.

Disturbed sleep and daytime fatigue have, in the past, been linked with religion, morality and the psyche. In 1880, narcolepsy was medically described by Gelineau as a neurological disorder characterized by sleep attacks and daytime sleepiness. Kleitman's (1963) experiments in a Kentucky cave indicated that humans have natural diurnal cycles of approximately 24 hours. Aserinsky and Kleitman (1953) first documented rapid eye movement sleep at the University of Chicago. This was followed by Dement's (1957) observation that rapid eye movements were related to dreaming and that these periods recurred about every 90-100 minutes. This discovery, coinciding with the peak of the psychoanalytical movement (which stressed the importance of the dream), gave strong impetus to the sleep research movement.

REM sleep was more fully detailed by Jouvet and Michel (1959) who reported the dramatic decrease of muscle tone in the REM sleep of animals. A similar observation was made in humans by Berger (1961). REM sleep was found to be a period of brain wave activity more intense than the waking state. REM sleep is also a state during which all but the most essential muscles are paralyzed.

Hans Berger (1929), a German psychiatrist, placed electrodes on the human scalp and observed patterns of electrical activity. He referred to such recordings as electroencephalograms. Loomis, Harvey, and Holbart (1937) described states of sleep characterized by distinct and separate EEG patterns. This development of polysomnography provided the requisite technique for measuring, evaluating and objectively describing sleep. By simultaneously measuring electrical activity of the brain, the eyes and muscles, sleep can be measured. The form and frequency of such wave forms are interpreted according to standardized criteria.

Growth experienced during recent years in the field of sleep disorders medicine has been spectacular. There are now over 800 sleep disorders clinics, as opposed to five in 1975. Millions of people have been treated world wide for sleep disorders. Over 100 medications are being used as sleeping pills. A national sleep database is being created to properly evaluate and monitor the efficacy of available treatments. Sleep disorders medicine is now included in the medical school curriculum. Project Sleep and The National Institute on Aging have increased public and professional awareness.

In the early 1960s, a small group of American investigators showed concern about disturbed sleep, the physiological anatomy of sleepiness, pathophysiological disturbances related to particular sleep stages and the

process of arousal, and the effects of hypnotic agents. Recent advances in knowledge about sleep-wake disorders have exposed the often hidden third of our lives which we call sleep.

Review of Social Work and Sleep Disorders Literature

Computer searches of the literature provided the principal source of information. Five databases (Medline, Social Work Abstracts, Sociological Abstracts, Nursing and Allied Health, and Psychological Abstracts) were searched through three retrieval services (MEDLARS, DIALOG, and BRS [see Appendix]). It should be acknowledged that these databases usually do not carry citations for books, book chapters, technical reports, and other non-peer-reviewed literature. Such sources must typically be found in the references of individual articles.

Of the nearly 200 citations that answered to the designated search topics, eight articles were deemed relevant to the fields of both social work and sleep disorders.

The earliest article found in social work literature which dealt with sleep disorders was published by Salvatore Garzino (1976). "Biorhythms and social work" appeared in Health and Social Work. The concept and principles of biorhythms were introduced in hopes that such knowledge could prove applicable to human service areas such as social casework,

counseling, psychotherapy and psychiatry. In this article, circadian rhythms and their relationship to personality are discussed. Periodic characteristics which may be observed in such discomforts as premenstrual syndrome, suicide, sleep disorders and others are also examined by Garzino.

“The case of Ann: a sleep disturbance in a 3 year-old child” (Hancock, 1978) , which appeared in Social Work In Health Care, discusses the case of a child’s severe sleep disturbance and its impact on the family. The social worker and pediatrician used a developmental interactional approach; the problem formulation concerned a reciprocal separation issue between mother and child. Resolution of Ann’s sleep problem as well as an improved relationship between the child and each parent were results of the intervention.

The trauma of sudden infant death syndrome is the subject of “Enigma in swaddling clothes: sudden infant death syndrome” (Hawkins, 1980), which appeared in Health and Social Work. Issues of parental role and status, guilt, grief and societal expectations of child rearing are discussed. Bereaved parents can be helped in many ways by the social worker. Issues of communications, interpretations of each parent’s needs and enlisting help from other resilient family members are raised. Swift and cautious intervention on the part of the counselor may be necessary in order to preserve family unity following such trauma.

“Post-traumatic stress disorders among Vietnam combat veterans” (Langley, 1982) addresses the issue of a cluster of interrelated symptoms usually comprising post-traumatic stress syndrome. Included are sleep disturbances, which tend to further undermine the Vietnam combat veteran’s ability to adequately cope with tasks of everyday life. The social worker providing services needs to be knowledgeable in this area in order to intervene effectively.

“Sleep: an expanding field of practice and research” (Piccione & Barth, 1983) was the only article found in social work literature to discuss the broad implications of advances in knowledge and treatment of sleep disorders. Interrelationships between sleep disorders and alcoholism, depression, anxiety, impotence and aging are cited, as is the necessity for social work practitioners to be aware of this body of knowledge in order to maximize patient care.

Criticisms of the article by Piccione & Barth include the following:

(1) When discussing sleep disorders involving daytime sleepiness, the authors give no indication of the relative prevalence of sleep apnea, and completely omit insomnia. Narcolepsy is rare; sleep apnea is much more prevalent, and insomnia--particularly transient insomnia (shiftwork, noisy environments)--is probably by far the most common cause of daytime sleepiness.

(2) The authors claim without evidence that “distributing sleep across the day causes disrupted nocturnal sleep, rather than compensating for sleeplessness at night.” (p. 231). This point is moot, and merely perpetuates common folklore about sleep. Present evidence suggests, in fact, that nocturnal sleep in “healthy” elderly is severely disrupted by hundreds of brief (a few seconds long) arousals, and that these predict daytime sleepiness (Carskadon, Brown & Dement, 1982). Implications from this research suggest that disrupted sleep is for some reason an unavoidable characteristic of aging, that it in turn leads to daytime sleepiness, and that therefore, “limiting nocturnal sleep and introducing a midday nap might improve both sleep and wakefulness by reducing the constraints on both [the sleep and waking] systems” (Carskadon et al., 1982, p. 326).

(3) The authors have an unfortunately fuzzy discussion of insomnia, devoting considerable space to a discussion of “internal-arousal” insomnia. Again, the authors appear to be perpetuating common folklore about sleep rather than allowing for the limitations of current knowledge. This is important, because insomnia is certainly the most common sleep disorder a social worker is likely to influence. In fact, insomnia has many causes (see chapter 4), but the single most important distinction to be made is duration (Consensus Conference, 1984).

“Psychotropic medications for children” (Cordoba, 1983) suggests that social workers need to be knowledgeable in the area of psychotropic drugs in order that they be able to work more effectively with clients using them for sleep disorders, depression, hyperactivity and other problems. The author also suggests that social workers advocate and promote training in this area.

“Helping people adjust to the death of a pet” appeared in Health and Social Work (Quackenbush, 1984). This article states that social work services in a veterinary setting are often indicated when an individual is distressed about a pet’s illness or death. Diminished social activity, erratic eating patterns and sleep disturbances are frequent complaints of such clients. It would be beneficial for the social worker in this setting to be knowledgeable about sleep disorders and their appropriate interventions.

Sudden infant death syndrome is the topic of “Things that go beep in the night: home monitoring for apnea” (Sheridan, 1985). The important contribution of social work to families using home monitoring equipment for infants experiencing apnea or prolonged breathing pauses is discussed. Features of a social work program providing parents of apneic infants with education and support are described. This article, though less ambitious in its scope than Piccione and Barth (1983), provides far more concrete suggestions than the latter for social workers. This article provides a model

for thorough, socio-medical discussions and the role of the social worker.

Although few citations were found in social work literature regarding the field of sleep disorders and the social worker's role in this area, common themes in the articles discussed are evident. Clients will come to the social worker with varied complaints, but a good chance exists that sleep disturbances will frequently be involved either as a cause or result of life's many daily functions. It is apparent that the social worker must have the ability and knowledge to recognize symptoms and refer the client for appropriate treatment in order to minimize disruption of the client's life. It is also obvious that there are appropriate reasons for the social worker to enter the field of sleep disorders. A major reason is to assess clients and families in addressing these conditions, so that psychological functioning is not impaired.

Chapter 3

Research Methodology

Type of Research

The primary research methodology utilized for this thesis is descriptive research. One purpose of this methodology is to identify characteristics of groups of persons (Bauman, 1980). In this particular case, individuals with sleep-wake disorders, and the role of the social worker within this context, are described. Because this thesis seeks to examine and identify the role of the social worker in relation to sleep-wake disorders, descriptive research is therefore appropriate in meeting this objective. Descriptive research is useful in advancing the broader aims of science, in the sense that it is used to develop knowledge of situations and phenomena (existing or past) on which problems and explanations of subsequent research can be based (Mason & Bramble, 1978).

Best (1959) describes descriptive research as that which describes and interprets what is. Existing relationships or conditions, prevailing practices, ongoing processes, developing trends, points of view, attitudes and beliefs, as well as effects being felt, are all concerns of descriptive research. In addition, the organization and analysis of data must provide a basis for conclusions. The significance of such conclusions may be a result of

contrast, comparison, or relationship. In keeping with Best's theory, this thesis cites present conditions in the field of sleep research, future goals which social workers may pursue, and methods of attaining such goals when working with individuals and families.

Data Sources

Methods of data collection for this thesis include library research, i.e., a systematic review of literature written on both sleep-wake disorders and social work, and a case study. In addition, experiments designed and carried out in the Stanford Sleep Center's laboratories offer extensive data. The Narcolepsy Support Group at Stanford also provided the opportunity to gather data through participant observation.

Descriptive research is particularly appropriate and important when working with a relatively young field such as sleep disorders medicine and the rarely considered role of the social worker in this field. This concept is stated quite eloquently by Simon (1969).

Path-breaking descriptive research is especially difficult because one starts with empty hands--no guideposts, no standards, no yardsticks, no intellectual framework, no categories within which to classify what one sees. The researcher's sole resources are whatever concepts he can borrow from other fields and the

ordinary words of the common language. He must write his own classifications and his own guideposts. He must decide what to look at and what to ignore, what to record and what not to record, which clues to follow up and which to drop, what is important and what is valueless. The early descriptive researcher has great freedom, but such great freedom can be terrifying. Once a tradition of descriptive research is established in a field, however, there are standards and concepts that the researcher can use (p.45).

Chapter 4
The Role of the Social Worker
in the Field of Sleep-Wake Disorders

Normal Sleep

There are two entirely different kinds of sleep. A typical sleep period consists of a regular alternation between REM (rapid eye movement) sleep and NREM (non rapid eye movement) sleep states. Almost all mammals reveal these two states of sleep. Precise polygraphic definitions enable a determination to be made whether a human being is in the state of wakefulness, REM sleep or NREM sleep.

REM sleep has several physiological characteristics. The body is in a state of generalized motor inhibition or paralysis, involving motor neurons to the limbs and trunk muscles. Reflexes are also suppressed during REM sleep. Two exceptions to the generalized motor inhibition are the nerves to the diaphragm (which enable breathing to continue) and the extraocular muscles (permitting rapid eye movements). Although the body is basically paralyzed during REM sleep, the brain is highly active.

Penile tumescence is another characteristic of REM sleep. Each REM period throughout the night is accompanied by an erection in males. REM

sleep is also associated with vivid dreaming. Awakening of volunteer subjects during REM periods invariably elicits vivid and detailed recall of dream material, which suggests that REM sleep can be equated with dreaming sleep.

NREM sleep is a state of comparatively quiet, lower level brain activity or deactivation. There is no inhibition of peripheral motor functions and reflexes can be elicited. When electromyographic activity is recorded from electrodes placed over the muscles, there is a continuous electrical output as opposed to a recording during the REM state where such tonic muscle activity is suppressed. Psychologically, NREM sleep is characterized as a period of vague imagery and thoughts, unlike the vivid dreaming of REM sleep.

Polysomnography, the recording of sleep states and stages became possible after World War II when electronic amplification became available. These amplifications (in the form of polygraphs) allow us to record the tiny voltage fluctuations known as brain waves. Routine polysomnographic examination is a continuous measure of muscle activity (EMG); brain wave activity (EEG); and eye movement activity (EOG). A clinical exam may also include measurements of respiratory functions (effort, air flow and blood oxygen saturation); cardiac activity, and abnormal movement, most importantly of the legs.

The NREM-REM cycle is repeated 4 to 6 times throughout the night, each cycle (NREM-REM) being approximately 90 minutes long. Objective and subjective sleep parameters include:

- sleep latency--the amount of time it takes for the patient to fall asleep.
- total waketime--brief awakenings occurring during the night due to body movements and changes in position during the sleep period.
- total sleep time--total wake time subtracted from the hours of sleep.

It is important to compare the objective and subjective parameters when diagnosing sleep problems such as insomnia. Although a mythology has evolved that REM sleep is a very important variable, especially when affected by drugs or alcohol, experiments with REM deprivation have failed to reveal that REM sleep alone is vitally necessary. REM sleep onset, however, is important in the diagnosis of narcolepsy and is also a useful variant when evaluating hypnotic drug withdrawal.

The exact function of sleep is not known. No evidence suggests that sleep is necessary in the same vital way as food, water or air. Depriving a subject of sleep for long periods of time does not result in development of any progressive mental or physical deterioration, nor is any structural damage or toxicity demonstrated. The major consequence resulting from prolonged sleep deprivation appears to be sleepiness (Carskadon & Dement,

1975). Sleepiness can be unpleasant and impair memory and the ability to carry out complex functions.

The amount of sleep needed varies from one individual to another, though the most common amount in a distribution of normal adults averages 7 to 8 hours. The amount of sleep needed for successful daytime functioning and full alertness is usually arrived at when an individual experiments directly by titrating the minimum amount of sleep he/she requires in order to function optimally the following day.

Total sleep time changes throughout the life cycle. A decrease in the amount of sleep occurs as young adults progress through middle and old age. Babies sleep more than young children, while children sleep more than young adults. The structure of sleep also changes with age. The infant may spend 50% of his/her time in REM sleep (8 to 9 hours) while the premature infant may have an even higher percentage of REM sleep (75%) (Roffwarg, Muzio & Dement, 1966). Also of importance is the fact that when the individual sleeps may be as or more important than the amount of time spent sleeping (Webb, 1971). The attempts by modern man to manipulate sleep (shift work, jet lag) while ignoring its innate biological rhythm may be forcing individuals to perform at a time when their capacity to respond effectively is lowest.

Possible Areas Of Sleep Research For The Social Worker

Fifty years ago sleep was thought of as a simple, passive state, yielding little or no important scientific information. It is helpful for today's social worker to be cognizant of the variety of academic disciplines contributing to research on sleep. Most clients with whom the social worker has contact will, in some way, be affected by sleep-related disturbances. In addition, these fields may provide employment opportunities for the social worker interested in research and practice. The expansion of sleep research and the role of the social worker should benefit not only the scientific community, but the client as well. The relationship between good health and sleep holds important implications for the field of social work. Various research areas include:

General neurophysiology--the study of EEG patterns of sleep in patients with various diseases, EEG responses during treatment with various medications, EEG responses during sleep of depressed patients.

Neurophysiology of the visual system--the study of eye movements during sleep in regard to effects of drugs on alertness and reaction time.

Physiology--physiologic responses during sleep (breathing, blood pressure, temperature), metabolic functions of the sleep-wake cycle.

Biochemistry--effects and relationships of amino acids and other natural body chemicals which may induce or inhibit sleep.

Pharmacology--preparation, use and effects of drugs which may cause or relate to sleepiness.

Endocrinology--patterns of thyroid, adrenal and pituitary hormone secretion and their effects on the sleep-wake cycle.

Ontogeny and phylogeny--changes and sleep patterns associated with various developmental stages of man and animals.

Behavior--sleep as it relates to conditioning, performance, discrimination, learning and memory.

Physiology and behavior of dreaming--dream recall, effects of external stimuli on dreams, patterns of dream content, effects of various medical problems on dreaming, altered states of consciousness (daydreaming, biofeedback, hypnosis).

Personality and psychopathology--sleep patterns and circadian rhythms in patients with clinical depression, alcoholism, drug addiction, schizophrenia.

Pathology and disorders associated with sleep--respiratory problems, sudden infant death, sleep apnea and related surgical procedures, narcolepsy, insomnia

Sleep in other medical areas--impact of diseases such as cancer, cystic fibrosis, pulmonary disease, epilepsy, etc., on sleep.

Sleep deprivation--physiological and psychological consequences of sleep deprivation and subsequent performance.

Biological rhythms and altered environments--biomedical results of space flights, night shift work, circadian rhythms and their alterations.

Instrumentation and methodology--engineering of equipment (i.e., portable monitors), new methods for studying sleep (i.e., the Multiple Sleep Latency Test), and automated monitoring of sleep (i.e., for SIDS, for respiratory variables during sleep).

Sleep hygiene--presents an important opportunity for the social worker as a consultant for industry or in work with individuals and families.

Shift work--schedule design and consultation to optimize sleep and wakefulness of the shift worker and minimize the social adverse consequences of shift work patterns.

The Social Worker's Approach to the Client in Terms of Sleep-Wake Disorders

Diagnosis and Evaluation

The social worker needs an approach to the client in terms of sleep and its potential disorders. A thorough psychosocial history of the client's sleep is the first step (Dement, 1978). How regular is the bedtime? How long does it take the client to fall asleep? How long does the client sleep and at what

times? What is the sleep environment like? What is the client's use of drugs and alcohol? (See questionnaires in appendix.) Questions should be asked about waking functions which may reflect sleep disorders. These questions should concern daytime sleepiness, daytime functioning, and alertness. How do these factors impact upon the client's work, family, social circumstances, and general quality of life? Does the client's sleep partner have information to offer pertaining to nighttime sleep and daytime functioning? Does the partner complain about the client's snoring, falling asleep at inappropriate times (while driving or during sexual intercourse)?

Referral

The social worker should be aware of the resources available for the client with sleep disorders. The primary indications for referral to a sleep disorders center are excessive daytime sleepiness, chronic insomnia (over 3 months), and nocturnal abnormal behavior (sleep walking, night terrors). The chronicity and degree of disability involved are important and may impact on the client's coverage by an insurance carrier as well as chances for receiving disability compensation. The social worker must determine if the complaint is long standing and if the client's waking life is significantly affected. The social worker should also bear in mind that some serious sleep disorders are occult--that is, not obvious during a routine interview with the client, but apparent only during a sleep recording and evaluation.

The Sleep Disorders Clinic offers specialized knowledge, techniques and treatment. Once the client is referred to the Stanford Sleep Clinic, the procedure is as follows:

1. The referral is reviewed and an appointment made.
2. The client will be requested to complete the following forms: (a) sleep diaries for one or more weeks, (b) Stanford Sleepiness Scale, (c) Minnesota Multiphasic Personality Inventory, and (d) sleep inventory.
3. Initial consultation with sleep clinic staff physician will include (a) history of sleep disorder; drug history, (b) physical examination, (c) neurologic examination, (d) psychiatric review, and (e) interview with bed partner, especially his or her observations on daytime functioning, snoring, and movement during sleep.
4. Case presentation to sleep clinic staff includes (a) tentative diagnosis and indications for polysomnography discussed, and (b) specific polysomnography protocol determined. All tests include electroencephalogram (EEG), electro-oculogram (EOG), electromyogram (EMG), cardiac and respiratory variables, plus audio monitoring and infrared video monitoring.

Impressions from the clinical examination are essential in determining if the patient actually has a sleep disorder of a serious nature. Many patients with excessive daytime sleepiness and/or chronic insomnia may have a

lengthy and current history of drug use and abuse. Evaluation and treatment of the client's drug ingestion must be carefully managed. Psychoactive drugs are normally withdrawn prior to most polysomnographic testing.

Undiagnosed medical, neurological or psychiatric conditions frequently complicate or give rise to a sleep disorder. For example, temporal lobe epilepsy may give rise to sleepwalking. When standardized polysomnography is used with appropriate indications, a specific diagnosis can usually be made. Most diagnoses are accounted for by sleep apnea, nocturnal myoclonus and narcolepsy (Coleman et al., 1982). Polysomnography may also rule out a sleep disorder in situations where the history is deliberately misleading, as in the case of a drug abuser's attempt to obtain amphetamines by falsely describing symptoms of narcolepsy.

Early diagnosis is important in the case of sleep disorders. This will avoid undue expense, suffering and inappropriate testing. Many patients with hypersomnia have erroneously received thyroid medications. Many narcoleptics tell of having been mistakenly diagnosed as schizophrenic.

Treatment and Prevention

Prevention in the area of sleep disorders is also important. Chronic hypertension, cardiac disease, and total disability due to hypersomnolence can be prevented in clients suffering from sleep apnea. Disability experienced by narcoleptics can be reduced by utilizing specific treatments and

knowledge of coping skills. Discovering a specific cause for the insomniac's complaint may not only reduce disability but also prevent problems relating to use and abuse of alcohol and hypnotic drugs.

Childhood Sleep Disorders

The social worker may often need to respond to and be familiar with the area of childhood and adolescent sleep disorders. The worker involved in areas of work related to health care and practice should be aware of advances and innovations in sleep disorders health care technology, knowledge base, and techniques of evaluation. The informed social worker can play a critical role in identification and management of sleep disorders. He/she can discuss symptoms with other health professionals addressing the client's psychological and physical needs, and assist them in becoming more sensitive to the manifestations of sleep/wake disorders.

The social worker can function in a supportive and educational role for the client by stressing the fact that the majority of childhood parasomnias are outgrown in a relatively short span of time. The social worker can enable the client and family members to better handle their fears associated with sleep disorders of childhood (Piccione & Barth, 1983).

The DSM III (and ICD-9) categorizes childhood sleep disorders under section 307.4 entitled "Special symptoms or syndromes not elsewhere

classified.” This includes conditions in which an outstanding symptom or group of symptoms is not manifestly part of a more fundamental classifiable condition. Section 307.4 refers to Specific Disorders of Sleep (of non-organic origin). This category includes Hypersomnia, Insomnia, Inversion of Sleep Rhythm, Nightmares, Night Terrors, and Sleep Walking, but excludes Narcolepsy (DSM III, 1980).

The nature and symptoms of sleep problems differ widely along the developmental continuum from infancy to adolescence. Irregular sleep patterns of the infant such as night waking and sleeping throughout the night are frequently associated with daytime fussiness. Early and middle childhood problems concern sleepwalking, sleeptalking, nocturnal enuresis, nightmares, night terrors and unwillingness to go to bed. Excessive daytime sleepiness is often the complaint parents verbalize about their adolescents. Learning difficulties, behavioral problems and diseases such as hypertension and related heart disorders are often results of failure to diagnose and treat sleep disorders in children and adolescents (Anders, Carskadon & Dement, 1980).

“Settling” and its presenting problems appears to be the most common sleep difficulty presented by the infant and toddler (Ferber, 1981). Settling is defined as sleeping through the night or sleeping from midnight to five a.m. without removal from the crib. This should continue for a four week

period. The most frequent cause of sleeplessness in the infant under twelve months of age appears to be that the child becomes accustomed to falling asleep at bedtime under circumstances which include the parents' presence. Normal nighttime awakenings also were associated with parents being present. Ferber (1984) has shown that when new associations were introduced and often accompanied by schedule changes, the problem was resolved for most children. Social issues such as a decision to continue middle of the night nursing often hindered the child's ability to sleep through the night. Ferber concluded that after four months of age, sleeplessness in babies can be appropriately diagnosed and treated in a prompt manner. In addition to babies with perinatal insult, parental failure to maintain appropriate schedule and limit setting, and child-parent anxieties may account for problems in settling. Childhood fears, physiological disorders and medications may also play a role here.

Sleep and related problems at bedtime are common though frequently not of a serious nature. Often they are more troublesome to the parent than the child. Maternal reports of 160 infants revealed that 70 percent had settled by age three months, 83 percent by six months and 90 percent by nine months (Moore & Ucko, 1957). Night awakening and irregular sleep patterns during the first year of life affect from 25 to 50 percent of all infants, and both maturational factors and environmental stress may be

related (Anders, 1979).

Infants and children differ from adults in total time spent asleep. At birth babies may sleep as much as 16-18 hours per day. By late adolescence, the amount of sleep has decreased to approximately eight hours per night. The amount of dreaming (REM) sleep for babies and children is greater, despite an apparent lack of memories or experience than for adults. Infants will sleep in short stretches throughout the day. Their bodies will not yet be synchronized to the 24 hour day, nor has a strong circadian rhythm yet developed (Kleitman & Englemann, 1953). It may take about the first two years of life before sleep becomes fully consolidated in the nocturnal hours. Short bouts of sleep in the infant gradually coalesce into a more consolidated sleep-wake rhythm (Moore-Ede, 1982).

Childhood sleep is deeper than sleep in later years. The deepest stages of a child's sleep, stages 3 and 4, will occur early in the night and will comprise 25 percent or more of total sleep. The immaturity of the child's nervous system combined with greater amounts of deep sleep may predispose children to such problems as sleeptalking, sleepwalking, bedwetting and night terrors. These more common disorders of pre-school and school-age children are classified as parasomnias, or episodic disturbances of NREM sleep. It is not unusual to find more than one of these disturbances occurring in the same individual at varying ages. These disorders are more common in

males and frequently there is a positive family history for the disorders. Laboratory studies have shown that these sleep disturbances occur about 70 to 120 minutes after sleep onset, a time when it is most difficult to awaken a child due to the depth of the sleep stage. When aroused, children are usually very confused and unresponsive. The release of growth hormone is also at its peak during this stage of deep sleep.

Sleep Terrors (*pavor nocturnus*)

A night terror or sleep terror is a sudden arousal during the first third of the night from NREM sleep (stages 3/4). The child suddenly sits upright, blankly stares ahead and screams, exhibiting a sense of great anxiety. Distress is also indicated by heavy breathing, rapid heartbeat, perspiration and a frightened expression. After being consoled, the child usually relaxes (unlike the parents), has no dream recall, returns to sleep, and has no memory of the experience the next morning (Dement, 1976). Night terrors occur most frequently in pre-school age children and are referred to as *pavor nocturnus* and differ from the common nightmare or anxiety dream. During a night terror, the child is difficult both to console and to arouse. The child appears agitated and confused. If awakened, he/she may remember a sensation of dread or terror and helplessness, but unlike a nightmare, detailed dream content is rarely recalled (Fisher, Byrne & Edward, 1970).

Sleep terrors in children usually appear between ages 4-12 and disappear in early adolescence. Attacks may vary in frequency. A sleep terror may advance to sleep walking if intensive efforts to terminate the episode are made by standing the child up.

Consistent personality features have not been noted in children with night or sleep terrors. Psychiatric and emotional illness has not been associated with these children, nor do they have any greater disposition to mental illness later in life (Rappoport & Ismond, 1984).

Night terrors beginning in adulthood may not appear until age 20, but onset after age 40 is rare. When the adult experiences episodes similar to sleep terrors the phenomenon is termed *incubus*. The adult may awaken with a sense of doom and dread, and experience palpitations and breathing difficulties. Severe chronic nervousness and anxiety are frequently associated with such individuals. In both child and adult stages, secondary disturbances of normal family life may occur.

Daytime stress and fatigue may increase the chance of a sleep terror episode. Approximately 1-4 percent of children reportedly experience night terrors. It is best to not awaken or question the child from a night terror. Reassurance of both family and child is suggested, assuring them that such episodes are not signs of serious emotional or medical problems, that they will in all probability be outgrown and that no permanent damage will result.

The child should not be made to feel guilty or abnormal.

A distinction should be made between night terrors and dream anxiety attacks primarily because in children, only the latter may require psychotherapy. Dream anxiety attacks, unlike sleep terrors, arise from REM sleep. There is slight physiological arousal and recall is vivid and detailed. The patient may arouse and orient more easily. Episodes of dream anxiety frequently occur during middle to later parts of the night when REM periods are most frequent and intense. The most distinguishing feature of the REM sleep nightmare or dream anxiety attack is the vivid recall of a distinct dream sequence in which an overwhelming threat eventuates in an awakening. Dream anxiety attacks (DAA) may often indicate psychopathology for which treatment is indicated.

Both sleep terrors and DAA should be differentiated from hypnagogic hallucinations. These terrifying episodes occur in the twilight state between waking and sleeping in some narcoleptics, schizophrenics, depressive patients, those with temporal lobe epilepsy, or in individuals with a chronically shifting sleep-wake schedule.

Nocturnal Enuresis

Five to seventeen percent of children between 3 and 15 years of age experience bedwetting. It is found more frequently in males and is often associated with a family history of the disorder. Retrograde amnesia is

characteristic of the disorder in that the patient does not recall the bedwetting episodes in the morning. Symptomatic enuresis indicates an organic etiology. Genitourinary disorders, diabetes, epilepsy, allergies and other organic causes should first be ruled out as causative factors.

Sleep related enuresis is characterized by involuntary micturition usually occurring during NREM sleep. This condition is found in approximately 15 percent of boys and 10 percent of girls at age five (Anders, 1976).

Bedwetting occurs during NREM (non-dreaming) sleep usually during the first third of the night, which is when the longest periods of deep sleep occur (Kales, Kales & Jacobsen, 1977). Episodes of bedwetting, as with other parasomnias, are thought to be problems of partial awakenings as the child passes from deep NREM sleep to lighter stages.

Primary enuresis is the term applied prior to accomplishment of nocturnal toilet training. Secondary enuresis indicates a child has been dry at night for several months before beginning to wet the bed again. Idiopathic enuresis (primary and secondary) implies a non-organic, self-limited phenomenon frequently based on delayed maturation (Shaffer, 1977).

Bedwetting children are often very sound and deep sleepers, possibly having a less well developed nervous system. It may be difficult to awaken the child from sleep after bedwetting, and he/she may be confused and very

groggy.

Bedwetting itself is not necessarily an indication of any emotional problem. The child usually suffers embarrassment and the additional stress of parental punishment may even increase the incidence of bedwetting. Parents should be as supportive and reassuring as possible and try not to become overly distressed themselves. Most bedwetting ends by adolescence, but stress due to a move, family, school or peer conflicts might be an initiating factor.

A “low profile” approach is the best treatment until a child grows out of the problem. If necessary, a specialist may be called in to help the child and family deal with the problem. Evaluation at a sleep disorders center can rule out sleep-related seizures as a cause of bedwetting. In instances where medication appears indicated, imipramine (Tofranil) may be helpful by keeping the bladder valve more tightly closed, and it lightens the sleep, which allows the child to awaken more easily to use the bathroom. Psychological evaluation may be needed in some cases to determine if excessive anxiety or other emotional problems need to be treated.

The social worker’s role in problems of this nature will involve explanation and consolation to both child and parents, with recommendation for a medical examination to rule out organic causes. Psychotherapy may act to rectify damage done by inappropriate handling of enuresis or by trauma

(divorce, death) which often precedes secondary enuresis. It is important to remember that little if any impairment of daytime physical functions results from idiopathic enuresis. However, symptoms often cause considerable stress to and between child and parent. The result may be guilt or shame suffered by the child. The fact is that enuretic children and adolescents have no particular personality pattern or psychopathological features, but may be quite sensitive to stress (Broughton, 1968).

Head-banging (*jactatio capitis nocturnus*)

Sleep related head-banging is a rhythmic, to and fro head or body rocking just prior to or during sleep. It is usually, though not exclusively limited to childhood and may be symptomatic of emotional stress or simply be a comfort habit similar to thumb-sucking (Baldy-Moulinier, Levy & Passouant, 1970).

This condition has a self-limited course, rarely evidenced during adolescence, implicating a maturational lag in the nervous system. Headbanging is observed in the immediate presleep period and may be sustained into light sleep. It rarely persists into deep NREM sleep.

It has been suggested that the condition occurs more frequently in children of subnormal intelligence. Having ruled out organic causes, headbanging in sleep may be related to environmental stress such as parental disharmony or pressure for the child to excel in various areas (Evans,

1961). Finch (1960) states that head banging is an aggressive act representing the child's aggression and hostility which he is unable to act out toward those around him.

Headbanging appears to be a comfort to children because of the motion, rhythmic stimulation of their head against the bed, and the sensation from the inner ear equilibrium system. Headbanging does not lead to difficulties during waking unless damage to the nervous system has caused or resulted from it. Preventive measures such as padding hard surfaces and removing sharp objects are appropriate. Otherwise, excessive attention to this behavior should be shunned in order to avoid reinforcement. If the child is under stress, extra affection will prove helpful. A diagnostic evaluation will reveal if a form of sleep related seizures exists which may relate to headbanging.

Sleepwalking (Somnambulism)

Sleepwalking takes place during the first third of the night during deep NREM sleep (stages 3 and 4), is a frequent occurrence in childhood, and occasional episodes are considered normal. Fifteen percent of children between ages 5 and 12 have sleepwalked at least once. One to six percent of children are persistent somnambulists, experiencing up to four episodes a week. Stress and emotional tension may increase the frequency due to the fact that during stress, more arousals from sleep may occur. This disorder is

characterized by retrograde amnesia and is found more often in males and in positive family histories.

Preceding a typical sleepwalking episode, a body movement occurs, the child abruptly sits up, the eyes are opened and stare blankly ahead for approximately 15 to 30 seconds, following which sleepwalking begins or the child lies down and resumes normal sleep. During sleepwalking, movements are usually clumsy and verbal communications consist of mumbled, slurred speech. Sleepwalking, like sleepwalking does not appear to be purposeful. A child presenting with clear, purposeful speech and well directed sleepwalking free from injuries may be exhibiting psychological disorders as opposed to a physiological sleep disturbance (Anders, Carskadon & Dement, 1980).

Sleepwalking usually begins prior to age ten, ceases by age fifteen, and is associated with normal psychological functions during the daytime. There may also be a family history of night terrors and enuresis as well as sleepwalking (Kales, Soldatos & Caldwell, 1980).

Sleepwalking in adults is a more serious phenomenon. If epilepsy is ruled out, psychopathology, extreme stress, certain drug treatments, sleep deprivation or alcohol may be causes. Behavior therapy and medications have not been universally successful as cures. Sleepwalking can be a threat to safety. Living on the ground floor, removing dangerous objects, locking

windows and doors and removing keys are appropriate safety measures. Stairways should be fenced off for the toddler and sharp objects removed. A decision to begin treatment with medication should take into account the frequency of events and history of previous injury (Ferber, 1984).

It appears that sleepwalking, like other parasomnias, is a problem of partial arousal from sleep; motor activity begins independently of conscious thought or brain coordination (Phillips, 1983).

An episode of sleepwalking may end with an awakening while the child is still walking away from the bed, in which case he/she will be confused and disoriented, or the sleepwalker may return to bed or another place without awakening at all. A typical episode may last anywhere from a few minutes to a half hour or longer. The child will have no recollection of the episode the next morning. It may be very difficult to awaken a sleepwalker and it is usually best to accompany him/her in order to avoid the possibility of the child harming him/her self. Sleepwalking may occur for many years and normally ends by late adolescence.

The social worker should be aware of the fact that a child who sleepwalks usually has no intellectual or emotional problems during waking hours. Sleepwalking in a child does not indicate a need for psychiatric treatment, but stress may increase the frequency of sleepwalking episodes and this should be communicated to both child and parents. In the adult

sleepwalker, however, there is a greater correlation with emotional difficulties . It is of interest that in normal children, as well as those who are prone to sleepwalking, an episode of sleepwalking can be induced by standing the child on his/her feet during stage four sleep. During sleepwalking, higher cortical functions are inefficient and coordination poor, but visual inspection is operative. The sleepwalker can see what is in his/her path but may misperceive shadows and objects.

Sleepwalking is self-limited and does not predispose to other illness. However, secondary problems in family and interpersonal relationships may result from repetitive episodes. Only when sleepwalking continues into, or returns in adulthood is there a high association with personality disturbance and psychopathology. Fatigue or prior sleep loss are factors which might deepen nighttime sleep and increase the probability of sleepwalking in children.

Sleeptalking (Somniloquy)

This common parasomnia usually occurs during NREM stages three and four. The sounds may or may not resemble words and make little or no sense. Occasionally, partial conversations are possible but speech is frequently irrelevant and illogical. Regardless of the content of the speech, little emotion is displayed.

Childhood-Onset Insomnia

Childhood-onset insomnia begins prior to puberty and may continue into and through adulthood. Total sleep time is low, there may be frequent awakenings and it may take the child a long time to fall asleep. There are many possible causes such as poor sleep hygiene, emotional stress, disturbed biological rhythms or there may be a learned and conditioned arousal pattern involved in initiating and maintaining sleep.

Fear of falling asleep may have been inadvertently caused by an adult equating sleep with death, as in the case of a deceased pet or relative. Hearing late night parental fighting or experiencing violence from abusive or drunken parents at night is often recalled as a marker for the beginning of childhood insomnia. There is also speculation that some childhood insomnia is present at birth due to an impairment in the sleep-wake system. Studies have shown that childhood-onset insomnia patients show a higher incidence of neurological impairments such as dyslexia, hyperkinesia or attention deficit disorders (Hauri & Olmstead, 1980).

The child suffering from this disorder complains of fatigue, irritability, nervousness and trouble concentrating. Poor sleep usually continues even in the face of better coping skills and reduction of external stress. There is no known cure, although very low doses of amitriptyline may help some patients. Childhood-onset insomniacs do not appear to habituate to the

amitriptyline, as they do to hypnotics.

Sleep Apnea in Children

Many children and adolescents experience difficulty breathing during sleep. Parents may become aware of a struggle to breathe, snoring, pauses in breathing and unusual sounds made during sleep. The frequent arousals resulting from respiratory disorders during sleep may result in various complaints. Poor nighttime sleep and persistent daytime sleepiness are usually the most common presenting complaints. Although sleepiness is common in adolescents, it may manifest itself more subtly in younger children who may appear hyperactive, exhibit attentional difficulties, various behavior problems and poor school performance. Children who have been toilet trained for some time may resume bedwetting. There may be complaints of morning headaches. Moodiness and deteriorating play habits may become apparent. Failure to thrive or obesity are occasionally observed. Although pediatricians have recognized children with acute cardio-respiratory failure due to enlarged tonsils and adenoids (Luke, Mehrizi & Folger, 1966), less dramatic cases are infrequently diagnosed properly and parents' complaints of a child's breathing difficulties are often ignored. Often it is not until severe learning and behavioral disturbances emerge that a proper diagnosis is made.

There is less male predominance in childhood sleep apnea than in the adult syndrome. A physical predisposition for childhood sleep apnea does exist. In addition to enlarged tonsils and adenoids, malformation of the tongue, jaw, or facial structure as well as certain neuromuscular disorders or obesity may exist (Guilleminault, Korrobkin, Winkle & Dement, 1981).

A medical checkup may reveal elevated blood pressure and the child may be overweight. The child is often labeled hyperactive only because he/she keeps busy and moving in order to avoid falling asleep and encounters difficulty concentrating due to excessive daytime sleepiness. Should stimulants be prescribed, the result may be to keep the child more alert and able to concentrate better, but the problem of sleep apnea has still frequently gone undiagnosed. An evaluation at a sleep disorders center and by an ear, nose and throat specialist to determine if there is an allergy, obstruction or other blockage in the windpipe is the proper route to follow. A simple tonsillectomy and/or adenoidectomy will frequently reverse the symptoms, including the hyperactive behavior. Although treatment of sleep apnea hypersomnia syndrome is often less than satisfactory, in life threatening situations, a small permanent tracheostomy, which functions only during the night and may be closed off during the day, will result in not only instant relief, but dramatic behavioral improvements as well.

Should the condition remain untreated, results might include damage to heart and lungs. Chronic lack of oxygen to the brain, lack of sleep and daytime sleepiness may leave the child with behavioral, social and academic problems. Such children will often be erroneously labeled retarded, borderline, or lazy, when in fact they are not. Curing the sleep apnea will similarly eliminate their intellectual problems.

Continuous Positive Airway Pressure (CPAP) has recently been shown to successfully treat sleep apnea in young prepubertal children. CPAP uses a facial mask and pressure delivery apparatus which allows the patient to receive sufficient oxygen throughout the night. Portable home devices are now available and this can be a valid home treatment for complex cases of obstructive sleep apnea in young children (Guilleminault, 1985).

Thus, appropriate referral, medical and psychological symptom recognition, counseling, and education of the child, family, and school personnel by the social worker, would be appropriate functions of a social worker dealing with a child suffering from sleep apnea.

Narcolepsy of Childhood

Although narcolepsy is rarely diagnosed prior to teenage years, it probably occurs in children as well as adults. Excessive daytime sleepiness during childhood, especially in children of adult narcoleptics, is often evident. Such children are frequently labeled as being lazy, poorly

motivated, unambitious and stupid. The psychological scars of narcolepsy are rarely eliminated. Peak age of onset is 15 to 25 years of age. Most adult narcoleptic patients recall childhood learning problems, excessive daytime sleepiness, and hyperactive behavior. There is also the danger that the excessively sleepy child may not be considered problematical and therefore be overlooked in spite of the gradually accruing learning and emotional problems.

Evaluation at a sleep disorders center will serve to objectively document a diagnosis of narcolepsy by confirming (a) excessive daytime sleepiness and irresistible sleep attacks, (b) cataplexy, which is a sudden muscle weakness, and collapse, (c) hypnagogic hallucinations (dreams prior to actual sleep onset), (d) sleep paralysis (inability to move prior to sleep or after awakening), and (e) disrupted nocturnal sleep.

In studies at Stanford University Sleep Camp, children of narcoleptic parents have been studied summer after summer while development of their narcolepsy has been followed. In the adolescent, excessive daytime sleepiness (EDS) occurs a few hours after awakening. As he/she begins to fight the sleepiness, and with no apparent signs of napping, recurrent "micro-sleeps" of 5 to 10 seconds can be recorded polygraphically. During such episodes, the adolescent's eyes have a glassy appearance. Perceptual abilities deteriorate and integration of information may become so distorted

with rapidly increasing micro-sleeps, that amnesia results. A recognizable nap or sleep period usually results with neither the patient nor others having been aware of the preceding micro-sleep episodes.

Hypnagogic hallucinations are terrifying experiences for the child. This symptom of narcolepsy sometimes results in a mis-diagnosis of schizophrenia. Both auditory and visual hallucinations may be present. The patient tries to escape or move from this frightening experience but is unable to do so because of the paralysis associated with inhibited muscle activity.

Unfortunately for the afflicted child, treatment for narcolepsy offers less than optimal relief. Medications to increase alertness may help the child to function more normally in school and with their peers; and some medications may reduce or control cataplexy and its attendant social embarrassment and injury. Needless to say, side effects of such medications and their long term use are not desirable.

The social worker should suggest frequent napping, make appropriate referrals, offer a careful explanation of the disease and its symptoms to the child, family and school, and assist in providing a supportive environment for the child and family.

Sleep-Wake Patterns in Adolescents

Research has shown that during the ages of 10-13 years, children tend to obtain less sleep on school nights as opposed to non-school nights during

which 9 to 10 hours of sleep are the norm. Such findings suggest that the need for sleep still remains stable, but outside pressures on older children may account for a reduced number of hours they have available for sleep. Older children may be sleeping longer on weekends to recover from sleep loss during the week.

The fact is that most children need more sleep during adolescence, not less. However, the amount of actual sleep obtained in our society appears to foster severe daytime sleepiness. Many parents are puzzled by the fact that their once exuberant teenagers now prefer to sleep late in the morning and begin to take afternoon naps--especially on weekends. Adolescents become less likely to awaken spontaneously in the morning (Carskadon, Orav & Dement, 1983).

It has been shown that there are effects of small constant reductions of nighttime sleep on daytime alertness. Nightly sleep reductions have a cumulative effect. Adolescents who are not getting sufficient sleep are likely to become more sleepy in school as the week progresses. There is also a tendency for adolescents to delay their sleep phase--that is, they habitually delay their bedtime. This tendency may result from changes in circadian physiology which accompany puberty, social and school pressures to stay up later at night and resultant chronic shortening of sleep times. The seriousness of such implications for school performance and daytime

functioning should not be underestimated. It is probable that severe physiological sleepiness is not necessarily always obvious subjectively, nor apparent in drowsy behavior.

Sudden Infant Death Syndrome (SIDS)

For centuries, infants have been dying suddenly and with no obvious cause. References to such deaths can be traced as far back as Biblical times. Not until the middle of this century, however, did physicians compare autopsy information from various parts of the world and become aware of the fact that deaths were occurring on a much larger scale than had been previously thought. In 1969 the sudden infant death syndrome was defined as the sudden death of an infant or young child, which is unexpected by history and unexplained by thorough autopsy.

SIDS, also known as crib death, kills approximately 10,000 babies a year in the United States (Bergman, Beckwith & Ray, 1970). Current thought holds that SIDS victims die quietly during nocturnal sleep periods or daytime naps. There is frequently no previous warning of underlying pathology. SIDS is the biggest killer of children under one year of age, and scientists remain uncertain of the exact nature of its cause or causes.

The highest incidence of SIDS occurs between two and four months of age, with the risk declining thereafter. SIDS is rarely the cause of death for children over one year. Years before the syndrome was medically identi-

fied, parents who lost a child to crib death were often blamed and forced to undergo interrogation by police as well as other social indignities.

Premature babies, siblings of previous SIDS victims, low birth weight babies and twins are more susceptible to the syndrome. A history of maternal addiction or smoking, young maternal age, low socioeconomic status, and male sex of the child constitute additional risk factors (Valdes-Dapena, 1980). The largest number of crib deaths occur during the winter months--often following a minor illness such as a cold. Native American Indians and black children are also at higher risk for SIDS. Autopsies frequently reveal an excessive amount of fluid in the lungs or an inflammation of the upper respiratory tract, but such slightly abnormal findings are not sufficient to explain the death.

Although many theories have been explored to explain why two out of every one thousand infants born alive each year succumb to SIDS, the major focus of interest is centered on the sleep patterns of infants. Most infants frequently stop breathing during sleep for up to five seconds at a time. Some babies experience longer *apneas*, or periods of suspended breathing (Guilleminault et al., 1981). Studies have shown signs of chronic oxygen shortage in SIDS victims, indicating a relationship between apnea and SIDS. The possibility has been suggested that some babies may have an immature or abnormal respiratory control system and they do not adequately respond to

routine accumulations of carbon dioxide in the blood, such as might happen when breathing ceases temporarily.

In addition to the theory that there may be a dysfunction in the autonomic nervous system during sleep, it has also been suggested that the problem might be caused by a sudden closing of the upper airway. The back of the tongue and related muscles may in fact obstruct the airway in some infants, due to poor muscle tone, overactive reflexes, or an infant's slow response to a lack of oxygen.

Presently there is little the average parent can do to prevent SIDS. However, in the case of parents who have lost an infant to crib death or who have a child who was resuscitated after a near miss, there are preventive measures to be taken. Any child found not breathing, bluish or pale and requiring stimulation to be aroused, should be seen immediately by a physician for a diagnostic evaluation. This includes any other children in the family as well. A sleep recording of a baby at high risk during which breathing is monitored should be performed so that guidelines can be determined.

Infants who are determined to be at high risk, such as those with prolonged breathing pauses of 15 seconds or longer, those who have a family history of Sudden Infant Death and/or apnea, and near miss babies (those who have already experienced a life threatening event and were resuscitated)

may be prescribed home monitoring alarm equipment. This equipment alerts parents to the occurrence of an episode in which resuscitation may be necessary. It has been demonstrated that well supervised home monitoring for near miss babies is a highly desirable preventive measure (Kelly, 1978).

There are multiple tasks for the social worker in the areas of SIDS and parents with near miss babies. In addition to support during the grieving period, the worker can help the family with their need to learn as much as possible about their child's death. Feelings of overwhelming guilt and grief commonly follow the shock of SIDS. Grief counseling and referral to self-help groups are appropriate.

SIDS allows no preparation for death and guilt-grief reactions are intense. A great opportunity exists here for the social worker in the area of preventive psychiatry. The family should be encouraged to ventilate their anger, and also allay the inevitable guilt feelings other siblings will experience. The subjects of autopsy, future pregnancies, genetic counseling and medical questions will require time, knowledge, skill and compassion on the part of the social worker. Written information about SIDS is extremely helpful for the family, who can then review it at their leisure as well as give it to friends and others in lieu of answering the myriad unavoidable questions they will be asked (Garfield, 1978). Long term follow up by the social worker will also be helpful in cases of SIDS where the

family was denied the opportunity for anticipatory grief (Gonda & Ruark, 1984).

The “Near-Miss” Baby and High Risk Baby

When working with parents of a near miss baby, the social worker will again perform multiple services. Chances are that there will have been a significant psychological impact on family members involved. All family members should be evaluated for significant incidence of prolonged apnea. The social worker can locate and coordinate community resources which will meet the needs of the family. Normal aspects of the high risk baby should be stressed in an effort to allow the baby to be nurtured and enjoyed and to strengthen parent-infant bonding. Other children in the family will also need continuing support and attention. Continuous observation and management of the high risk infant exerts tremendous pressure and it is helpful if relief personnel in the home setting can be provided. There is a need for ongoing medical, technical, and psychosocial support to the family in question. Providing letters from a physician or appropriate social service agency to the parents which they can give to the telephone and electric companies and local emergency services are helpful. Such a letter would explain the medical aspects of babies at risk for SIDS and the necessity for cooperation in the event of emergencies (see appendix)

The social worker may first become involved with the near miss baby and family when the child is rushed to the hospital following an episode of apnea. The parents are encouraged to remain in the hospital with the child, not only to help care for the infant, but also to maintain parental-infant bonding. The parents may be grieving over the threat of losing their child and will require support from the social worker. Parental misconceptions about SIDS can be dealt with and factual information given. Teaching the parents to become familiar with monitoring equipment, should they elect to have a home monitoring system, is of the utmost importance.

The cardiorespiratory monitor is a machine used at night and when the child can not be directly observed. The most highly recommended model monitors both breathing and heart rate, and would include electrode belts, remote alarms, power failure alarms and wireless intercoms.

The Social Worker and Home Monitoring of the High Risk Baby

The entire family (if feasible) should be familiarized with the monitor, methods of observation and intervention including infant CPR. If at least both parents learn apnea monitoring care, the tremendous burden can be shared. It is helpful for the social worker to outline various changes in daily living patterns which usually occur as a result of home monitoring. For instance, with only one parent available, such common activities as

showering, napping or taking medications which cause drowsiness may be curtailed, as one must always be able to hear the monitor alarm and to respond within seconds.

A financial assessment of the family in addition to appropriate support services will minimize undesirable stress on the home monitoring family. Home visits to review prior instructions, check placement and functioning of the equipment and offer continuing support for the family are also indicated.

Prior to discharging the child from the hospital, it is helpful for the social worker to give the parents a telephone number where he/she can be reached in the event of specific problems. A referral to a local visiting nurses association should be made so that it can assist the parents in observing changes in the infant's health which might tend to increase apneic episodes. These can include colds, diarrhea and sleep deprivation. The latter may occur during holidays when the child's normal routine may be disrupted by visitors.

Infants usually adjust easily to the monitor and interference with normal growth and development should not be expected. The parents however, often experience chronic stress. Between the third and sixth month of monitoring many parents show signs of depression from being confined to the home so much. Pre-existing family stress can be exacerbated and it is important for the social worker to identify such situations and make

appropriate interventions (Favorite, 1979).

Parents are now being encouraged on a larger scale to accept home monitoring. If the infant stops breathing or the heart beat falls below an acceptable value, the machine sounds an alarm and the parents are better able to immediately and effectively deal with the high risk infant and apneic events. Only a few years ago, such parents were considered to be neurotic or overprotective of their child if they requested such help. Now, modern technology has made it possible for parents to have and understand the use of home monitoring systems.

In a typical near miss incident the parent notices that the child has stopped breathing, may feel cold and limp to the touch and be blue in color. The parent usually shakes the child, initiates CPR, and calls for help and ends up in the emergency room where, hopefully, the incident is taken seriously and appropriate action undertaken. This includes not only monitoring the child but working with the confused, traumatized, and often angry parents. Although their child is alive, fear of a repeated incident and one's ability to cope with it usually is overwhelming to most parents. Although most eventually learn to cope with the situation, some parents reveal features similar to those of SIDS families. Some may react in a way that correlates with post-traumatic stress disorder as found in the DSM III manual (Sheridan, 1985).

The social worker working in a monitoring program should be aware of the fact that the home monitor is something the parents are voluntarily willing to take into their home. It is not a decision they should be forced into making. The social worker should be knowledgeable about the family's financial concerns related to the monitor and should convey reassurance that the parent need not make a life or death decision about their child due to an inability to cover the financial costs of home monitoring. The social worker's support is also essential during the time of monitor discontinuance. The family's readiness to cease relying on the monitor will ideally coincide with medical evidence suggesting it is no longer needed. Approximately ninety percent of infants no longer need the monitor by age one year.

The social worker's participation in a SIDS or a monitoring program is logical, particularly because of the person-in-situation approach (Hollis & Woods, 1981). The social worker's training with a holistic concentration will serve both client and worker well. Facilitation, coordination, orientation and follow up by the social worker are essential for the treatment team, the family in question and to the social worker him/her self. The stress of working with a life-or-death situation is balanced by the rewards of being in a position to contribute to patient care and management, and being an integral part of the health professional team. In addition, the worker is afforded the chance to see results of his/her work and realize the

appreciation of other health professionals (Sheridan, 1985).

Narcolepsy

Narcolepsy was first described in 1880 by Gelineau (Karacan, 1978). This life long, potentially disabling sleep disorder may affect more than 250,000 Americans, many of whom are undiagnosed. No known cure exists for narcolepsy, nor is fully adequate treatment available.

Narcolepsy is a syndrome, the symptoms of which comprise the “narcolepsy tetrad,” namely (a) excessive daytime sleepiness, (b) cataplexy, (c) sleep paralysis, and (d) hypnagogic hallucinations. Since all of these four symptoms are unusual with respect to everyday experience, a detailed discussion follows:

Excessive daytime sleepiness (EDS)

Hypersomnia and pathological sleepiness are terms used interchangeably. Such terminology refers to being sleepy all day without prior sleep loss. In other words, this sleepiness is not caused by sleep deprivation. It should also be noted that the nature of the problem is sleepiness, as opposed to excessive amounts of sleep. For the individual with hypersomnia, sleep does not appear to be restorative as is the case of a normal person.

The social worker needs to be aware of the fact that the client with hypersomnia lives from day to day, year after year, with a relentless state of fatigue and sleepiness. This overwhelming sleepiness can be disabling and impair the client's ability to work, learn and engage in interpersonal relationships. Unfortunately the physician, family or school may not recognize the seriousness of pathological sleepiness. The average patient may suffer for ten years or more before hypersomnia is diagnosed and recognized as a symptom of pathology (Guilleminault & Dement, 1977). During this time the client may fail in high school and college, be fired from jobs, and be rejected by others as being lazy, or uncaring. He/she may be told "nothing is wrong" based on routine physical examinations, blood tests and thyroid measurements. Misdiagnosis such as hyperthyroidism, hypoglycemia and emotional illness are frequent.

Patients with EDS are pathologically susceptible to sleep inducing situations. They are also prone to automatic behavior or memory lapses (doing routine things with little awareness of or control over the activity such as arriving at an unintended destination). The inappropriateness and frequency of sleep episodes is important information which the social worker should obtain for diagnostic purposes. Does the client fall asleep in the middle of a conversation, while driving, or while teaching a class?

The social worker will first want to determine whether or not the client is suffering from chronic sleep loss before suspecting narcolepsy as the cause of hypersomnia. A history of the client's sleep habits and complaints should be obtained. If the client travels and crosses time zones frequently, jet lag syndrome should be considered. Irregular hours, environmental disturbances, poor sleep hygiene and other factors may contribute to chronic sleep loss, which should not be confused with pathological sleepiness. Although many narcoleptics also complain of disturbed nocturnal sleep, other symptoms will distinguish the EDS patient from the individual suffering from sleep loss.

Narcolepsy accounts for approximately 60% of patients with hypersomnia (Coleman et al., 1982), the other major cause being sleep apnea. Sleep paralysis, hypnagogic hallucinations and nocturnal sleep disturbances are frequently associated with narcolepsy, but such symptoms also are found in non-narcoleptic individuals. Cataplexy is the key symptom to look for when definitively diagnosing narcolepsy.

Cataplexy

Cataplexy is a loss of voluntary muscle control and tone, usually triggered by strong emotion (anger, laughter, elation, surprise). Such reversible attacks may range from a brief experience of partial muscle weakness (a quick jerk of the neck or sag of a facial muscle) to a state of total

physical collapse during which the patient is unable to move or speak for as long as 30 minutes, though still partially aware of his/her surroundings. In this case, the patient is helpless until the attack is spontaneously relieved.

The self-imposed restrictions of emotions and activities (such as athletic activities, sexual intercourse, reading an exciting book) in an attempt to avoid cataplexy is one of the more disabling consequences of narcolepsy. Cataplexy can occur in everyday social situations such as disciplining a child, arguing with a spouse, or asking the boss for a raise. Obviously, dangers are posed when the narcoleptic individual performs routine tasks such as driving a car, holding a baby, or smoking a cigarette.

Frequently the cataplectic attacks will be mistaken for epilepsy, conversion neuroses, hysteria or schizophrenia because of hypnagogic hallucinations and the “out of body” sensations the patient describes (Zarcone & Fuchs, 1976). It is unlikely that the physician or social worker will witness an attack in the office, and onset of symptoms is usually gradual and insidious. The client may not initially verbalize complaints of mild cataplexy because they are unable to describe them or because previous complaints have been ignored. A key question for the social worker to ask is “Do you ever have attacks of muscular weakness or paralysis that appear to be caused by emotions such as laughter or anger?”

A cataplectic attack in a person who is reclining or sitting, may develop into a sleep attack during which there is no awareness of one's surroundings or memory recall. Although a person may appear to be unconscious during cataplexy, he/she will frequently remember sounds and words spoken during an attack. If the individual's eyes are open during an attack, they may be able to track external motions.

It has been found that narcoleptic patients, when observed polysomnographically will go from a state of wakefulness directly into REM sleep (Rechtschaffen, Wolpert, Dement, Mitchell & Fisher, 1963). These sleep onset REM periods (SOREMPs) have enabled the sleep researcher to interpret narcolepsy symptoms in terms of sleep mechanisms and conclude that narcolepsy is a disorder of REM sleep--during which REM sleep erupts into the waking state.

Sleep paralysis

Sleep paralysis is the inability to move as one wishes and occurs when the individual is falling asleep or waking from sleep. Generally, the individual is unable to speak or open the eyes, although he/she is usually fully aware of and has recall of sleep paralysis, which may also be accompanied by hallucinations. The individual may recall incidents which did not, in fact, occur. The inability to move in addition to being helpless, combine to make this an extremely frightening experience for the patient.

Hypnagogic hallucinations

These are extremely vivid dreams which usually occur at the beginning of a sleep period. The person has a feeling of being paralyzed and perceives a threatening event or figure nearby, accompanied by a sense of fear. The typical hypnagogic hallucinations involve the bedroom area or one near to where the person is sleeping, and a feeling of impending harm from an invader (person, monster, animal). Frequently the threat revolves around the sounds of footsteps or breaking glass.

Hypnagogic hallucinations and sleep paralysis may also be found to occur occasionally in normal people, though the experiences are usually less intense and may be termed "hypnagogic reveries."

Implications of narcolepsy for the social worker

Narcolepsy is a lifelong, progressive disabling illness, the onset of which is usually prepubertal. Familial incidence suggests a genetic component. Typically at 8-12 years of age, a problem with sleepiness may be noticed, although it is not unheard of for an adult over age 30 to develop the disease (Dement, Carskadon, Guilleminault & Zarcone, 1976). When working with children and adults exhibiting sleep problems, the social worker should bear in mind such questions as whether or not the client falls asleep at inappropriate times, has been called "lazy," has exhibited dramatic changes in grades and performance, experiences difficulty getting out of bed, appears to be

forgetful or not know what he/she is doing, craves sweets or uses sweets, coffee and cigarettes in an effort to remain awake during the day, or “loses time” (goes to bed and sleeps for one or two days, particularly after exertion). In view of the fact that sleepiness is not socially acceptable, the client may speak more in terms of fatigue and tiredness. Frequently it is the parent, spouse, teacher or boss who is more aware of automatic behavior and sleep attacks than the client him/herself.

The social complications of narcolepsy are myriad. The ability to read, study, concentrate and learn are impaired. Parents, teachers, spouses and employers often misinterpret the client’s sleepiness as a lack of interest, or a sign of hostility, rejection or laziness. The narcoleptic may learn to guard emotional responses in an effort to avoid cataplexy, thus adding further diminishment to the quality of life.

The social worker working with the narcoleptic client may be extremely instrumental in improving the client’s quality of life. Care and management involve education and working with the client’s employer, suggesting flexibility in work requirements, altering social attitudes, dealing with the natural aging process and long-term drug effects the client must endure. Helping the client achieve maximum alertness and participation in society for as long as possible is of the utmost importance. If the attending physician has failed to do this, the client may feel his/her problems are a result of an

emotional or other disturbance. Education about the disease and its development is necessary in order that the client not deny difficulties caused by the symptoms and subsequently increase his/her frustrations and loss of self-esteem. A correct understanding of narcolepsy offers the client the ultimate tool with which to cope with society. His/her ability to appropriately explain the illness to others and to actively seek the acceptance of others is the sole alternative to social withdrawal or stoic acceptance of isolation and emotional depression.

The social worker will find it helpful to counsel the spouse and family of the narcoleptic client. Due to the nature of their symptoms, misunderstanding and social stigmatization often result. Our culture has little compassion for inactivity, lack of alertness, or sleepiness. Education, marital and family counseling should be considered important remedial and preventative measures. In the area of employment, the social worker's interventions may prevent the client from being dismissed from a job he/she is competent to perform. The social worker can encourage the employer to be flexible by allowing the employee brief naps throughout the day (in lieu of coffee breaks), enabling the client to remain more productive and employed.

The client should be counseled in areas of sleep hygiene and sleep habits. Regular hours are important as are chances for brief naps throughout the day. Changes in life style and scheduling which might prove helpful should

be explored, and dangers should be identified (driving while pathologically sleepy). Children should be reassured that the narcoleptic is neither dying nor in pain. Adults should understand that cataplectic attacks are not related to epilepsy, convulsions, or hysteria, but are manifestations of REM sleep occurring during the waking state. These attacks can be frightening for others to witness and family members need to learn when and how to help the patient. The best approach is to remove any obvious dangers during an attack (such as sharp edges or causes of fire), to accept such attacks calmly and routinely until spontaneously relieved, and to offer reassurance to the patient.

Treatment of narcolepsy with drugs is less than ideal and should be avoided by those who are not severely disabled by sleep attacks, sleepiness and cataplexy. Analeptic (stimulating) drugs such as Ritalin are used to manage pathological sleepiness. Adverse reactions to such medications include psychosis, tenseness and irritability, depression when drugs begin to wear off, dryness of mouth, headache and heart problems. Development of drug tolerance is an ever present problem necessitating drug alternation and withdrawal. It may be important for the social worker to help the client with problems of medication management. Careful record keeping is often helpful. Potential food and drug interactions should be explained as well as the need to take the medications on an empty stomach. Avoidance of antacids

should be mentioned, as should the importance of taking medication at hours when nocturnal sleep will not be impaired.

Treatment of cataplexy with chemotherapy is even more complicated. Although imipramine (Tofranil) may effectively control cataplexy, results of long term tricyclic antidepressant use are not well known and the two most troublesome side effects are sleepiness and impotency. Some male patients routinely discontinue medication for one or two days, allowing erectile potential to return while the anticataplectic action is still in effect. Patient and partner should be counseled about timing of dosage and techniques of sexual stimulation for both partners. Follow up calls from the social worker should occur in order to help the client establish the lowest effective dosage, optimum time for medication use, the inevitable development of drug tolerance and possible need to be hospitalized for a period of brief drug withdrawal.

A full diagnostic work-up at a sleep disorders clinic is essential for a proper diagnosis of narcolepsy. This involves objectively measured criteria such as the short length of time it takes for a narcoleptic to fall asleep during Multiple Sleep Latency Tests (see Chapter 1) and the appearance of sleep onset REM periods. The normal individual will take at least 10 minutes to fall asleep, if at all, on these “nap” tests. The narcoleptic may fall asleep on every test, often within 30 seconds, and have frequent sleep-onset REM

periods. At least one definitive diagnostic evaluation is also necessary for the narcoleptic to avoid a life-long difficulty obtaining medications which are closely monitored legally. The socioeconomic impact of narcolepsy will also be lessened with proper diagnosis and treatment.

The social worker should refer the narcoleptic client to the American Narcolepsy Association (ANA) and/or the appropriate support groups when possible. The ANA is an independent non-profit corporation established in 1975 by persons afflicted with narcolepsy to help solve problems related with the disease and related chronic sleep disorders. The association offers valuable literature on coping with the disease and ongoing research. Narcolepsy Network is another organization which is dedicated to helping the narcoleptic patient. This group stresses communication, advocacy, research, and education for those concerned with narcolepsy.

At the Stanford University Medical Center, this writer co-leads a support group for individuals with narcolepsy. Behavioral coping strategies and cognitive restructuring are being evaluated as therapeutic treatment modalities in narcolepsy. Psychosocial needs of patients and their families, the effectiveness of medications, social work interventions, finding a knowledgeable physician in the community, genetic factors and ongoing research are some of the various topics discussed. A similar group has been formed by a social worker at the Veterans Administration Hospital in

Syracuse, New York, and its development was also detailed at the Second International Symposium on Narcolepsy held at Stanford University in July, 1985.

Secondary consequences of narcolepsy such as reduced employment, disrupted family life, personality changes and high divorce rate have been the subject of research for some time (Daniels, 1934; Zarcone & Fuchs, 1976; Broughton et al., 1981, 1983). Questionnaire studies have endeavored to describe many variables of the narcoleptic patient. The Center For Narcolepsy at Stanford has devised a questionnaire (Foster & Baker, 1985) designed to inventory a multitude of factors associated with narcolepsy. Results of this questionnaire also represent the establishment of a national narcolepsy data base covering the following categories: (a) demographic, (b) current sleep hygiene, (c) incidence of other sleep disorders presenting with narcolepsy, (d) symptom onset and progression, (e) diagnostic history, including the number of helping professionals consulted before a definitive diagnosis was made, (f) medication usage and reason for discontinuance, (g) medication side effects, (h) family history of sleep disorders and other illnesses, (i) mechanisms utilized by subjects for coping with symptoms, (j) the effect of narcolepsy on mobility, (k) impact on family life and relationships with significant others, (l) effect of narcolepsy on friendships and other social relationships, (m) circadian rhythms as perceived by

subjects and impact on perceived emotional well being. Data analysis is still pending.

One of the most valuable research resources available is the narcoleptic dog colony at Stanford University. In 1953, Dr. William Dement discovered a miniature French poodle with a syndrome that resembled human narcolepsy. In an effort to locate more animals, he visited veterinarians in more than 50 cities during the next year and spoke at nearly all of the Colleges of Veterinary Medicine in the United States, describing canine narcolepsy. A series of genetic and breeding studies eventually led to the isolation of a type of genetic narcolepsy (Mitler, Boysen, Campbell & Dement, 1974). To date, this dog colony is the only operation of its kind in the world. This discovery has demonstrated the genetic factor in narcolepsy and has also suggested that narcoleptic symptoms develop at an early age. Other narcolepsy researchers are investigating the possibility of narcolepsy as an autoimmune disease and are exploring new drug compounds.

Sleep Apnea

The sleep apnea syndrome is characterized by frequent cessations in normal breathing during sleep. The term *apnea* denotes a suspension of breathing and is defined here as any pause in air flow in excess of 10 seconds (Guilleminault, Eldridge, Simmons & Dement, 1976). These sleep induced,

sleep related respiratory impairments may be life threatening and can develop at any age. Men have sleep apnea more frequently than women and those who have narcolepsy may be at higher risk than others. Breathing pauses may occur as frequently as several hundred times per night, lasting from 10 seconds to over 3 minutes each.

The primary factor involved in diagnosis of sleep apnea is that the patient's respiration is normal when he/she is fully awake. It is the actual occurrence of sleep which leads to the abnormality. A medical examination of the patient during wakefulness may reveal no physical abnormality, whatsoever. In addition, the patient may not recall or be aware of the apneic episodes. A polysomnographic sleep recording is the only conclusive way to accurately diagnose sleep apnea. As a result of continued oxygen deprivation and stress on the heart and lungs, the sleep apnea patient is at increased risk for heart attack and possible sudden death during sleep. It is therefore essential that the disorder be accurately diagnosed and treated.

There are three types of sleep-induced apnea. (1) Upper airway, or obstructive, sleep apnea, is the most common and serious form. There is an abnormal loss of tone (healthy elasticity) in the throat, tongue and larynx muscles during sleep. This results in blockage of airflow. During the apneic episode, the diaphragm continues to rhythmically contract with an increasingly greater effort against the closed airway. Eventually, a partial

or complete awakening occurs during which normal breathing is resumed. (2) Central sleep apnea is comparatively rare and found primarily in those with a complaint of insomnia. When an individual with central sleep apnea falls asleep, the diaphragm stops moving due to the failure of the sleeping brain to send impulses through the nerves which control diaphragm movement. When the diaphragm ceases to function, breathing stops. Again, lack of oxygen will hopefully prompt the individual to awaken, gasp for air and resume breathing. (3) Mixed sleep apnea is a combination of both of the previous two forms and is frequently the type of apnea found in narcoleptics. Such apneic events begin with central apnea which then turns into upper airway sleep apnea.

The chief complaint of the sleep apneic is excessive daytime sleepiness. Sleep attacks appear to be prolonged (over an hour) and unrefreshing. The social worker should listen for complaints such as, "I never seem to get enough sleep." The client may indicate he/she can never get a night of continuous sleep. Despite the fact that he/she is unaware of apneic incidents, the client is aware of frequent awakenings during the night and experiences difficulty getting back to sleep.

The social worker may gain valuable information from an interview with the client's bed partner. Loud snoring associated with a sudden silence, followed by a loud choking inspiratory gasp is characteristic of this

syndrome. It may be helpful for one to make a tape recording of the client's breathing pattern. In addition, once asleep, the apneic may be difficult to arouse and frequently unresponsive to even painful stimulation. The bed partner may also notice thrashing like body movements as the patient struggles to get air.

In children with sleep apnea, reappearance of enuresis after toilet training is complete may be noted. Other symptoms may include decreased school performance, learning difficulties and hyperactivity interrupted by hypersomnolence. Often the child may be found to have enlarged tonsils (Guilleminault, Eldridge, et al., 1976).

Daytime sleep apnea complaints also include morning headaches, learning and memory problems, automatic behavior, unexplained hypertension and depression. Grogginess and confusion upon awakening is common. The social worker should be alert to the mention of a spouse moving to another bedroom because of inability to tolerate the loud snoring and thrashing in bed. This often results in great marital stress. Personality changes such as irritability and lack of motivation may be noted. Men may report bedwetting, loss of sexual drive and impotence.

The incidence of sleep apnea increases with age. Other risk factors include obesity, nasopharyngeal abnormalities, CNS depressants, COPD and a family history of respiratory problems. Consequences include

pathological daytime sleepiness, stroke, coronary thrombosis, cardiac problems, vulnerability to sleeping pills and alcohol, and sudden death during sleep.

A careful history emphasizing daytime sleepiness and snoring is helpful in diagnosing sleep apnea, as is an ambulatory microprocessor recording. A complete evaluation of the sleep apnea patient requires all-night polysomnography with ear oximetry to determine the degree of severity, plus, if indicated, pulmonary function tests and an ENT examination including radiological procedures. The type, frequency and severity of cardiac arrhythmias, severity of oxygen desaturation and type, duration and frequency of apneas (sleep apnea index) is necessary to establish appropriate treatment.

Treatment approaches include avoidance of respiratory depressants (Guilleminault, Tilkian & Dement, 1976). This is an area where the social worker may need to educate the client about the hazards of tranquilizers, barbituates, alcohol and other drugs. Weight loss is frequently indicated (Harmon, Wayne & Block, 1982) and such a program with social worker involvement and follow up can be especially important. Various types of surgery are available, the most drastic being the tracheostomy, which is a small hole in the throat allowing air to bypass an obstruction. There are, however, postoperative difficulties and psychosocial problems associated

with this surgery. Other surgeries involve removing excess tissue from the throat, stiffening the windpipe to prevent collapsing during sleep or realigning the jaw to help keep the windpipe open (Simmons, Guilleminault, Dement, Tilkian & Hill, 1977).

Preparation and education for surgical techniques, follow up care, enlisting cooperation and obtaining feedback from family members, and counseling (individual, family, marital) are all important functions of the social worker dealing with the sleep apnea patient. Although there is still no one ideal treatment for sleep apnea, many patients who have elected to undergo surgical procedures report excellent results. Their blood pressure and cardiac rhythm may improve or normalize and they no longer suffer the endless sleepiness which previously impaired their quality of life.

Various pharmacological approaches may relieve symptoms of sleep apnea. Protriptyline, a tricyclic antidepressant, has been shown to reduce drowsiness, improve oxygenation during sleep and alter sleep disordered breathing. Progesterone also has been found to relieve some of the problems associated with sleep apnea. Side effects of such agents, however, are considerable.

One of the newest techniques in use, CPAP (Continuous Positive Airway Pressure), is a treatment for obstructive sleep apnea which involves the use of a nasal mask and motor by the patient. This can be used nightly at

home by the patient. The mask fits over his/her nose and is attached to a air pump via a plastic tube. The air pump gently pushes air from the room into the patient's airway, allowing it to remain open. This system is comfortable, safe, and enables the patient to breathe normally during the night, thus reducing or eliminating excessive daytime sleepiness. In many instances, it has saved lives of both children and adults and the treatment has few appreciable side effects.

If CPAP is determined to be the most appropriate treatment, the patient would spend two nights in the sleep laboratory in order that the machine can be adjusted to the precise pressure needed to eliminate apneas and allow normal breathing at night. The social worker may be involved in necessary after care to assist the client with a smooth transition in the home, continued use and care of the system, and follow up evaluation.

The social worker can screen for apnea, caution clients against use of contraindicated drugs and medications which further depress the respiratory system and urge clients with apneic symptoms such as cardiac irregularities, high blood pressure and obesity to seek medical attention for these potentially life threatening problems.

The social worker can also be instrumental in working with the post surgical client learning to cope with the tracheal tube. Similarly, follow up care with the CPAP client is frequently indicated to ensure maximum and

continued benefit. Support groups and therapy are beneficial as the client and family adjust to a new lifestyle frequently involving the use of state of the art equipment in the home setting.

Erectile Dysfunction

Male erectile impotence is defined as an inability to obtain and/or maintain an erection sufficient for vaginal penetration and satisfactory conclusion of sexual intercourse (Karacan, 1978). Nocturnal penile tumescence (NPT) can be easily monitored, analyzed and interpreted in a sleep disorders laboratory. NPT monitoring determines whether or not an erection occurs during REM sleep, utilizing an electroencephalogram as well as strain gauges to measure penile size and firmness of erection.

The normal male will have an erection during REM sleep periods, even if he is unable to attain an erection while awake due to emotional conflict or inhibitions. The individual who is unable to have an erection due to organic causes (nerve damage, inadequate blood supply to the penis, use of certain medications) will not have erections during REM sleep. While researchers once believed the cause of impotence was organic in only 5% of reported cases, subsequent clinical experience suggests that figure is closer to 50% (Karacan, Salas, Thornby & Williams, 1976).

Impotence is a very common and highly distressing disorder which the client may be hesitant to discuss. The social worker will be in a strong position to rationally counsel the client in appropriate areas of intervention once an objective differential diagnosis of psychogenic or organogenic impotence is made. Referral to a sleep disorders clinic for such an evaluation should be considered for every client complaining of or seeking treatment for impotence.

The clinical evaluation of a client complaining of impotence begins with a careful psychosocial history (including medication, drug and sexual factors). A clinical examination, psychiatric and psychological evaluation, followed by a physical examination (including hormonal and metabolic studies) would also precede the three nights of sleep recordings called for by this protocol. Possible treatment modalities would include treatment of primary illness if possible, manipulation of causative medications, family and/or sexual counseling, psychotherapy (including simple reassurance), surgical prosthesis, vascular or other surgery.

The symptoms most frequently presented by a client with a complaint of impotency are sudden onset of impotence, impotence with one partner but not with another, transient occurrence of impotence, and the occurrence of only minimal erection (spontaneous, masturbatory, morning [Simpson, 1950]). The three basic emotions particularly relevant to sexual

performance are depression, hostility, and guilt, which may or may not be apparent in the client's presentation.

Goals of the psychosocial interview are to obtain a complete history, evaluate the client's mental status (including marital, psychological and social problems) and to form a rational basis for referral if indicated. If a client is a known candidate for a penile prosthesis he may also be interviewed by a psychiatrist, and a battery of psychological inventories may be administered to further assess degree of psychopathology, current mood, cognitive impairment, and interpersonal expectancies and needs (Beutler, Scott & Karacan, 1976).

NPT monitoring is important in both prevention and management of impotence, and to the understanding of erectile mechanisms in relation to use of various drugs. Alcohol, tranquilizers, antidepressants, antihypertensives, anticholinergic agents and various socially used drugs may inhibit erectile response. It is important to keep in mind, however, that drug use/ abuse or the existence of identifiable psychopathology does not necessarily indicate existence of a psychological cause of impotence (Derogitis, 1976).

The social worker is in a position to provide valuable intervention to the client experiencing marital and social distress resulting from impotence by referring him to a sleep clinic for diagnostic evaluation. This important diagnostic procedure can prevent unwarranted surgical procedures for the

psychogenically impotent client and a long, inappropriate course of sexual and psychotherapeutic counseling for the organically impotent client.

Sleep And Alcohol Use

In all likelihood, the oldest and most widely used sedative to promote sleep is alcohol. Because sleep in the human race is universal and alcohol use widespread, the social worker needs to be aware of the interrelationship of these two factors. Alcohol abuse is estimated to involve 10% of the drinking population (Porkony, 1978). A vicious cycle evolves whereby the drinker may drink to sleep or experiences disturbed sleep due to drinking.

Although a moderate single dose of alcohol may appear to induce sleep onset, it also results in increased wakefulness in the latter half of the night as the alcohol is metabolized, as well as sleep stage disruption (Gross & Best, 1975). The percentage of REM sleep will diminish during an episode of acute intoxication and REM rebound will occur during withdrawal. During withdrawal, delay of sleep onset, multiple awakenings, frightening nightmares, and a decrease in total sleep time may occur. Alcohol may also act as a diuretic, causing frequent urination during the night.

In the case of the chronic alcohol abuser, even when abstinent and detoxified, sleep disruptions can continue for a period of one or two years following abstinence (Adamson & Burdick, 1973). Sustained use of alcohol

and other CNS depressants as an aid for insomnia may result in symptoms such as daytime sleepiness, grogginess, depression, irritability, restlessness, shakiness, and agitation. The social worker may discover that some clients have initiated alcohol use as a response to physical or psychic pain. The client may or may not be aware of alcohol abuse as an attempt to create anxiety-limiting, social and interpersonal barriers. The social worker should be aware of related signs of marital, social, and occupational disability.

The social worker should attempt to establish whether a client's alcoholism is the result of a sleep problem or if the sleep problem is caused by the drinking. If the client uses alcohol to treat a sleep disorder, the sleep disturbance will not necessarily improve with alcohol discontinuance and a referral to a sleep clinic is definitely indicated. It is helpful to determine if the client experiences difficulty getting to sleep, drinks only prior to the sleep period, if the sleep problem existed prior to onset of drinking, whether or not psychosocial problems exist and whether or not the client wishes to eliminate alcohol use in an effort to solve the sleep problem. These factors may indicate presence of an underlying sleep disorder (Piccione & Barth, 1983).

Anxiety and Sleep Disorders

Sleep disturbances frequently accompanying anxiety include nighttime awakenings and sleep-onset insomnia. Phobias, obsessions and compulsions are typical forms of anxiety. The loss of control associated with sleep and nightmares may frighten individuals with rigid personalities. Traumatic events and loss associated with nighttime may give rise to persistent fears of sleep and bedtime. Psychotherapy, progressive relaxation training, or referral for judicious use of medication may be helpful social work interventions for breaking the cycle of sleep-disturbed nights that also leads to increased anxiety.

The normal individual sleeping under unusual or unfamiliar circumstances may experience what is called “the first night effect” (Agnew, Webb & Williams, 1966). An anxious person will experience this repeatedly even in their own familiar surroundings, resulting in night after night of repeated awakenings, disruptions, difficulty falling asleep and/or irritability on awakening. Situational anxiety stemming from family, work or other psychosocial factors contributes to the anxious individual’s sleep difficulties. The anxious insomniac worries that better sleep would lessen his/her problems and the more he/she obsesses about sleep, the more difficult it becomes to escape sleep loss. The cycle is perpetuated when such sleep loss impairs memory, performance and general quality of life, thus elevating

anxiety and increasing disruption of sleep.

Chronic insomnia resulting from situational anxiety may continue long after the stressor has been removed. “Conditioned” or “internal arousal insomnia” may result when the sleeping area becomes associated with disrupted sleep and anxiety provoking feelings. Irrational fears about getting adequate sleep may also come into play by generating arousal and anxiety. Treatment for this type of insomnia may or may not prove helpful. In some cases, education, sleep hygiene, progressive relaxation, biofeedback, meditation, self-hypnosis or paradoxical instructions to remain awake in bed may be successful. Stimulus control (associate the bed with quick sleep onset), psychotherapy and medication provide alternative interventions (Piccione & Barth, 1983).

Daytime sedation is a common and potentially dangerous problem for the client using anti-anxiety agents. With certain anxiolytics however, tolerance to daytime sedation can be achieved. In a recent study at the Stanford Sleep Center, researchers found that tolerance to alprazolam’s (Xanax) sedative effects (which develops during the first week of treatment) may be separable from tolerance to its anti-anxiety effects (which develops after at least 4 weeks) (Seidel, Cohen, Wilson & Dement, 1985). Also of great interest is an investigational new anxiolytic--buspirone--whose chemical structure and pharmacological profile are unrelated to any other

class of psychotropic drugs. This medication has also been under study at Stanford and has been shown to be a non-sedating tranquilizer (Seidel, Cohen, Bliwise & Dement, 1985).

Depression and Sleep Disorders

Depression, whether reactive (secondary to environmental, situational, or medical factors) or endogenous (a function of biological makeup or change in body chemistry) and sleep disturbances are closely related. In a manic-depressive illness, the client may experience an inability and little desire to sleep during the manic phase, and fragmented, disrupted sleep during the depressive period. The depressed individual may encounter a long sleep latency and early morning awakening, daytime fatigue and sleepiness. Sleep recordings of endogenous depressives reveal REM abnormalities, in particular, REM onset (Kupfer & Foster, 1978). A polysomnographic evaluation can be an especially useful diagnostic method to employ because it may reveal characteristics of REM sleep which differentiate normals, reactive depressives, endogenous depressives and primary insomniacs (Gillin, 1979).

REM sleep deprivation has been shown to temporarily improve some cases of endogenous depression (Vogel, 1975). Vogel (1980) has also demonstrated that anti-depressive medications suppress and reduce REM

sleep.

When the social worker encounters the client suffering from depression accompanying a sleep disturbance, every effort should be made to base treatment on the underlying problem as opposed to the symptoms. Appropriate therapy can prove to be lifesaving in the case of severe depression but it should not be assumed that a covariance will exist between improvement of sleep and depression (Bootzin & Nicassio, 1978).

Insomnia

Insomnia is a confusing term, but one generally used to describe difficulties with initiation and maintenance of sleep. The condition of insomnia is “a perception of disturbed or inadequate sleep” (Dement, Seidel & Carskadon, 1984). A complaint of sleep disturbance which exceeds one month’s duration, and which interferes with efficient daytime functioning takes into account two other important factors in the definition of insomnia: duration and effect (Phillips, 1983).

Often, objective measurement (polysomnographic recordings) of the patient’s sleep do not corroborate the complaint of too little or disturbed sleep. Additionally, a lesser amount of sleep at night than the patient desires, does not constitute insomnia unless daytime impairment results. Perhaps the patient remains in bed longer than necessary, or during hours inappropriate

for his/her sleep rhythms. In other words, being awake during nighttime hours and feeling bored, lonely or anxious about this, does not imply insomnia unless daytime impairment (sleepiness measured by multiple sleep latency tests and subjective complaints) results. A patient's subjective complaint of having not slept all night is rarely found to be the case when his/her sleep is objectively recorded in the laboratory . However, the complaint is taken seriously because the concept of what the patient perceives is important to the definition of insomnia. "Insomnia with no objective findings" is not an uncommon diagnosis, even in sleep center populations generally thought to reflect patients with the most severe complaints (Coleman et al., 1982).

It should also be noted that there exists a small group of individuals with objectively verified chronic insomnia who exhibit no measurable daytime sleepiness (Seidel, Ball, Cohen, Patterson, Yost & Dement, 1984).

Various factors may play a role in causing the individual to experience difficulty sleeping at night. The cause may be psychological such as in the case of depression or stress. The cause may be physiological, due to breathing disorder, pain, alcohol or other drug use, body rhythms, or abuse of sleeping pills. Other causes include periodic leg movements, sleep apnea and gastroesophageal reflux. Insomnia is a symptom of an underlying problem. Insomnia is not itself a disease, though it can exacerbate various

medical and life problems. More than 30 million Americans have difficulty achieving continuous sleep at night. A recent national survey reported that one third of the population complained of some degree of insomnia (Mellinger & Balter, 1985).

The individual thinking of oneself as an insomniac may complain of feeling sleepy and tired during the daytime, as well as feeling anxious or depressed. Despite not sleeping well at night, the individual is unable to nap or sleep during the day. He/she has difficulty first falling asleep at night, and experiences frequent awakenings and possible early morning awakenings.

The amount of sleep needed varies from individual to individual, but it can be safely concluded that we need that amount of sleep which allows us to be fully alert and energetic throughout the day. Optimum sleep is most likely to occur when bedtime hours are scheduled to coincide with the “sleepy” phase of the twenty four hour cycle of sleep and wakefulness.

Duration is an important aspect of insomnia. Insomnia can be transient (lasting a few days or weeks), such as prior to an important exam, resulting from travel or noise, or a period of grief or trauma. Insomnia can be chronic and unremitting (lasting months or years), or it can occur as intermittent bouts of transient episodes which recur at regular or irregular intervals.

Diagnostic causes of insomnia as published by the Association of Sleep Disorders Centers (1979) include the following:

(1) Persistent psychophysiological insomnia may develop when the attempt to sleep or place of sleep becomes associated with frustration and arousal which results in sleep loss. When this tension-anxiety is discharged into physiological channels, insomnia can result. Often there are other symptoms such as backaches, tension headaches and palpitations. There is a fear of being unable to fall asleep, and the sleep environment and rituals may become associated with a high level of frustration and arousal. Although a temporary stress may have instigated the chain of events, the negative conditions may persist long after the temporary stressors have disappeared. The insomnia will be maintained, as may be illustrated by the patient who can easily fall asleep elsewhere, but becomes hyperalert in his/her own place of sleep (Hauri & Fisher, 1986).

(2) Emotional and psychiatric problems are frequently the underlying cause of the complaint of chronic insomnia. Personality disorders may result in hypochondriacal complaints of poor sleep. Mania is often accompanied by reduced total sleep time. Depression may cause insomnia--especially early morning awakenings.

(3) Insomnia associated with the use of drugs or alcohol may result with prolonged use of a drug. Habitual use of hypnotics, tranquilizers, or certain

antihistamines may produce drug-dependency insomnia. Although the patient's sleep time initially increases with the drug, total sleep time declines after several weeks. The patient then feels a need for higher dosage and the cycle repeats itself. Abrupt withdrawal may cause sleeplessness more severe than the premedicated level and can precipitate nightmares or convulsions. The solution to this problem involves medically supervised, gradual withdrawal.

Use of stimulants may induce insomnia. Many drugs used to treat non-sleep disorders in the aged, such as theophylline, L-Dopa, and isoproterenol used to reverse severe bronchospasm, may cause sleep problems. Tricyclic antidepressants may worsen sleep. Diuretics increase nocturia and thereby disrupt sleep. Alcohol and its withdrawal will fragment sleep.

(4) Nocturnal myoclonus is a condition in which the anterior tibialis muscles periodically contract during sleep, causing pronounced, rhythmic leg jerks and possible complaint of insomnia (Guilleminault, Raynal, Weitzman & Dement, 1975). This diagnosis can be established when EMG recordings of the leg muscles reveal stereotyped contractions lasting about two seconds, repeated rhythmically every thirty seconds, and continuing for minutes or hours. The myoclonus jerk is followed by an arousal with either brief or a full awakening. A change in heart rate is the most obvious arousal

response. This syndrome may often be associated with “restless legs” where the patient experiences an intense crawling sensation in the legs which can be relieved by movement. It is not yet understood what causes this condition, nor is there a cure. It may be useful for the social worker to question the patient’s bed partner, as the patient is frequently unaware of such leg movements.

(5) Sleep-induced ventilatory impairment may present as insomnia, as in the case of central sleep apnea (Guilleminault, Eldridge & Dement, 1972). Here, the diaphragm periodically stops moving when the patient falls asleep. The patient must continually awaken in order to breathe. In such cases, reports of snoring and breathing pauses by the bed partner are helpful. Respiratory depressants should be avoided in cases of central sleep apnea.

(6) Other causes of insomnia include poor sleep hygiene, behavioral conditioning, poor sleep environment, chronic pain, medical problems, bruxism, circadian rhythm disturbances, and gastroesophageal reflux. The last is a disorder in which the patient awakens from sleep with a burning pain or tightness in the chest, or a sour taste in the mouth. Coughing and choking may also occur. This disorder results when acid from the stomach is regurgitated into the esophagus. Treatment includes use of antacids and instructing the patient to sleep in a position less than fully reclining.

Bruxism (teeth grinding during sleep) occasionally gives rise to a complaint of insomnia, and often causes aching jaws in the morning as well as damage to the teeth. Special teeth-protecting prostheses are available and will prevent serious dental problems. Severe bruxism may disrupt sleeping arrangements and give rise to marital discord due to the disagreeable sound produced. Bruxism occurs as a result of masseter muscle activity. There is no systematic study which indicates psychological variables or preexisting dental pathology play a part in bruxism. Grinding of the teeth during waking is common and, interestingly enough, produces no sound.

(7) Circadian rhythm disturbances will be frequently seen by the social worker dealing with clients involved in shift work or travel. The sleep-wake cycle maintains an approximate 24 hour periodicity. Disturbance of these twenty-four hour rhythms may give rise to complaints of insomnia.

Delayed sleep phase syndrome (phase-lag syndrome) is a disorder characterized by inability of the patient to fall asleep at night and to awaken without difficulty in the morning or at a time considered normal by society. Sleep may be entirely normal but is occurring at the wrong time of day. This has successfully been treated by a technique called "chronotherapy" (Czeisler et al., 1981), which utilizes schedule manipulation. This drug free treatment allows the patient to shift his/her sleep from inappropriate hours to those that coincide with their work and social needs.

In advanced sleep phase syndrome (phase-lead syndrome), the patient falls asleep earlier than is socially acceptable and awakens earlier than is desirable. Again, no difficulty is reported in maintaining sleep, and recent research suggests that chronotherapy may be applicable to this syndrome as well (Moldofsky, Musisi & Phillipson, 1986).

Several hundred million people a year travel by air on transmeridian routes (Moore-Ede, Sulzman & Fuller, 1982). In jet lag, the individual experiences difficulty adjusting the internal body clock to the new external time zone. The relatively recent phenomena of jet transportation may afflict the traveler with symptoms of sleep disturbance and disorientation. Sleep disruptions from jet lag usually disappear by themselves because one's circadian rhythms eventually adjust, although some biological clocks take longer than others to reset. Severe and continuous sleep disruption due to frequent work related travel may be treated on a short term basis with rapidly eliminated hypnotics (Seidel, Roth, Roehrs, Zorick & Dement, 1984; Seidel, Cohen, Bliwise, Roth & Dement, in press).

In a recent study conducted by the Stanford Sleep Disorders Center, in conjunction with NASA, sleep and wakefulness in aircrew before and after transoceanic flights were studied. Pilots from Pan American, Japan Airlines, British Airways and Lufthansa had their sleep recorded in the Stanford Sleep Laboratory in an effort to determine effects of jet lag

(Dement, Seidel, Cohen, Bliwise & Carskadon, in press). Based on observed sleep loss and fatigue, it has been recommended that scheduled napping by cockpit crew be allowed, and that adjustment of airline flight times would prove helpful in certain instances.

This international study represents the first report of comprehensive EEG recordings of long-haul layover sleep in operating cockpit crews. Implications for investigating sleep-wake patterns include a variety of operational situations such as rapid troop deployment, rescue missions, transportation operations, space and shuttle activities. Effects of chronic schedule disruption, as well as effects of partial sleep loss or daytime alertness, are known to be cumulative. This implies that sleep and alertness are likely to deteriorate with multiple schedule disruptions. During the Falklands war, which necessitated pilots flying extremely long trips, their sleep was successfully regulated by use of a rapidly eliminated hypnotic (Nicholson, 1984).

Just as frequent travel across time zones can cause circadian rhythm disturbances, so can maintaining an erratic schedule and working on irregular shifts. The social worker must be aware of the implications of shift work for the client. More and more people are now doing work involving "flextime," compressed work week and other alternative work schedules. As new coping strategies for shift workers are determined, it is important for

the social worker to be aware and supportive of them, especially as they relate to the client's free time, safety, health, social life, and career.

The impact of shift work on the family is considerable. That shift work interferes with the social and family life of the shift worker more than it facilitates them is a well supported conclusion (Walker, 1985). Sleep-wake cycles, family relationships, and participation in institutional life may be impaired and social contacts curtailed. There is also a trend toward reduction in the number of hours an individual works. This may allow the shift worker to schedule larger blocks of time by rearranging working hours. The social worker should follow future research which determines how the free time can best be managed and manipulated to result in a more positive effect on social and domestic life.

When the social worker hears the client complain of insomnia, several questions should come to mind. Are there medical reasons (endocrine dysfunction, pain, allergies, neurological problems) for poor sleep? Could myoclonus, sleep apnea or epilepsy be factors? A medical evaluation and an interview with the client's bed partner would be indicated in such cases. Medications, stimulants such as coffee and cola, chronic alcohol, drug and hypnotic use should be investigated. Are psychiatric factors such as depression, alcoholism, or schizophrenia involved? Would psychiatric treatment (pharmacological and psychotherapeutic) be appropriate? Is

psychotherapy, job or marital counseling, or environmental intervention indicated? If the client is muscularly or psychologically tense or anxious, would he/she benefit from relaxation training, exercise or tranquilizers? Does the client reveal signs of learned insomnia? What factors are involved in the client with transient insomnia?

When referral to a sleep disorders clinic is made, various sources of diagnostic information are utilized. The patient is interviewed and given a physical examination. Usually the patient will have an overnight sleep recording done to rule out organic causes of insomnia. The patient may be asked to discontinue use of certain medications, under medical supervision, prior to the sleep evaluation. The patient may be requested to keep a sleep diary and often the bed partner will be interviewed. Low cost ambulatory monitoring is frequently available if the client's lack of insurance coverage negates the possibility of an all night recording at the sleep clinic.

Once a specific diagnosis is made, the patient is apprised of the various techniques conducive to good sleep. Behavioral treatments, chronotherapy, psychiatric treatment, or counseling may be advised. Stress reduction, relaxation training, and the judicious use of hypnotics may be considered, though in cases of chronic insomnia, drugs would be a last resort.

When hypnotics are indicated, the benzodiazepines are preferable. The smallest effective dose for the shortest period of time necessary is the

recommendation of the Consensus Conference sponsored by the National Institute of Mental Health (1984). The physician should educate and monitor the patient in an effort to lessen risks of drug dependence, side effects and difficulties concerning withdrawal. Factors such as toxicity, lethality, withdrawal, drug interactions, half-life and tolerance are important considerations. The patient should experience a specific benefit from hypnotic use such as improved daytime functioning. The use of short acting benzodiazapines will avoid daytime sedation which may be the result of longer acting hypnotics. A specific time of ingestion should be clarified with the patient in order to ensure that he/she be ready for bed and not at increased risk for accidents. Special caution should be exercised when hypnotics are prescribed for the elderly, due to the fact that they metabolize and excrete drugs more slowly. They are also more likely to experience cognitive and motor impairments with benzodiazepine use. Pregnant patients should avoid hypnotic use as should those with sleep apnea or a history of drug/ alcohol dependency.

Sleep and aging

The incidence of nearly all sleep pathologies and problems increase with aging (Carskadon, Van den Hoed, and Dement, 1980). As one ages, the quality of sleep deteriorates, which may account for the problems the elderly

experience in maintaining alertness and functioning independently (Carskadon & Dement, 1981). One of the primary causes of senility may be chronic sleep deprivation. Frequent awakenings and reduced total sleep time result in daytime sleepiness and fatigue. The sleep phase may become advanced or delayed with bed rest becoming a contributory factor in this process. Sleep apnea, sleep related myoclonus and gastroesophageal reflux often impair the sleep of the elderly.

A variety of factors influence the sleep-wake functions of the elderly, including less than optimal sleep environment, excessive bed rest, physical and mental illness, change in physical activity, feelings of rejection, uselessness and loneliness, loss of loved ones, lack of family and friends, social isolation, socioeconomic changes, use of hypnotics, psychoactive drugs and other medications, retirement, confinement, and lack of self-sufficiency. Institutionalized patients are more prone to depression, circadian rhythm abnormalities, and hypnotic dependence insomnia.

Whether verbalizing a sleep complaint or not, the elderly are more likely to suffer sleep impairments which adversely affect the quality and duration of their life (Bliwise, Carskadon, Carey & Dement, 1984). Sleep apnea and other causes of cardiac arrhythmias during sleep can be a major source of deaths occurring during the night. The commonly accepted phrase, "he died peacefully in his sleep," may imply a situation which is

anything but peaceful. Death in bed may involve bouts of suffocation, oxygen starvation, epileptic seizures, heart attack and stroke. The peak time for death is six o'clock in the morning.

The sleep of the older person is often fragmented to the point where sleep and wake become intermixed, resulting in sleepiness and napping during the day, restlessness and wakefulness at night, and the appearance of a general diminishment of mental faculties (Carskadon, Brown & Dement, 1982). Disruption of a lifetime of normal routine frequently results in impairment of circadian rhythms and disrupted sleep-wake patterns. A decrease in total sleep time may be a result of senility. Sleep may be severely disrupted and the person may experience nightly awakenings accompanied by confusion ("sundowner" syndrome).

The social worker working with elderly clients should offer reassurance in the sense that diminished quantity and quality of sleep appears to be a recognized progression of the aging process and should not necessarily be a cause for alarm. It may be appropriate to spend a bit more time in bed to compensate for this lesser need for sleep. Maintenance of regularly scheduled activity, time in and out of bed, and meals are important.

The social worker who is in a position to have an impact on an institutional setting should be acutely aware of sleep hygiene practices for elderly institutionalized patients. Attention should be paid to physical aspects

of the environment. Noise level should be low, as the elderly have lower arousal thresholds. Temperature should be controlled to avoid extremes of heat or cold. A firm bed will be helpful for those suffering from arthritic pain. Upright bed positions will be helpful for those with gastroesophageal reflux. Privacy is important as is compatibility of bedroom partners. The room should remain partially lit for patients experiencing episodes of confusion. Sleep-wake, meal, and medication regularity is important. Medications with sedative side effects should be avoided in the morning. Psychological support from family, friends, and staff members may decrease the need for sedative-hypnotic medications (Kupfer & Crook, 1984).

The social worker can be helpful to the older client by helping him/ her to cope with boredom, financial stress, and insecurities attendant to the aging process. Health care providers should be encouraged to refer elders for psychosocial care. Sleep hygiene should be stressed and drugs avoided. Seniors should be encouraged to participate in health promotion groups which stress improvement in their sleep environment and general health and sleep hygiene.

Sleep Hygiene

The area of sleep hygiene is a widely expanding field, offering various opportunities for the social worker. There is a need for establishment of sleep hygiene programs within industry, the armed forces, the area of sports, the space program and various institutional settings, and areas of transportation (pilots, truck drivers, etc.).

The behavioral treatment of insomnia is an area in which the social worker can work with the client in an effort to improve the quality of the client's life. The client should be instructed to keep a sleep diary for three weeks and note what irregularities are involved. Bedtime should be regularized and curtailed to prevent remaining in bed too long. Relaxation procedures, exercise and maintaining good health are important. Caffeinated beverages should be avoided, especially after noon time. Changes in evening habits such as smoking, taking a walk, reading, and going out at night should all be explored and manipulated. The experience of total insomnia should also be explored by remaining awake an entire night, realizing that this may be difficult to do, but one can still function the next day. At night, a light snack may be helpful. One should try to remain in bed as long as possible, e.g., while reading. One should not try to seek sleep to the point of inducing arousal.

The client should be instructed to first remain in bed, relaxed, if he/ she awakens at night. If he/she becomes tense, reading or a quiet hobby should be pursued. The client should also be instructed never to oversleep because of a poor night; always have an alarm clock set in order to awaken at the regular, early time; during the day, keep busy with tasks requiring gross movements; explore naps to see if they help or hinder night time sleep; if living in an environmentally noisy area, consider noise and light screening measures; and explore effects on sleep of a particular mattress or the floor, temperature, presence or absence of a bed partner, pet, or radio (Bootzin & Nicassio, 1978).

For the client whose bed and/or bedtime has become cues for arousal, stimulus control behavior theory may prove helpful. This entails going to bed only when sleepy and using the bed only for sleep. If the client experiences frustration due to inability to fall asleep, he/she should get up and go to another room until sleepiness returns. The goal is to associate the bed with falling asleep. This procedure is repeated as often as necessary. One should get up at a predetermined time even if there was little sleep at night, make a graph of progress, and not take naps during the day.

The primary focus of a sleep hygiene program is to teach one to become more aware of one's own sleep habits as well as daytime habits which affect sleep. Disturbed sleep is not simply a nighttime problem, but one which

involves behavior and stress patterns of the day as well. Awareness of a sleep pattern can be accomplished by keeping a daily log of eating habits, alcohol, tobacco, drug, medication consumption, exercise, work hours, and sleep time and habits. Regularity of sleep-wake times is of utmost importance. Changing bedtime hours on weekends can shift the sleep-wake cycle. The internal clock is changed from its normal rhythm. Feeling fatigued is not enough to fall asleep or stay asleep if circadian rhythms are abnormal. A transition period to prepare for bedtime should be established. Smoking and heavy meals should be avoided prior to bedtime. Sleeping medications should be avoided: they are not a long term solution to poor sleep, and their use can aggravate sleep problems.

Various relaxation techniques are available, and these skills can be helpful to the individual experiencing tension at bedtime. The premise is that if one can relax at bedtime, sleep will come more easily. These same skills can be useful in dealing with other stresses in life. Autogenic training relies on self-suggestion. Another technique known as progressive or deep muscle relaxation teaches people to recognize muscle tension in an effort to reduce it.

Chapter 5

Case Illustration

The client, a sixty-six year old widow, was referred to a sleep disorders clinic by the social worker at a community senior citizen's center for an evaluation of chronic insomnia. She complained of difficulty initiating sleep over the last three years, which surfaced following the death of her husband and subsequent retirement from a teaching position she held for nineteen years. Following the loss of both her husband and career, she began to struggle with feelings of uselessness and loneliness. Although she described feelings of anxiety about her inability to sleep and tendency to ruminate at night, there were no other symptoms of a depressive syndrome. The client also disclosed that she had developed a habit of using alcohol at night in an effort to fall asleep, and feared such abuse might escalate beyond her control.

The client had a history of myocardial infarction nine years prior to evaluation. There was no evidence of congestive heart failure or angina. She was taking propranolol, 10 mg daily. No indication of an organic mental syndrome was observed and a physical examination was unremarkable. Mental status examination indicated a pleasant and attractive woman with mildly anxious affect.

Sleep studies during the two consecutive nights this client spent at the Sleep Clinic objectively confirmed her subjective complaints of difficulty falling asleep and frequent awakenings. It took her 107 minutes to fall asleep the first night. Sleep latency was 39 minutes on the second night, indicating some adaptation to the laboratory. Her overall sleep efficiency (time in bed spent asleep) improved from 62 percent on night one to 84 percent on night two. No evidence of sleep apnea, cardiac arrhythmia or nocturnal myoclonus was found, nor were characteristics of primary depression, such as a short REM latency, noted.

The client's difficulty initiating and maintaining sleep appeared to be closely related to the death of her husband and retirement from her teaching career. Though not suffering from primary depression, she had feelings of loneliness and anxiety. These feelings were exacerbated at night when she became anxious and ruminated. The client stated that she slept better on those occasions when a friend or family member spent the night. Interestingly, her improved sleep in the laboratory on night two revealed a tendency to sleep better when she was feeling secure and surrounded by those having an interest in her.

The client, at the suggestion of the Sleep Center, made arrangements for follow up care by the referring social worker. The client's condition was not complicated by significant current medical or psychiatric disorders or by

specific sleep abnormalities such as sleep apnea, but rather appeared to be related to the losses she experienced and her inability to respond satisfactorily to them. Antidepressants were not indicated, nor were hypnotics due to their possible carry over effects in the elderly, of daytime sedation.

The social worker offered support in various ways. Supportive psychotherapy was initiated and issues such as unresolved grief and mourning, lack of assertiveness, stress management and a network for emotional support were discussed. A psychosocial evaluation was made and environmental factors examined. The client was apprised of the various resources available. She began attending a club during the day for retired people of her age. She was able to meet others and make friends. She enrolled in a bridge class and resumed social interaction. She spent increased time with family members and her sense of usefulness gradually returned. A behavior modification program offering relaxation training was successful in reducing a great deal of the stress associated with sleep onset. The client was able to eliminate her nighttime use of alcohol when informed of its deleterious effects on sleep.

Because this client's sleep problem had reached chronic proportions when first called to the attention of the social worker, it was apparent that such well established habits would require considerable time to overcome. The social worker, using a psychosocial approach, paid attention not only to

the overall quality of the client's life, but to specific issues of sleep itself.

The client's living and economic situation was evaluated. The possibility of moving to a retirement community offering increased social opportunities and better security at night was explored. A program of sleep hygiene was initiated, stressing regular bed and waking times, and avoidance of naps and lying in bed for lengthy periods of time. Sustained interest on the part of the social worker was successful in helping this client cope with a sleep onset problem.

Chapter 6

Conclusions and Recommendations

Conclusions

According to the National Association of Social Workers (1973), social work is defined as “. . . the professional activity of helping individuals, groups or communities enhance or restore their capacity for social functioning and creating societal conditions favorable to that goal” (p. 4).

Social work practice requires a knowledge base which should include sleep-wake disorders in the area of human development and behavior. In addition, the social worker must acquire knowledge of the economic, social and cultural factors interacting in this field.

The sleep-wake disorders field of health care is an area where the social worker can help people of all cultures obtain appropriate services, counsel individuals, families, and groups, assist the community in providing and delivering improved social and health services. There is a need in the area of sleep-wake medicine for social workers to become involved in the administrative, research, policy setting and legislative processes.

The ideals, values and philosophies of the social work profession have universal relevance to the field of sleep-wake disorders. The international code of ethics (Sanders, Kurren & Fischer, 1982) for social workers has as

one of its basic principles that:

. . . the professional social worker has the responsibility to devote objective and disciplined knowledge and skill to aid individuals, groups, communities and societies in their development and resolution of personal-societal conflicts and their consequences.

(p. 50)

This is particularly relevant in view of the fact that sleep is a universal phenomenon affecting virtually every human being .

The sleeping brain is active--as opposed to resting--and functions differently from the waking brain. It performs various unique tasks such as maintaining vital processes, enabling us to be fully awake and alert during the day, and keeping us healthy and alive.

On May 22, 1986, Dr. William Dement testified before the House Appropriations Committee Subcommittee on Labor, Health and Human Services and Education. He cited the need for additional funding for sleep disorders research and identified six areas, spanning the entire life cycle, in which the sleeping brain is failing.

1. Sudden Infant Death Syndrome: The sleeping brain fails to maintain life support for more than 7000 infants each year who die suddenly in their cribs.

2. **Narcolepsy:** The sleeping brain fails to accomplish restoration of alertness, which results in more than 250,000 Americans who are unable to remain awake during the day.

3. **Sleep Apnea Syndrome:** The sleeping brain is unable to maintain breathing and normal oxygen levels for over 20 million Americans.

4. **Insomnia:** The sleeping brain fails to maintain continuous sleep throughout the night for over 30 million Americans.

5. **Stroke and epilepsy:** The sleeping brain predisposes one to occurrence of seizures and stroke, which occur more often during sleep.

6. **The impact on the sleeping brain of the aging process, alcohol, drugs, abnormal work schedules and jet travel results in an increase of sleeping problems.**

Social workers must be aware of such vulnerabilities and be able to recognize diagnostic signs of sleep disorders in order to offer clients appropriate intervention and treatment in this area of health care. Sleep disorders affect one in four people (Dement, 1976) and frequently cause or relate to psychosocial problems. The fact that many people do not allow themselves sufficient sleep at night in order to achieve full daytime alertness, needs to be publicized. The public should be educated about promoting healthy sleep and wakefulness and the fact that effects of sleep reduction are cumulative. The social worker is in a position to communicate this information.

Agencies in which the social worker might function to formulate policy by promoting sleep hygiene include the Department of Defense (rapid troop deployment), NASA (the space station), Department of Transportation (safety and alertness in the air and on highways and rails), and the Food and Drug Administration (most drugs impact on sleepiness and alertness). The social worker can be influential in areas of Medicare guidelines and other health plans, enabling every client to receive benefits from recent knowledge and treatment of sleep disorders.

Social workers with elderly clients or those suffering from depression, anxiety, impotence, alcohol, and drug abuse should be aware of causes, symptoms, and treatments of sleep disorders. The social worker can act to minimize or eliminate emotional, academic, social, vocational, economic, and marital problems associated with sleep disorders, and thus improve the quality of life for those served by this profession.

Recommendations

Involvement of the social work profession in the field of sleep-wake disorders is highly recommended in order that the quality of life for Americans be enhanced by improving their health and preserving their independence. Social workers should contribute to development of a policy, on a national level, in the area of sleep-wake disorders where public health

and safety is affected. Funding from government and the private sector for continuing research in this area, and the relation of sleep-wake disorders to health and disease, should be supported. Social workers should participate in educating the public about sleep and its attendant disorders, the need for daytime alertness, and the hazards of sleepiness behind the wheel, on the job, and in the classroom.

The social worker can be influential in focusing attention on the preventable aspects of sleep disorders by disseminating knowledge of sleep hygiene and by helping to raise the level of awareness of that third of our lives which is spent in a state of sleep. Monitoring the cost and availability of health care for individuals with sleep disorders is also an area worthy of the social worker's attention, especially in instances associated with preventable disease .

An effort should be made in schools of social work to incorporate information about sleep-wake disorders within the curriculum. Sleep disorders centers should be considered as field placement sites for students and as a potential source of employment. Formulation of a model for the development of social work services in the sleep-wake disorders setting should be encouraged.

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Appendix A

Computerized Data Bases

Several computerized databases were utilized for the purpose of searching the history of social work literature relevant to the field of sleep-wake disorders.

The Dialog Information Retrieval Service, in operation since 1972, presently has over 220 databases available on the system. These databases contain in excess of 110 million records, are regularly updated, and are being continually expanded. The following databases were used:

Medline. 1966 to present. 4,687,000 records, monthly updates.

Medline is produced by the National Library of Medicine, is one of the major sources for biomedical literature, and indexes in excess of three thousand international journals.

Nursing and Allied Health. 1983 to present. 30,900 records, bimonthly updates. This database covers such subjects as nursing, health education, medical and laboratory technology and social services in health care.

Psychological Abstracts. 1967 to present. 493,500 records, monthly updates. This database includes the world's literature not only in the field of psychology, but related disciplines in the behavioral sciences, as well.

Sociological Abstracts. 1963 to present 153,5000 records, updated three times a year. The world's literature in sociology and related disciplines in the social and behavioral sciences are covered.

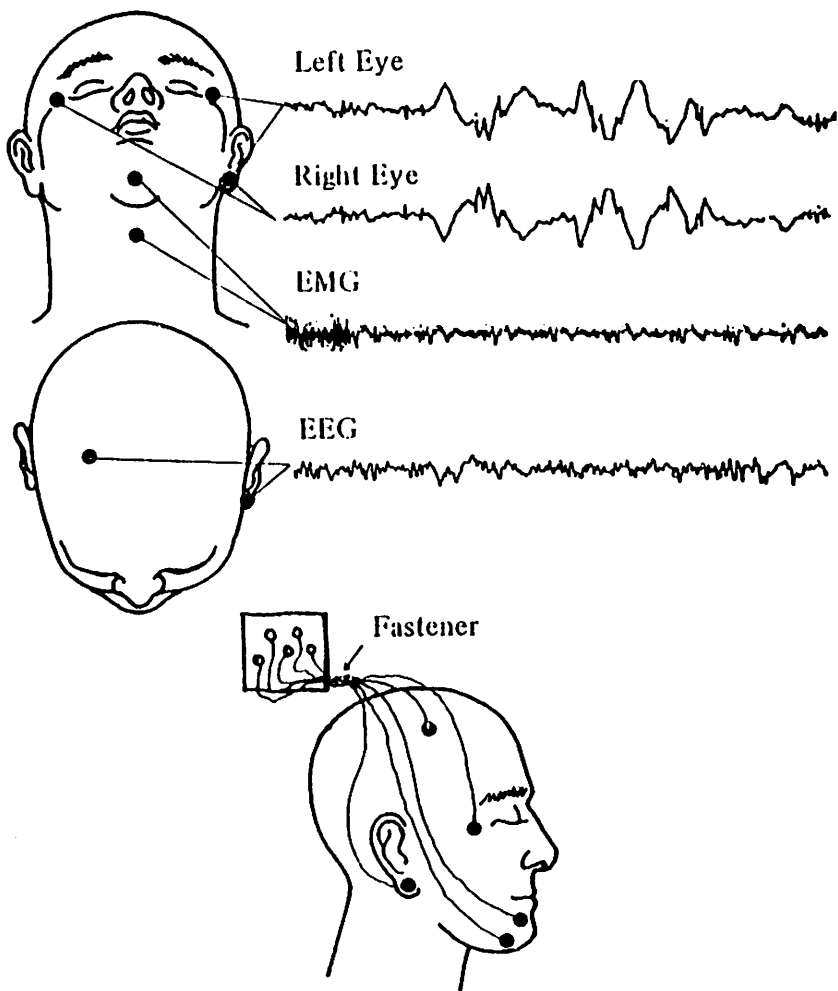
Social Work Abstracts. 1977 to present. 13,000 abstracts, updated quarterly. Abstracts covering American Social Work journals and a number of social-work-related journals, both American and foreign.

APPENDIX B

ASDS Classification of Sleep and Arousal Disorders

-
- A. DIMS: Disorders of Initiating and Maintaining Sleep (Insomnias)**
1. Psychophysiological
 - a. Transient and Situational
 - b. Persistent
 2. associated with Psychiatric Disorders
 - a. Symptom and Personality Disorders
 - b. Affective Disorders
 - c. Other Functional Psychoses
 3. associated with Use of Drugs and Alcohol
 - a. Tolerance to or Withdrawal from CNS Depressants
 - b. Sustained Use of CNS Stimulants
 - c. Sustained Use of or Withdrawal from Other Drugs
 - d. Chronic Alcoholism
 4. associated with Sleep-induced Respiratory Impairment
 - a. Sleep Apnea DIMS Syndrome
 - b. Alveolar Hypoventilation DIMS Syndrome
 5. associated with Sleep-related (Nocturnal) Myoclonus and "Restless Legs"
 - a. Sleep-related (Nocturnal) Myoclonus DIMS Syndrome
 - b. "Restless Legs" DIMS Syndrome
 6. associated with Other Medical, Toxic, and Environmental Conditions
 7. Childhood-Onset DIMS
 8. associated with Other DIMS Conditions
 - a. Repeated REM Sleep Interruptions
 - b. Atypical Polysomnographic Features
 - c. Not Otherwise Specified
 9. No DIMS Abnormality
 - a. Short Sleeper
 - b. Subjective DIMS Complaint without Objective Findings
 - c. Not Otherwise Specified
- B. DOES: Disorders of Excessive Somnolence**
1. Psychophysiological
 - a. Transient and Situational
 - b. Persistent
 2. associated with Psychiatric Disorders
 - a. Affective Disorders
 - b. Other Functional Disorders
 3. associated with Use of Drugs and Alcohol
 - a. Tolerance to or Withdrawal from CNS Stimulants
 - b. Sustained Use of CNS Depressants
 4. associated with Sleep-induced Respiratory Impairment
 - a. Sleep Apnea DOES Syndrome
 - b. Alveolar Hypoventilation DOES Syndrome
 5. associated with Sleep-related (Nocturnal) Myoclonus and "Restless Legs"
 - a. Sleep-related (Nocturnal) Myoclonus DOES Syndrome
 - b. "Restless Legs" DOES Syndrome
 6. Narcolepsy
 7. Idiopathic CNS Hypersomnolence
 8. associated with Other Medical, Toxic, and Environmental Conditions
 9. associated with Other DOES Conditions
 - a. Intermittent DOES (Periodic) Syndromes
 - i. Kleine-Levin Syndrome
 - ii. Menstrual-associated Syndrome
 - b. Insufficient Sleep
 - c. Sleep Drunkenness
 - d. Not Otherwise Specified
 10. No DOES Abnormality
 - a. Long Sleeper
 - b. Subjective DOES Complaint without Objective Findings
 - c. Not Otherwise Specified
- C. Disorders of the Sleep-Wake Schedule**
1. Transient
 - a. Rapid Time Zone Change ("Jet Lag") Syndrome
 - b. "Work Shift" Change in Conventional Sleep-Wake Schedule
 2. Persistent
 - a. Frequently Changing Sleep-Wake Schedule
 - b. Delayed Sleep Phase Syndrome
 - c. Advanced Sleep Phase Syndrome
 - d. Non-24-Hour Sleep-Wake Syndrome
 - e. Irregular Sleep-Wake Pattern
 - f. Not Otherwise Specified
- D. Dysfunctions Associated with Sleep, Sleep Stages, or Partial Arousals (Parasomnias)**
1. Sleepwalking (Somnambulism)
 2. Sleep Terror (Pavor Nocturnus, Incubus)
 3. Sleep-related Enuresis
 4. Other Dysfunctions
 - a. Dream Anxiety Attacks (Nightmares)
 - b. Sleep-related Epileptic Seizures
 - c. Sleep-related Bruxism
 - d. Sleep-related Headbanging (Jactatio Capitis Nocturnus)
 - e. Familial Sleep Paralysis
 - f. Impaired Sleep-related Penile Tumescence
 - g. Sleep-related Painful Erections
 - h. Sleep-related Cluster Headaches and Chronic Paroxysmal Hemicrania
 - i. Sleep-related Abnormal Swallowing Syndrome
 - j. Sleep-related Asthma
 - k. Sleep-related Cardiovascular Symptoms
 - l. Sleep-related Gastroesophageal Reflux
 - m. Sleep-related Hemolysis (Paroxysmal Nocturnal Hemoglobinuria)
 - n. Asymptomatic Polysomnographic Finding
 - o. Not Otherwise Specified
-

APPENDIX C



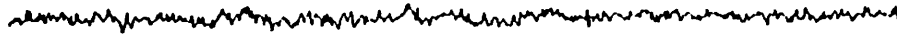
Standard Electrode Placements

APPENDIX D

Electroencephalogram (EEG) Readings of Various Sleep Stages



AWAKE: Normal EEG readings during full wakefulness.



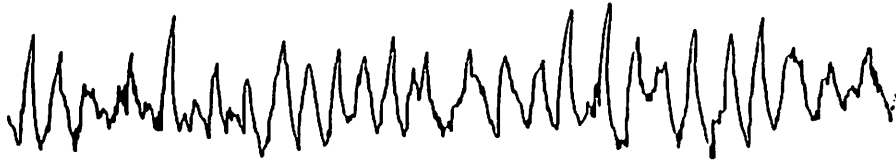
STAGE 1: The transitional phase between wakefulness and sleep. Reaction to outside stimuli is diminished.



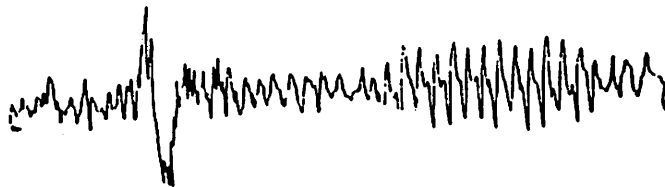
STAGE 2: A deeper sleep. Slower brain activity interrupted by sudden active bursts.



STAGE 3: Characterized by 20-50% slow wave (delta wave) sleep.



STAGE 4: Characterized by a greater than 50% slow wave sleep. Stages 3 and 4 are sometimes referred to as "deep sleep."



REM SLEEP: REM (rapid-eye-movement) sleep. Your pulse and breathing quicken, and you dream.

APPENDIX E



STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 497-2300

STANFORD UNIVERSITY HOSPITAL

Attention: Electric Company

_____ is under my care for sleep apnea and/or bradycardia. Apnea ("without Breath") means that the infant stops breathing and bradycardia means slowing of the heart rate. Both conditions can cause cyanosis which indicates that there is insufficient oxygen getting into the blood stream. If such a spell recurs it can cause brain damage and death.

Therefore, while the infant is sleeping at home, breathing and/or heart rate is monitored with a device to detect these spells so that parents can stimulate him/her when the spell is detected.

In addition to the monitor, each parent is provided with a power failure alarm which will sound when electricity has been discontinued. However, this device does not keep the monitor working; it only alerts the parents to the problem, and they must watch during the day and night while the baby is sleeping.

The electric company's support to these families is urgently needed. When there are power failures, we advise that the names of these families be placed on a priority list for restoration of electricity. Also, if there is a forewarning of a power failure, please notify these families so that proper arrangements can be made for emergency generator power.

It is possible that these infants would be "crib death" babies, now called Sudden Infant Death Syndrome (SIDS). This is a disease which kills 1 out of every 400 liveborn infants in our country every year. It is 3 to 5 times more common in prematures, economically deprived families and siblings in families previously afflicted by SIDS. When a twin has died of SIDS, there is a striking increase in incidence of SIDS in the other twin, perhaps 1 in 10.

I feel it is very important to the future and the life of this infant and family that the baby be protected with this heart rate monitor at home until these changes in heart rate are no longer a problem. If you have any further questions, please contact me.

Sincerely,

H.D.

APPENDIX F



STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 497-2300

STANFORD UNIVERSITY HOSPITAL

Attention: Telephone Company

_____ is under my care for sleep apnea and/or bradycardia. This infant is at risk (during sleep) for recurrent episodes of apnea and bradycardia, which may require resuscitation. Therefore, while the infant is asleep, breathing or heart rate is monitored and, if an episode occurs, an alarm sounds, alerting the parents to danger. If the parents need to resuscitate their baby and have difficulty in carrying out the procedure, they will need to telephone for help. Therefore, since Cardio Pulmonary Resuscitation cannot be performed while using a conventional telephone, it is recommended that the family have installed a speaker phone like that used by handicapped persons who do not have use of their hands. Such a phone can be turned on by the person flipping a switch with the chin, the operator is contacted directly and the person speaks directly into a speaker.

Twenty-four hour a day telephone service for the family is, of course, imperative for the safety of their child. Most infants with apnea outgrow the problem by one year of age and are completely normal children.

If you have any questions, please contact me.

Sincerely,

_____, H.D.

APPENDIX G



STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 321-1200

STANFORD UNIVERSITY HOSPITAL

Attention: Emergency Services

_____ is under my care for sleep apnea and/or bradycardia. This infant is at risk (during sleep) for recurrent episodes of apnea and bradycardia which may require resuscitation. Therefore, while the infant is asleep, breathing or heart rate is monitored and, if an episode occurs, an alarm sounds, alerting the parents to danger. If the parents need to resuscitate their baby and have difficulty in carrying out the procedure, they will call for help. Therefore, if your department receives a call from these parents, immediate response is urgent. Once your team has arrived in the home, if the infant is still being resuscitated, he should be transported immediately to the nearest emergency room. Resuscitation should be continued by the parents or the emergency team until a doctor arrives in the emergency room. Oxygen may be used as necessary.

If the infant is breathing but lethargic when the ambulance crew arrives, he should be transported to the nearest emergency room. However, if the infant appears normal when the ambulance crew arrives he need not necessarily be transported to an emergency room. A monitor program physician should be contacted, and he will make the decision concerning the transfer.

All parents have been thoroughly instructed in cardiopulmonary resuscitation. Usually these infants outgrow the problem, and are discontinued from monitoring before one year of age and are completely normal children.

If you have any further questions, please contact me.

Sincerely,

H.D.

APPENDIX H



STANFORD UNIVERSITY HOSPITAL.

STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 497-5091

Department of Clinical Social Work

Re: Request for Insurance Coverage for Home Monitoring Expenses

To Whom It May Concern:

Sudden Infant Death Syndrome (SIDS) is characterized by the sudden and unexpected death of an infant which remains unexplained even after post-mortem studies. Although no means have yet been devised to cure the syndrome, progress has been made in identifying conditions which may precede a sudden infant death. In particular, Apnea (an abnormal pause in breathing) and Bradycardia (an abnormal slowing of the heart rate) occur in certain infants and can cause death. SIDS presently is the cause of death of more than one of every 500 live births in this country. Rates are three to five times greater among premature babies and siblings in families previously afflicted by SIDS.

Although SIDS cannot be cured, many sudden deaths can be and have been avoided. Through a series of evaluations, infants who are susceptible to conditions which may result in a life-threatening episode or death - including Apnea and Bradycardia - can be identified. These babies are then placed on monitors which detect episodes of Apnea and Bradycardia in sufficient time for corrective action to be taken. This corrective action usually involves only physical stimulation, although cardio-pulmonary resuscitation is sometimes necessary. The success rate in reviving such infants is exceptionally high in both hospital and home-based monitoring experience.

Between (list dates) _____, _____, _____ was evaluated by me and was found to have symptoms which indicate that she is susceptible to conditions that may result in a life-threatening episode. Rather than suggest long-term hospitalization - which is not only extremely expensive, but is otherwise debilitating to both patient and parent - I have prescribed a home monitoring regimen supplemented with periodic medical assessments.

In particular, based on its proven reliability and simplicity of operation, I have prescribed a Healthdyne Infant Monitor. With the monitor, I require an intercom system or remote alarm and a power failure alarm. The former amplifies emergency alarm sounds so parents will be sure to hear the activation in time to effectively respond. The latter notifies parents of power failures so they may personally monitor the baby until the infant monitor is again able to function. The prescription also includes consumable supplies such as electrodes, electrode belts, lead wire, fuses, batteries and emergency repair service.

I feel it imperative for the health and well-being of both _____ and Mr. and Mrs. _____ that the home monitor be used until generally accepted criteria for discontinuation are met. Since this equipment is necessary for treatment of an illness, the cost of this home monitoring regimen should be supported under the family's current health care coverage. If you have any questions, or if you disagree with insurance coverage for this prescribed treatment, please contact me.

Sincerely,

_____, M.D.

APPENDIX I

Sleep disorders center questionnaires

PATIENT SLEEP-WAKE QUESTIONNAIRE*

My main sleep complaint is:

I have trouble sleeping at night.

I am sleepy all day.

I have unwanted behaviors when I am asleep, explain:

Other, explain:

Usual Sleep Habits

On weekdays (workdays) I usually go to bed at: _____

On weekdays (workdays) the *earliest* time in the last two weeks I
have gone to bed is: _____

On weekdays (workdays) the *latest* time in the last two weeks I
have gone to bed is: _____

My usual weekend (off days) bedtime is: _____

On weekdays I wake up at: _____

On weekends I wake up at: _____

To feel my best, I should go to bed at: _____

To feel my best, I should get up at: _____

In the evening I usually start feeling tired at: _____

Sleep Disorders Center Questionnaires ,

The amount of time that I usually take to fall asleep is: _____
 I usually exercise at _____ for _____ minutes.
 I wake up naturally by using alarm(s).
 I take a nap about _____ days each week.
 After taking a nap I usually feel (check one):
 refreshed.
 groggy or sleepy.

Awakenings During Sleep

The number of times that I usually wake up during the night is: _____
 My best estimate of the clock time(s) during the night that I wake up is (are): _____
 If I wake up during the night, the time it usually takes me to fall asleep again is: _____
 The total amount of time that I am awake during the night after I first fall asleep is: _____
 The dozing time I generally spend between awakening in the morning and getting out of bed is: _____

Place a check beside any of the following statements that are *true* for you.

- I have a job that involves shift work or night work.
- I frequently travel across time zones (east-west travel).
- I feel that sleep is a waste of time.
- I enjoy sleeping very much.
- I usually sleep with a bed partner.
- I sleep with earplugs or eyeshades.

My usual sleeping position is:
 on my back
 on my side
 on my stomach
 no single position is usual

I remember dreaming:
 rarely
 about once a week
 a few times a week
 nearly every night

Typically my dream recall is:
 only a vague feeling of having dreamed something
 a sketchy story, image, or thought
 a fairly detailed and complex recollection

During the first 30 minutes after waking up in the morning, I usually feel:
 very groggy
 somewhat drowsy
 slightly drowsy but awake
 alert

Parasomnias

Place a check beside any of the following statements that are *true* for you.

I have been told that I grind my teeth when I sleep.
 As an adolescent or adult, I have been seen sleepwalking.
 As an adolescent or adult, I have been seen sleep-talking.
 My dreams are often very vivid.
 I feel that I dream too much.
 My dreams often awaken me.
 I often have frightening dreams.
 As an adult I have wet my bed.
 I've been told that I bang or twist my head at night.

Disturbed Sleep

Place a check beside any of the following statements that are *true* for you.

I have been told that I snore very loudly.
 Sometimes a person cannot sleep in the same room with me because he or she is bothered by my snoring.
 My bed covers are very messed up in the morning.
 I am a very restless sleeper.
 I have been told that I kick or poke my bed partner while I am asleep.
 I have hallucinations or dreamlike images when I am not actually asleep but while falling asleep or waking up.
 I sometimes awaken with a choking sensation.
 I've been told that I stop breathing when I sleep.
 I have fallen out of bed.
 I have been told that I make rolling or rocking movements during sleep.
 I sometimes have felt paralyzed or unable to move when waking up or falling asleep.
 I wake up suddenly from sleep with an unpleasant feeling of fear, anxiety, tension, or unhappiness.
 I wake up from sleep with a feeling of muscle tension or tightness in my arms or chest.
 I have awakened from sleep once or more having vomited.
 When I wake during the night, I often have to get up and go to the bathroom.
 I sweat a lot when I sleep.
 I feel that the quality of my sleep is unsatisfactory.

Sleep Disorders Center Questionnaires ,

I have been told that my legs twitch or jerk while I am sleeping.
I sometimes wake up with a headache.

Insomnia

Place a check beside any of the following statements that are *true* for you.

I have trouble falling asleep at night.
When I don't sleep well, I worry about it the next day.
When I wake up during the night, I have trouble going back to sleep.
I wake up in the morning long before I have to.
Some nights, I never get to sleep no matter how hard I try.
When I try to go to sleep, my mind races with many thoughts.
At night when I go to bed I don't feel sleepy.
I often sleep better in an unfamiliar bedroom, such as a hotel or motel room.
When I try to fall asleep I become anxious or nervous.
When I try to fall asleep I worry about whether or not I can sleep.
When I try to fall asleep I often feel hungry or thirsty.
When I try to sleep I feel pain.
Pain often wakes me up or keeps me from going back to sleep.
I often take sleeping pills in order to sleep.
I have a creeping, crawling sensation in my legs when I lie down to sleep.
When I do sleep, I feel that I sleep very well.
I am a very light sleeper; I am easily awakened by noises.
My sleep is disturbed because of my bed partner.
Heat or cold disturbs my sleep.
Generally I get up in the middle of the night for a snack.

Daytime Sleepiness

Place a check beside any of the following statements that are *true* for you.

I have sometimes fallen asleep at very inappropriate times, such as while driving, eating, or during a conversation.
I have sometimes been so sleepy that I became confused or lost track of the topic during a conversation.
I am frequently so sleepy during the day that my work is poor.
I have had accidents or near-accidents when driving because I felt so sleepy.
When I have no plans or appointments the next day, I frequently go to bed late (compared with my usual bedtime).
I frequently do not feel sleepy at bedtime and stay up until it is so late that as a consequence I get too little sleep.
I would feel better if I slept at least one more hour every night.
I feel that I sleep too much.
I feel that I sleep too little.

I function best in the morning.

I function best in the evening.

I've "come to" or suddenly become alert and found myself doing things without being aware of having started them or how I got there.

I generally feel (tired) (sleepy) all day.

When I get a good night of sleep I feel better the next day.

Several times recently I got up later than planned, even though I went to bed at the right time.

I've had the sensation of a sudden weakness in my legs while awake (this may occur particularly in emotional situations).

Usually I find myself falling asleep during even half-hour TV shows.

Medical Conditions

Place a check beside any of the following statements that are *true* for you.

I sometimes have pain from my heart during the night.

I usually have a bitter or sour taste in my mouth when I awaken at night or in the morning.

I have been told that I shake my head at night.

I have been told that I have convulsions, fits, or seizures at night.

I have had convulsions, fits, or seizures during the day.

I have awakened with blood on my pillow.

I have bitten my tongue while asleep.

I sometimes wake up with heartburn.

I sometimes wake up with lower back pain.

I sometimes wake up with feelings of aching or "pins and needles" in my legs.

I am unable to sleep in a flat position because of shortness of breath.

I sometimes cough up sputum or mucus during the night or in the morning.

I have gained more than 10 lb. in the last year.

I have lost more than 10 lb. in the last year.

I have been told that I have high blood pressure.

Men

I awaken with painful penile erections.

I have problems obtaining or maintaining penile erection.

Women

My sleep problem varies according to the stage of my menstrual cycle.

I am currently taking birth control pills.

My sleep problem started or got worse at menopause.

Sleep History

Place a check beside any of the following statements that are *true* for you. (If possible, please ask your parents or older brothers or sisters to help you remember your childhood behavior.)

Sleep Disorders Center Questionnaires

- I sometimes wet the bed after age 6.**
- As a child I talked in my sleep.**
- As a child I sleepwalked.**
- As a child I had frequent nightmares.**
- As a child I screamed in my sleep.**
- As a child I had convulsions during sleep.**
- As a child I would grind my teeth during sleep.**
- As a child I banged or rocked my head on the bed to sleep.**
- My current sleep problem started in childhood.**
- I used to fall asleep in school as a child or adolescent.**
- I always had to fight the urge to sleep during my classes at school when I was a child or adolescent.**
- As a child I used to stay up late in the evening.**
- I was told that I snored while sleeping as a child or teenager.**
- I was considered a hyperactive or hyperkinetic child or teenager.**

Family History

(These questions apply to your extended family: parents, children, aunts, uncles, cousins, nieces, nephews, etc.—relatives related by “blood.”)

- A relative died from “crib death” or sudden infant death.**
- Other members of my family have insomnia.**
- Other members of my family snore loudly at night.**
- Other members of my family frequently fall asleep during the day or evening.**
- Other members of my family are troubled by sudden attacks of physical weakness or paralysis, particularly in emotional situations.**
- Other members of my family have been hyperactive or hyperkinetic as children.**
- Other members of my family have the same sleep problem that I do.**

APPENDIX J

**SPOUSE OR
ROOMMATE QUESTIONNAIRE**

Check any of the following behaviors that you have observed (Patient) doing *while asleep*.

loud snoring
light snoring
twitching of legs or feet during sleep
breathing pauses
grinding teeth
sleep-talking
sleepwalking
bed-wetting
sitting up in bed not awake
rocking or banging head
kicking with legs during sleep
getting out of bed while not awake
biting tongue
becoming very rigid and/or shaking

How long have you been aware of the sleep behavior(s) that you checked above?

Describe the sleep behavior(s) checked above in more detail. Include a description of the activity(ies), the time during the night when it (they) occur(s), frequency during the night, and whether it (they) occur(s) every night.

If you have noticed loud snoring, do you remember hearing short pauses in the snoring or occasional loud "snorts"?

APPENDIX K

NAME _____

AGE _____ Sex M F (Circle) HEIGHT _____ WEIGHT _____

Telephone - Home: () _____
- Work: () _____

Todays date _____

Sleep Questionnaire and Assessment of Wakefulness (SQAW)**Family Practice Version****Stanford Sleep Disorders Clinic****and****Stanford Sleep Research Center****Stanford Sleep Disorders and Sleep Research Program,
Stanford University Medical Center,
Stanford, California, 94305.**

The questions enclosed in this booklet, will help us to obtain a good understanding of your sleeping and waking behaviour.

There are questions in this booklet that might be better answered by someone else (e.g. your spouse, bed-partner, or even roommate). Certainly ask for help from such a person if they are available.

PROCEDURE FOR ANSWERING DIFFERENT TYPES OF QUESTIONS

1. DEGREE TYPE



EXAMPLE: HOW GREAT a problem do you have with paying your bills? 1 2 3 4 5

2. FREQUENCY TYPE



EXAMPLE: HOW OFTEN have you been to the North Pole? 1 2 3 4 5

3. YES/NO TYPE

EXAMPLE: Have you EVER filled out this questionnaire before? yes no

4. BOX TYPE

EXAMPLE: Have you EVER eaten any of the following foods:

CHECK ALL THESE THAT APPLY
LEAVE OTHERS BLANK

	for breakfast	for lunch	for dinner
cereal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pizza	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
fruit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5. X — RESPONSE

Place an X beside any question that YOU DO NOT UNDERSTAND, or which does NOT APPLY TO YOU, or which CANNOT BE GIVEN A VALID ANSWER.

EXAMPLE: Have you EVER had CAMPBELL'S DISEASE of the UTERUS? yes no

(Patient responded with an X for two reasons:)
 ((a). He was a male.)
 (and)
 ((b). He did not know what CAMPBELL'S DISEASE was)

6. LITERAL RESPONSE

EXAMPLE: What time do you usually go to work?

8:30 am/pm

A few simple Rules

The following rules should be kept in mind when answering the questions in this booklet:

1. Answer the question quickly, do not spend too much time on any question. Your first impression is generally the best.
2. The time period of all the questions is the present, which includes the last six months, unless otherwise stated.
3. A "weekday" is any day on which you normally work. (For most people, it is 8 am to 5 pm, Monday through Friday).
4. "Daytime" is the part of each 24 hour period during which you are awake.
5. "Nighttime" is the part of each 24 hour period during which you sleep.

(If you work night, swing, or unusual hours, "day" and "night" refer to your own waking and sleeping periods).

Now you're ready to answer the questions, so please turn to the next section. Remember to refer to the Response sheet to remind you how to answer the questions.

GENERAL

ANSWER ALL YES/NO QUESTIONS

Do you feel that you:

- 1* -get too little sleep at night?..... yes no
- 2* -get too much sleep at night?..... yes no
- 2a* Have you EVER had a poor nights sleep? yes no
- 2b What time do you usually go to bed on a weekday? _____ am/pm
 HOW MUCH of a problem do you have:
- 3* -with getting to sleep at night?..... 1 2 3 4 5
- 4* -because of waking up during the night?..... 1 2 3 4 5
- 5* -with waking up and getting up in the morning? 1 2 3 4 5
- 6* -with non-restorative sleep (that is, no matter how much sleep you get, you don't wake up feeling rested)?..... 1 2 3 4 5
- 7* -with sleepiness during the day?..... 1 2 3 4 5
 (feeling sleepy, struggling to stay awake in the day{no})
- 8* -with fatigue during the day?..... 1 2 3 4 5
 (tiredness, exhaustion, lethargy)

SLEEP ONSET

- 12* How long does it usually take you to fall asleep after deciding to go to sleep? _____ hr _____ min
- 12a* Have you EVER had difficulty falling asleep? yes no

When falling asleep or during the night,
 HOW OFTEN do you:

- 21* -feel unable to move (paralyzed)?..... 1 2 3 4 5
- 22* -notice that parts of your body startle or jerk?..... 1 2 3 4 5
- 23* -experience restless legs (crawling or aching feelings, and inability to keep legs still)?.. 1 2 3 4 5
- 24* -experience vivid, dream-like scenes (hallucinations) even though you know that you are awake?..... 1 2 3 4 5
- 25* -experience any kind of pain or physical discomfort?..... 1 2 3 4 5

DURING THE NIGHT

(that period of an average day during which you normally sleep)

- 39* What is the total number of hours of sleep that you usually get at night?..... _____ hr _____ min
(Do not include time spent awake in bed)
- 39a* Have you EVER awakened during the night? yes no
- 40* How many times do you wake during the night? _____ times
- 41* How long is the typical longest wake?..... _____ hr _____ min

If you wake during a typical night, which part of your sleep period is it?

CHECK ALL BOXES THAT APPLY
LEAVE OTHERS BLANK

- 42* -first third? []
- 43* -middle third?..... []
- 44* -last third? []

- 45* How many times do you get out of bed during a typical night's sleep?..... _____ times

HOW OFTEN do you:

- 50a* -have restless, disturbed sleep?..... 1 2 3 4 5
- 51* -disturb the sleep of your bed partner?..... 1 2 3 4 5

HOW OFTEN during the night do you:

- 74* -have asthma? 1 2 3 4 5
- 64* -awaken from sleep because of coughing, heartburn, gas, or regurgitation? 1 2 3 4 5
- 125a* -have dreams or nightmares associated with awakenings? 1 2 3 4 5
- 78* -snore in any way?..... 1 2 3 4 5
- 80* -snore loudly and disruptively?..... 1 2 3 4 5
- 81* -hold your breath, or stop breathing during sleep?..... 1 2 3 4 5
- 82* -have some other breathing problem during sleep?..... 1 2 3 4 5
- 83* -notice that your heart pounds (beats strongly), beats rapidly, or beats irregularly (palpitations), during the night?..... 1 2 3 4 5
- 83a Do you have high blood pressure? yes no

HOW OFTEN do you:

- 86* -walk in your sleep?..... 1 2 3 4 5
- 87* -talk in your sleep?..... 1 2 3 4 5
- 90* -grind your teeth during your sleep?..... 1 2 3 4 5
- 91* -bang your head (on the bed or wall)
and/or make rocking-rolling movements
during sleep? 1 2 3 4 5
- 93* -fall out of bed while asleep?..... 1 2 3 4 5
- 94* -awaken from sleep screaming, violent, and
confused (night terrors)?..... 1 2 3 4 5
- 69* -wet your bed during your adult years? 1 2 3 4 5
- 95* HOW OFTEN do your legs twitch or kick
during the night - while you are asleep?..... 1 2 3 4 5
- 96* HOW OFTEN have you had a convulsion
(fit, seizure, epilepsy) during sleep?..... 1 2 3 4 5
- 97* HOW OFTEN is your sleep disturbed
during the night by headaches?..... 1 2 3 4 5
- 319* FOR MEN ONLY - HOW OFTEN do you have problems
with painful erections during the night? 1 2 3 4 5
- 149A HOW MUCH does your sleep-wake schedule differ
on weekends as compared to weekdays? 1 2 3 4 5
- 150a How variable (irregular) are your bedtimes
and wake times? 1 2 3 4 5

FINAL COMMENTS ABOUT YOUR SLEEP

- 154* Do you feel that you have insomnia?..... yes no

DAYTIME FUNCTIONING

176^A HOW MUCH of a problem do you have with SLEEPINESS during the daytime?..... 1 2 3 4 5

During the last 6 months have you fallen asleep or struggled to stay awake (fought sleep) in the following situations:

	fallen asleep	struggled to stay awake (fought sleep)	
182 ^A -during intercourse?.....	()	()	CHECK ALL BOXES THAT APPLY LEAVE OTHERS BLANK
183 ^A -eating food (meals)?.....	()	()	
184 ^A -on the telephone?.....	()	()	
185 ^A -in conversation with another person at WORK?.....	()	()	
188 ^A -traveling (car, bus, train?).....	()	()	
189 ^A -attending a performance (lectures, films, operas, plays?).....	()	()	
190 ^A -watching television?.....	()	()	
191 ^A -listening to the radio or stereo?....	()	()	

200^A HOW OFTEN have you had automobile accidents or near misses caused by sleepiness?..... 1 2 3 4 5

200a^A HOW OFTEN do any of your sleep-wake problems seem to go in cycles or recur at regular intervals?.... 1 2 3 4 5

208^A HOW MANY naps (actually falling asleep) do you take during a usual weekday?.....__ __ times

OTHER DAYTIME BEHAVIOR

HOW OFTEN do you:

283^A -have episodes of sudden muscular weakness (paralysis or inability to move) when laughing, angry, or in other emotional situations..... 1 2 3 4 5

283a^A Do you feel that you are excessively sleepy during the daytime?..... yes no

HOW OFTEN have you used any of the following to HELP YOU GO TO SLEEP OR WITHIN ONE HOUR of getting into bed?.....

554^A -marijuana?..... 1 2 3 4 5

521^A -alcohol?..... 1 2 3 4 5

Do you take any type of medication at the
PRESENT TIME to help you

ANSWER ALL Yes/No QUESTIONS

- 561* -with a problem with your sleep?..... yes no
- 562* -to stay alert and/or awake during the day?..... yes no
- 562a If you answered yes on 561 or 562, was the medication prescribed for you by a physician?..... yes no
- Have you EVER obtained a prescription for medication from a physician to help you:
- 563* -with a problem with your sleep?..... yes no
- 564* -to stay alert and/or awake during the day?..... yes no

Have you taken any of the following medications in the last 12 months:

CHECK ALL BOXES THAT APPLY
LEAVE OTHERS BLANK

TO AID SLEEP TO COMBAT SLEEPINESS ANY OTHER REASON

- 566* -aspirin?..... () () ()
- other analgesics (for example: Darvon, Tylenol, Codaine)?..... () () ()
- 575* -nasal decongestants (for example: pills, sprays)?.. () () ()
- 578* -tranquilizers and muscle relaxants (for example: Valium, Librium, Meprobamate (Miltown, Equanil), Mellaril, Thorazine, Stelazine, Haldol, Navane, Proloxin)?..... () () ()
- 578a* -antidepressant medication (for example: Elavil, Tofranil, Sinequan)?..... () () ()
- 581* -barbiturate sedatives (for example: sleeping pills) (Seconal, Tuinal, Nembutal, Phenobarbital)?..... () () ()
- 584* -non-barbiturate sedatives (for example: sleeping pills) (Placidyl, Quaalude, Noludal, Dalmane, Chloral Hydrate, Benadryl)?..... () () ()
- 584a* -Pharmacy NON-prescription sleeping pills (for example: Compoz, Dorina, Somnex, Nytol)?..... () () ()
- 587* -anti-allergy medications (for example: Tedral, Aminophyllin, antihistamines, Cortisone)?..... () () ()
- 590* -stimulants (for example: Ritalin, amphetamines, diet pills)?..... () () ()
- 590a* -MILD stimulants (for example: coffee, tea)?..... () () ()
- 590b* -Pharmacy NON-prescription stimulants (for example: No-doz, Vivarin, Cafféine tablets, Eye openers, Tired, Ban-Drows)?..... () () ()
- 596* -any other medications?..... () () ()

FILL IN THE BLANK

SCHEDULE

122* What time do you usually try to go to sleep on:

weekdays _____ am/pm
weekends _____ am/pm
vacations _____ am/pm

124* What time do you usually have your final awakening on:

weekdays _____ am/pm
weekends _____ am/pm
vacations _____ am/pm

694* In the last 6 months have you worked rotating shifts or night work?.....

yes no

What hours do you work?

696*

from _____ am / pm

697*

to _____ am / pm

708* HOW OFTEN do you have a problem with your sleep or daytime functioning because you travel across time zones?.....

1 2 3 4 5

IS THERE ANYTHING ELSE

919. If your sleep/wake behavior is not adequately covered by the above questions, briefly describe the nature of your sleep/wake behavior and list anything else (not yet covered) which especially interferes with your sleep or wakefulness:

APPENDIX L

DAYTIME SLEEPINESS SCALE

Directions

Rate your degree of sleepiness during the day by choosing the statement below that best describes your feeling at the time. Write the number of that statement in the appropriate box. Make this rating shortly after you awaken in the morning and every hour during the day. This card may be carried with you.

1. Alert, wide awake, feeling vital, peak alertness.
2. Awake, able to concentrate, but not quite at peak.
3. Awake, but not fully attentive; responsive, but let down a little.
4. A little foggy, a little sleepy, losing interest, but still able to function.
5. Foggy, prefer to be lying down, slowed down.
6. Very sleepy, woozy, fighting sleep, almost in reverie.

SLEEPINESS SCALE

Name _____ Date started _____

	A.M.						NOON						P.M.						
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
M																			
T																			
W																			
Th																			
F																			
Sat																			
Sun																			

APPENDIX M

STANFORD SLEEPINESS SCALE (SSS)

Name: _____

Date: _____

How many hours did you sleep last night? _____

This morning, do you feel your amount of sleep was (check one):

more than sufficient _____

sufficient _____

insufficient _____

Directions

Choose the statement below which best describes your state of sleepiness. Then place the number of that statement in the appropriate box. Write down under "comments" if you have taken medication, indulged in exercise, or have done anything else that you feel may have influenced your sleepiness. If you have forgotten to record your sleepiness for a particular time period, then leave that time blank.

Rate your sleepiness for each of the time periods indicated. Please record your sleepiness during 15 minute intervals, and note that times are presented in 24 hour notation, e.g. 5:00 A.M. is 0500, and 3:00 P.M. is 1500.

Code

- 1 Feeling active and vital; alert; wide awake
- 2 Functioning at a high level; but not at peak; able to concentrate
- 3 Relaxed; awake; not at full alertness; responsive
- 4 A little foggy, not at peak; let down
- 5 Fogginess, beginning to lose interest in remaining awake; slowed down
- 6 Sleepiness; prefer to be lying down; fighting sleep, woozy
- 7 Almost in reverie, sleep onset soon; lost struggle to remain awake
- X Asleep (If you are sleeping during any of the time periods, then write "X" for these periods)

	0-15	15-30	30-45	45-60	Comments
Midnight 0000					
0100					
0200					
0300					
0400					
0500					
0600					
0700					
0800					
0900					
1000					
1100					
Noon 1200					
1300					
1400					
1500					
1600					
1700					
1800					
1900					
2000					
2100					
2200					
2300					

M = normal meal P = sleeping pill or tranquilizer
 S = snack D = other drug such as diet pill
 A = alarm X = exercise

NAME _____

WEEK BEGINNING _____ .19 _____

	PM					MIDNIGHT	AM					NOON												
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
CLOCK TIME INTO BED																								
CLOCK TIME TRY SLEEP																								
MINUTES BEFORE SLEEP																								
SLEEP PERIOD GRAPH																								
CLOCK TIME FINAL WAKE																								
CLOCK TIME OUT OF BED																								

APPENDIX N

SLEEP DIARY LOG

Directions: Notice how the sample below has been completed for three 24-hour periods. Complete your SLEEP DIARY LOG on the other side of this sheet. Write all time in hours and minutes. For example, "CLOCK TIME INTO BED" asks for the time when you first got into bed, "CLOCK TIME TRY SLEEP" asks for the time when you first began trying to sleep, and "MINUTES BEFORE SLEEP" asks how long it took you to get to sleep once you really wanted to sleep. This means you should estimate the time in minutes from "CLOCK TIME TRY SLEEP" to the clock time you actually did fall asleep. Mark with a dark line all the times you are asleep including naps. Mark the times you eat with an "M" for a normal meal and an "S" for a snack. Show the times you took sleeping pills or tranquilizers with a "P" and the times you took other drugs such as diet pills or pep pills with a "D". Show the times you exercise with an "X". Try and write in all events or activities that may have influenced the time and quality of your sleep. You should begin your LOG on Sunday at 6 P.M. and finish the LOG one week later. Try to keep this form by your bed and try to make your entries at least twice a day such as in the morning and evening. If you awaken with an alarm clock, put an 'A' at the end of your sleep period graph.

NAME John Doe

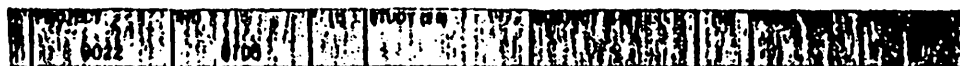
WEEK BEGINNING May 6, 1956

	PM			MIDNIGHT	AM			NOON	PM			
	6	7	8	9	10	11	12	1	2	3	4	5
CLOCK TIME INTO BED	-	-	-	9:20								
CLOCK TIME TRY SLEEP	-	-	-				11:00					
MINUTES BEFORE SLEEP	-	-	-				20					
SLEEP PERIOD GRAPH	M	napped in chair			SUNDAY - MONDAY			A	M	S	X	X
CLOCK TIME FINAL WAKE	-	-	-	-	-	-	-	-	-	-	-	-
CLOCK TIME OUT OF BED	-	-	-	-	-	-	-	-	7:30	-	-	-
									8:00			

CLOCK TIME INTO BED							11:00					1:00
CLOCK TIME TRY SLEEP							11:30					1:00
MINUTES BEFORE SLEEP							30					
SLEEP PERIOD GRAPH	M	alcohol			MONDAY - TUESDAY			S	M	L	S	X
CLOCK TIME FINAL WAKE									8:30		12:10	
CLOCK TIME OUT OF BED									9:00		12:15	

CLOCK TIME INTO BED							12:30					
CLOCK TIME TRY SLEEP							12:30					
MINUTES BEFORE SLEEP							60					
SLEEP PERIOD GRAPH	M	heavy food			TUESDAY - WEDNESDAY			SICK	S	D	X	
CLOCK TIME FINAL WAKE									9:00			
CLOCK TIME OUT OF BED									9:10			

APPENDIX O



BEDTIME QUESTIONNAIRE

SUBJECT'S INITIALS/PAGE	IRRENTIDATE (month/day)	SEX (circle) M F	SUBJECT CODE NO
-------------------------	-------------------------	---------------------	-----------------

NO. REW. 212	AGREED STAND
--------------	--------------

Treatment Period: (Circle) A 1 2 3 4 5 6 Date: _____

PART I

1. In general, how would you say you felt today? (circle one number)

	bad								good	
0	1	2	3	4	5	6	7	8	9	

2. Did you exercise more or less than usual today? (circle one number)

	much less								much more	
0	1	2	3	4	5	6	7	8	9	

3. Choose the statement below that best describes the way you feel right now (circle any one):

1. Feeling active and vital; alert; wide awake.
2. Functioning at a high level, but not at peak.
3. Relaxed; not at full alertness; responsive.
4. A little foggy; not at peak; let down.
5. Fogginess; losing interest in staying awake; slowed down.
6. Sleepiness; prefer to be lying down.
7. Almost in reverie; sleep onset soon; hard to stay awake.

4. How long did it take you to "get going" this morning? _____ hr _____ min

5. Did you fall asleep during the day? _____ yes _____ no

6. Did you drink coffee, tea or cola during the day? _____ yes _____ no

PART II

1. Have you any physical complaints right now? _____ yes _____ no
If Yes, describe:

2. List any type of medication you used today including caffeinated beverages, aspirin, etc.

3. Please describe any significant problem:

APPENDIX P

PROJECT 9022	IND 8700	(1)	STUDY (2)	SUBJECT	
-----------------	-------------	-----	-----------	---------	--

MORNING QUESTIONNAIRE

SUBJECT'S INITIALS (NAME)	BIRTHDATE (month/day/yr)	SEX (circle)	SUBJECT CODE (NO)
		M F	

DATE	TIME

Treatment Period: (Circle) A 1 2 3 4 5 6 Date: _____

PART I

1. In general, how would you rate your sleep last night? (circle one number)

bad good
 0 1 2 3 4 5 6 7 8 9

2. Choose the statement below that best describes the way you feel right now (circle any one):

1. Feeling active and vital; alert; wide awake.
2. Functioning at a high level, but not at peak.
3. Relaxed; not at full alertness; responsive.
4. A little foggy; not at peak; let down.
5. Fogginess; losing interest in staying awake; slowed down.
6. Sleepiness; prefer to be lying down.
7. Almost in reverie; sleep onset soon; hard to stay awake.

3. How long did it take you to fall asleep last night after the lights were turned out?

_____ hr _____ min

4. How much sleep did you get last night?

_____ hr _____ min

5. How many different times did you wake up during the night?

_____ times

6. How long did you lay in bed awake before you got up this morning? _____ hr _____ min

7. Did you have any disturbing or frightening dreams last night? _____ yes _____ no

PART II

1. What awakened you this morning?

spontaneous, cause unknown noise discomfort technician

other, explain: _____

2. Do you have any physical complaints right now? _____ yes _____ no

If YES, please describe:

3. Please describe any significant problems:

PROJECT NO	PROJECT	NO	(S)	STUDY NO	SUBJECT (S)	(M)	FORM NO.	FORM NO.
	0022	0705						

PROFILE OF MOOD STATES

SUBJECT'S INITIALS (PMA)	BIRTHDATE (M/D/Y)	DATE (M/D/Y)	SUBJECT CODE NO

DIRECTIONS: Describe HOW YOU FEEL RIGHT NOW by checking one space after each of the words listed below.

FEELING	Not	A	Mod.	Quite	Ex-	FEELING	Not	A	Mod.	Quite	Ex-
	at all	little		a bit	remely		at all	little		a bit	remely
	1	2	3	4	5		1	2	3	4	5
Friendly						Nervous					
Tense						Lonely					
Angry						Miserable					
Worn Out						Muddled					
Unhappy						Cheerful					
Clear-headed						Bitter					
Lively						Exhausted					
Confused						Anxious					
Sorry for things done						Ready to fight					
Shaky						Good natured					
Listless						Gloomy					
Peeved						Desperate					
Considerate						Sluggish					
Sad						Rebellious					
Active						Helpless					
On edge						Weary					
Grouchy						Bewildered					
Blue						Alert					
Energetic						Deceived					
Panicky						Furious					
Hopless						Efficient					
Relaxed						Trusting					
Unworthy						Full of pep					
Spiteful						Bad-tempered					
Sympathetic						Worthless					
Uneasy						Forgetful					
Nestless						Carefree					
Unable to concentrate						Terrified					
Fatigued						GUILTY					
Helpful						Vigorous					
Annoyed						Uncertain about things					
Discouraged						Bushed					
Resentful											

Screening Questionnaire (normals) Age: ____ Initials: ____

Name: _____ Interviewer: _____
Address: _____ Contact date: ____/____/____

Best time to call _____
phone: _____ work: _____ Subsequent contacts: _____
Birthdate: ____/____/____ MF / M Si Sep D _____
Height: ____ Weight: ____ SS* _____ Occupation _____

- (1) How would you rate your sleep? not very good
 moderately good
 good
 extremely good
If yes, describe/quantify: _____
- (2) Do you have a sleep problem now? Y N
Do you get sleepy during the day? Y N
Have you ever had a sleep problem? Y N
Do you get drowsy in the afternoon? Y N
Have you ever used sleeping pills? Y N
Do you ever sleep in front of the TV? Y N
Do you drink caffeinated beverages? Y N
In what environments do you sleep poorly? new? alone?
- (3) On the average when do you _____ pm
turn out the lights (to go to sleep)? _____ am (*lights out*)
What range of times has your bedtime? _____ - _____
- (4) On the average, *when do you awaken*
in the morning? _____ am (*lights on*)
What range of times has your wake-up? _____ am - _____ am
Could you sleep well from 11pm-8:30? Y N
- (5) On the average (over the last month)
how long does it take you to fall
asleep each night? _____ min. (*sleep latency*)
What range of times does it take? _____ - _____ minutes

(6) On the average, *how much sleep* do you get each night? _____ hours (*total sleep*)

What range of hours do you get? _____ - _____ hours

(7) Do you get up to go to the bathroom? Y N

On the average, how often are you awake? _____ *number of wakes*

For how long (altogether) ? _____ minutes (*WASO*)

(8) In the morning, do you awaken
 spontaneously
 by an alarm

(9) How often do you --
 -- take naps? _____ / week
 -- drink alcohol in the evening? _____ / week
 -- use marijuana (etc) in the evening? _____ / week
 Do you smoke? Y N - How much? _____ pk/day
 Do you snore excessively? Y N

(10) Are you currently using any (other) kinds of medication for any (other) purposes? -- Include birth control pills, aspirin, medication for high blood pressure or allergy, vitamins.

Medication Name	Amount	Frequency	For what purpose?	When started?
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(11) Have you had any serious illness or physical problem in the past 6 mo.? no / If yes, please list:

(12) Do you have any chronic or recurrent disorders, such as diabetes, high blood pressure, kidney/liver disorder, heart/cardiovascular disorder, anxiety, depression? no / If yes please list:

(13) Have you had any surgery? no / If yes, list:

APPENDIX S
TRANSIENT INSOMNIA SURVEY QUESTIONS

Screening Questionnaire (*June 86*) Age: ____ Initials: ____

Name: _____ Start date: _____

Address: _____ 1 Night/day screening date: _____

phone: _____ work: _____

Birthdate: ____/____/____ MF / M SI Sep D

Height: ____ Weight: ____ SS* _____ Occupation _____

(1) How would you rate your sleep? not very good
 moderately good
 good
 extremely good
If yes, describe/quantify: _____

(2) Over the past month, how many times have you had difficulty sleeping due to:

- Anticipation of an important event _____ times
- Other stress, grief, depression _____ times
- Cold, congestion or allergy _____ times
- Pain _____ times
- Alcohol or other drugs _____ times
- Prescription medication _____ times
- Environmental disturbance (noise, etc.) _____ times
- Jet lag _____ times
- Shift work _____ times

(3) On the average when do you _____ pm
turn out the lights (to go to sleep)? _____ am (*lights out*)

What range of times has your bedtime? _____ - _____

(4) On the average, *when do you awaken*
in the morning? _____ am (*lights on*)

What range of times has your wake-up? _____ am - _____ am

Could you sleep well from 11pm-7:30? Y N

(5) On the average (over the last month)
how long does it take you to fall
 asleep each night? _____ min. (*sleep latency*)

(6) On the average, *how much sleep*
 do you get each night? _____ hours (*total sleep*)

What range of hours do you get? _____ - _____ hours

(7) Do you get up to go to the bathroom? Y N

On the average, how often are you awake? _____ *number of wakes*

For how long (altogether) ? _____ minutes (*WASO*)

(8) In the morning, do you awaken
 spontaneously
 by an alarm

(9) How often do you --

-- take naps? _____ / week

-- drink alcohol in the evening? _____ / week

-- use marijuana (etc) in the evening? _____ / week

Do you smoke? Y N - How much? _____ pk/day

Do you snore excessively? Y N

(10) Are you currently using any (other) kinds of medication for any (other) purposes? -- Include birth control pills, aspirin, medication for high blood pressure or allergy, vitamins.

Medication Name Amount Frequency For what purpose? When started?

(11) Have you had any serious physical or emotional problem in the last year?

(12) What health concerns do you have ? (i.e, diabetes, high blood pressure, kidney/liver disorder, heart/cardiovascular disorder, anxiety, depression).

(13) What types of surgery have you had? _____

APPENDIX T

STANFORD QUESTIONNAIRE FOR INSOMNIA SURVEY

Name: _____ Interviewer: _____
 Address: _____ Initial contact:
 _____ zip _____ time: _____ date: ____/____/____
 Phone: home: _____ work: _____ Subsequent contacts:
 Birthdate: _____ sex: _____ mar. stat. _____
 Height: _____ weight: _____ SSN: _____
 Occupation: _____ How did you hear of this study? _____

>>> COMPLETE AT LEAST QUESTIONS 1-5 & 17, PLUS BIRTHDATE & SEX. <<<

1. How severe would you rate your sleep problem?
 - not very severe
 - moderately severe
 - severe
 - extremely severe
2. How long have you had a sleep problem? _____ years _____ months
3. Do you have a sleep problem NOW? (yes) (no)
4. Over the past 30 days, about how many nights per week have you had a sleep problem? _____ nights per week.
5. What kind of sleep problem do you have?
 - problem falling asleep
 - many nighttime awakenings
 - early morning awakenings
 - sleep is not sound
 - lengthy nighttime awakenings
6. On the average when do you turn out the lights (to go to sleep)? _____ am/pm < L.OU
7. On the average (over the last month) how long does it take you to fall asleep each night? _____ hours _____ minutes < SL
8. On the average, how many times do you awaken each night? _____ times
9. On the average, how long are you awake during the night after having initially fallen asleep and before your final morning awakening? _____ hours _____ minutes < WAO
10. On the average, when do you awaken in the morning? _____ am < L.ON
11. In the morning, do you awaken?
 - spontaneously
 - by an alarm
 - other outside disturbance
12. On the average, how much sleep do you get at night? _____ hours _____ minutes < TST
13. How often do you take naps?
 - every day
 - frequently
 - rarely
 - never
14. How often do you drink alcohol in the evening?
 - every night
 - frequently
 - rarely
 - never
15. How often do you use marijuana or similar drugs in the evening?
 - every night
 - frequently
 - rarely
 - never
16. Do you snore excessively? (yes) (no)
 - If yes, is your snoring:
 - loud
 - annoying to others
 - gasping

What medications are you currently using for your sleep (include alcohol, marijuana, etc.) ?

MEDICATION	DOSE	HOW OFTEN?	WHEN DID YOU START USING THIS DRUG?	DOES IT HELP YOU 1. GO TO 2. STAY ASLEEP?
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Any others? no

18. What medications have you taken in the past for your sleep (incl. alcohol)?

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

19. Are you CURRENTLY using any other kinds of medication for any other purposes? Include birth control pills, aspirin, medication for high blood pressure or allergy, vitamins, etc.

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Any others? no

20. List IN THEIR ORDER OF IMPORTANCE any daytime consequences of your sleep problem (ie, fogginess, no pep, irritability, sleepiness, can't think clearly, etc.)

If "none", how is your sleep a problem? none

21. Have you had any serious illness or physical problem in the past six months? no
If yes, please list.

22. Do you have any chronic or recurrent disorders, such as diabetes, high blood pressure, kidney/liver disorder, depression/mental disorder, heart/cardiovascular disorder? no
If yes, please list.

23. Have you ever had any surgery? no
If yes, please list.