



## Assessment and Treatment of Sleep Disturbances Associated with Deployment

Dr. William Brim  
Deputy Director

  1



## Sleep and Insomnia Basics

“I’ll sleep when I’m dead  
-Warren Zevon

  2



## Why do we sleep?

**Inactivity Theory**

- Also called an adaptive or evolutionary theory
- Sleep serves a survival function and has developed through natural selection
- Animals that were able to stay out of harm’s way by being still and quiet during times of vulnerability, usually at night...survived

**Energy Conservation**

- Related to inactivity theory
- Suggests primary function of sleep is to reduce energy demand and expenditure
- Research has shown that energy metabolism is significantly reduced during sleep

**Restorative**

- Sleep provides an opportunity for the body to repair and rejuvenate
- Major restorative functions such as muscle growth, tissue repair, protein synthesis and growth hormone release occur mostly or exclusively during sleep

**Brain Plasticity**

- One of the most recent theories is based on findings that sleep is correlated to changes in the structure and organization of the brain.
- Sleep plays a critical role in brain development with infants and children spending 12-14 hours a day sleeping and a link to adult brain plasticity is becoming clear as well

  3



## How is sleep regulated?

- Early scientists believed that gases rising from the stomach during digestion brought on the transition to sleep.

Aristotle (c350 B.C.) “We awaken when the digestive process is complete”



  4



**“Sleep is a dynamic behavior. Not simply the absence of waking, sleep is a special activity of the brain controlled by elaborate and precise mechanisms.”**

J. Allan Hobson, *Sleep*, 1989



5



## How is sleep regulated?

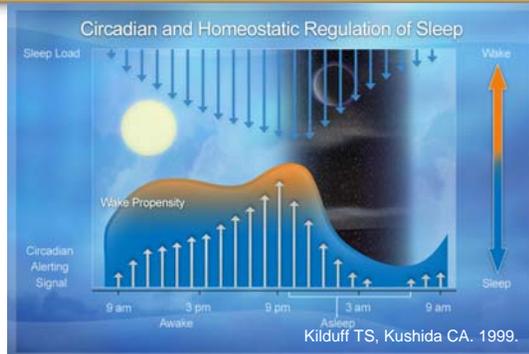
- Homeostatic sleep drive (Process S)
  - During wakefulness a drive for sleep builds up that is discharged primarily during sleep
  - As sleep drive increases, so do subjective feelings of sleepiness
- Circadian rhythms (Process C)
  - Varying strength alerting signal increases over the course of the day and decreases across the night until early morning



6



## How is sleep regulated?

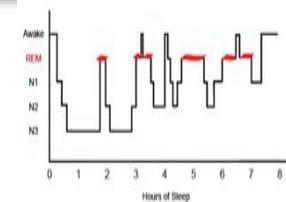


7



## Sleep architecture

- N1 or Stage 1 (5%)
  - 5 mins; transitional phase
  - Low arousal threshold
- N2 or Stage 2 (50-55%)
  - 10-15 mins;
- N3 or Stage 3 & 4 (20%)
  - Lasts 20-40 mins; “delta” “slow-wave sleep”
- REM (20%)
  - Tonic (hypotonic muscles) and Phasic (eye movement) stages



8



## Harvard University Sleep Lab Website

<http://healthysleep.med.harvard.edu/>



[//healthysleep.med.harvard.edu/interactive/sleep\\_lab](http://healthysleep.med.harvard.edu/interactive/sleep_lab)



9



## Terms & Abbreviations

- SOL = Sleep Onset Latency
- WASO = Wake After Sleep Onset
- EMA = Early Morning Awakening
- TWT = Total Wake Time
- TST = Total Sleep Time
- TIB = Time in Bed
- FNA = Frequency of Night-time Awakenings
- SE = Sleep Efficiency =  $TST / TIB$



10



## Sleep-Wake Disorders



11



## Disorder Taxonomies - ICS

The International Classification of Sleep Disorders-2 (ICSD-2) lists more than 80 distinct sleep disorders in 8 categories



12



## Disorder Taxonomies – DSM-5

- Organized for easier differential diagnosis and to clarify when a referral to a sleep specialist is warranted
- Geared towards general mental health and medical clinicians vs sleep medicine specialists
- Mandated concurrent specification of medical and mental disorders
- Lumping (e.g., insomnia disorder) vs Splitting (e.g., narcolepsy)



## Disorders Common in the Military

- The most common complaint of military members returning from deployment is about sleep
- There has been a rise in the number of service members receiving treatment for;
  - Obstructive Sleep Apnea
  - Circadian Rhythm Sleep Disorders
  - Nightmares
  - Insomnia



## Sleep disturbance during deployment





## War and Sleep

"I observed disorientation, overwhelming sleepiness, and an inability to give and receive orders due to uncontrollable lapses in attention and poor memory."

Gen George Marshall observations during Operation Overlord at Normandy, June 1944

On some nights, he has nowhere to sleep, on others he suffers from insomnia. "That's just how it is," thinks the warrior. "I was the one who chose to walk this path."

Paulo Coelho from *The Warrior of the Light*

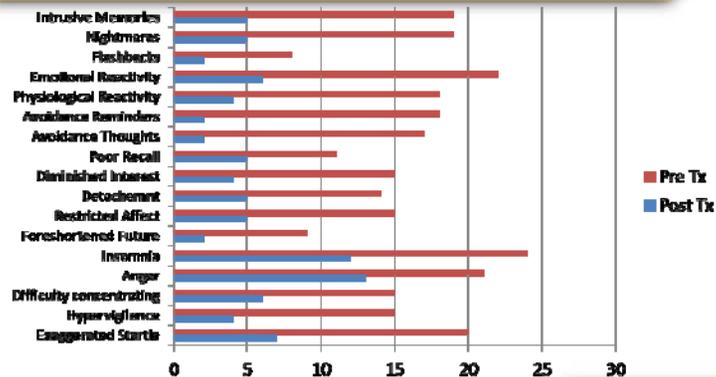


## Sleep Disturbance and PTSD

- Sleep disturbance and nightmares are part of a normal and typical acute response to trauma (Pillar, Malhotra, & Lavie, 2000) and are usually transient (Lavie, 2001).
- Combat exposure has been strongly correlated with the frequency of nightmares, moderately correlated with problems falling asleep and weakly correlated with problems staying asleep (Neylan et al., 1998) in Vietnam Veterans in objective tests
- Sleep disturbance is a core feature of PTSD not a consequence of the disorder (Spoormaker et al 2008)



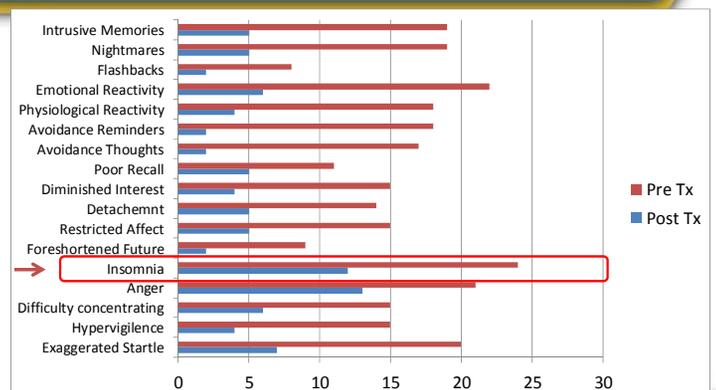
## Residual Insomnia



Zayfert & Devira, 2004



## Residual Insomnia



Zayfert & Devira, 2004





## Predictive power of sleep disturbance

- Moderate probability of PTSD if sleep symptoms were present soon after the trauma but High probability of no PTSD if no sleep disturbance within 1 month after trauma (Harvey and Bryant, 1998) - NPP
- MVA survivors – Insomnia at 1 week not predictive of PTSD but sleep complaints at 1 month post trauma were a significant predictor of PTSD at 12 months post trauma. (Koren, Arnon, Lavie and Klein, 2002) - PPP



21



## Sleep Disturbance and PTSD

- 35 veterans w/ PTSD and 37 patients with insomnia but no PTSD
- No difference in average sleep per night (2.7 hrs vs. 2.8 hrs)
- PTSD group reported more sleep-related anxiety symptoms including
  - Fear of going to sleep, waking up with covers torn apart, fear of the dark, having thoughts of the trauma whilst lying in bed, having disturbing thoughts while lying in bed, talking during sleep, yelling/shouting during sleep, waking up confused and disoriented fear of the dark and waking up from a frightening dream and finding it hard to return to sleep.

Inman, Silver, and Doghramji (1990)



22



## Sleep Disturbance and PTSD

- 35 veterans w/ PTSD and 37 patients with insomnia but no PTSD
- No difference in average sleep per night (2.7 hrs vs. 2.8 hrs)
- PTSD group reported more sleep-related anxiety symptoms including
  - **Fear of going to sleep**, waking up with covers torn apart, fear of the dark, having thoughts of the trauma whilst lying in bed, having disturbing thoughts while lying in bed, talking during sleep, yelling/shouting during sleep, waking up confused and disoriented fear of the dark and waking up from a frightening dream and finding it hard to return to sleep.

Inman, Silver, and Doghramji (1990)



23



## SOL & Sleep Maintenance

- SOL – 44% of VV w/PTSD reported SOL sometimes or very frequently vs 6% of VV w/o PTSD (Neylan et al. 1998)
- Sleep maintenance – 91% of VV w/PTSD rated sometimes or very frequent difficulty maintaining sleep vs. 63% w/o PTSD and 53% of civilians
- PTSD community sample more disrupted sleep (47% vs 18%) and wake too early (43% vs 13%).



24



## Nightmares - Prevalence

- 52% VV w/ PTSD sometimes or very frequently compared to 5% VV w/o PTSD
- Community sample 19% vs 4% (Ohayon and Shapiro 2000)
- Female sexual or physical assault survivors w/PTSD reported nightmares on avg. 5 nights a week (Krakow, Schrader, et al., 2002).



25



## Nightmares - Content

- Only VV w/PTSD reported dreams related to wartime experiences but both VV w and w/o PTSD reported disturbing dreams along themes other than war (Mellman, Kulick-Bell, Ashlock, & Nolan, 1995)
- VV w/PTSD 50% combat themes, 85% mod to highly threatening, 53% set in present, 79% distorted elements
- Patients who reported distressing dreams were also more likely to have more severe PTSD symptoms (Mellman, 2001)
- In general, appears that content is more exact reenactment trending towards more distorted over time.



26



## Sleep and TBI



27



## Sleep Disturbances Are Common and Harmful to Patients with TBI

- 50% of patients with TBI have some form of sleep disturbance (Mathias & Alvaro, 2012)
- In a study of veterans with TBI, PTSD, or chronic pain (Lew et al., 2010):
  - 93.5% of the entire study population had a sleep disorder
  - 65% of the population screened positive for mTBI
- Sleep disturbances may cause harmful consequences on memory function in patients with TBI and/or exacerbate comorbid symptoms (Bloomfield, Espie, & Evans, 2010; Castriotta et al., 2007)
  - May prolong concussion recovery
  - Potentially a risk factor for suicide



28

**CDP**  
**Prevalence of Sleep Disorders**

	Insomnia*	Sleep Apnea*	CRSD
General Population	• 10% of U.S. population (Roth, 2005; Roth & Roehrs, 2003)	• 24%–28% of men and 9%–28% of women (Young, Peppard & Gottlieb, 2002)	• Prevalence is unknown
TBI Population	• Ranges from 24.6–87% depending on study population (Ouellet et al., 2006; Castriotta & Murthy, 2013; Fichtenberg et al., 2002; Parcell et al., 2008; Fichtenberg et al., 2000; Mayer et al., 2011) *These studies included mixed TBI populations (mild, moderate, and severe).	• 47% of TBI patients within three months of injury (Webster et al., 2001) • 53.1% in blunt trauma patients vs. 30.8% in blast injury patients (Collen et al., 2011)	• 36% of mTBI patients diagnosed with CRSD (Ayalem et al., 2007)

hjf  29

**CDP**  
**Influence of Severity of Injury on Sleep Disturbance**

- Patients with less severe brain injuries have more severe sleep disturbances
  - Insomnia higher in mTBI (38%) than moderate (35%) or severe (25%) injuries (Ouellet et al., 2006)
  - Insomnia linked to milder injury severity, severe depressive symptoms, higher pain and fatigue (Ouellet et al., 2004)
  - mTBI patients had poorer sleep quality and duration and more sleep disturbances than moderate/severe TBI patients (Mahmood et al., 2004)

hjf  30

**CDP**  
**TBI related Polysomnographic Changes in Sleep**

- Acute Brain Injury (less than 2 weeks post injury) Disrupts sleep organization with;
  - increases in sleep onset latency
  - increases in N1 sleep
  - reductions in total sleep time
  - reduction in N2 sleep
  - reduction in slow wave sleep
  - frequent nocturnal awakenings

hjf  31

**CDP**  
**TBI-related Polysomnographic Changes in Sleep**

- Sub-acute brain injury (2-4 weeks post injury)
  - Show improved sleep structure
  - Shortened sleep latency
  - Decreases in N1 sleep
  - Increases in total sleep time
  - Increases in N2 and slow wave sleep
- Sleep improvement is prognostic for extent of brain recovery

hjf  32

Sleep Disorder	Pharmacological Treatment	Non-Pharmacological Treatment
Acute Insomnia	<ul style="list-style-type: none"> <li>Benzodiazepine hypnotics (not recommended)               <ul style="list-style-type: none"> <li>May interfere with neuronal recovery in patients with TBI (Flanagan et al., 2007)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Sleep hygiene education (Babson, Feldner, &amp; Badour, 2010; Siebert &amp; Manber, 2010)</li> </ul>
Chronic Insomnia	<ul style="list-style-type: none"> <li>Non-benzodiazepine hypnotics (recommended) (Flanagan et al., 2007)</li> </ul>	<ul style="list-style-type: none"> <li>Cognitive behavioral therapy for insomnia (CBT-I) (Ouellet &amp; Morin, 2007)</li> <li>Treatment with acupuncture (Zollman et al., 2007)</li> </ul>
Sleep Apnea	<ul style="list-style-type: none"> <li>Limited pharmacological treatments (Hedner, Grote, &amp; Zou, 2008; Jayaraman, Sharafkhaneh, Hirschowitz, &amp; Sharafkhaneh, 2008)</li> <li>Modafinil (FDA-approved for OSA patients with EDS who also use CPAP) (Kumar, 2008)</li> </ul>	<ul style="list-style-type: none"> <li>CPAP (most common) (Weaver &amp; Grunstein, 2008; Castriotta et al., 2009)</li> <li>Oral appliances (Almeida &amp; Lowe, 2009)</li> <li>Surgery (Maurer, 2009)</li> </ul>
CRSD	<ul style="list-style-type: none"> <li>Timed melatonin and hypnotics (Sack et al., 2007a, 2007b)</li> <li>Use of stimulants (Sack et al., 2007a, 2007b)</li> <li>Use of Modafinil (Kumar, 2008)</li> <li>Melatonin and phototherapy (Carter et al., 2010)</li> </ul>	<ul style="list-style-type: none"> <li>Prescribed sleep scheduling (Sack et al., 2007a, 2007b)</li> <li>Circadian phase shifting using timed light exposure (Sack et al., 2007a, 2007b)</li> </ul>

## CBT for Insomnia associated with TBI

- 30-70% report increase SOL and WASO post trauma
  - Can exacerbate sx's of TBI: pain, cog deficits, fatigue or irritability and compromise rehab.
- 5 component CBT-I: education, stimulus control, sleep restriction, cognitive therapy, fatigue management skills
- Benefits within 1-2 weeks sustained at least 3 months
  - Increased sleep efficiency
  - Decreased SOL and WASO
  - Reduction in fatigue

Ouellet & Morin (2007) Arch Phys Med Rehabil

## The Etiology of Insomnia

A Cognitive-Behavioral Conceptualization

## The Nature of Insomnia

- Three common types of insomnia:
  - Sleep-onset
    - Problems with falling asleep at bedtime
  - Sleep-maintenance
    - Waking during the night and having trouble falling back to sleep
  - Terminal
    - Awakening too early in the morning



## Combined DSM-IV and ICSD Criteria for Insomnia

- Subjective complaints of poor sleep.
- Difficulties in initiating and/or maintaining sleep, whereby SOL or WASO is greater than 30 minutes; SE less than 85%.
- Sleep problems are present 3 or more nights per week.
- Duration of insomnia longer than 6 months.



37



## Combined DSM-IV and ICSD Criteria for Insomnia

- Subjective report of at least one daytime sequela attributed to poor sleep: fatigue, performance impairment, or mood disturbances.
- The sleep disturbance (or daytime sequelae) causes significant impairment in social or occupational functioning, or causes marked distress.



38



## DSM-5 – Insomnia Disorder 780.52

- A predominant complaint of dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms – difficulty initiating sleep, difficulty maintaining sleep, early morning awakening
- Sleep complaint is accompanied by significant distress or impairment in social, occupational or other important area of functions by presence of at least one of the following
  - 3 nights per week
  - Present for 3 months
  - Occurs despite adequate opportunity for sleep
- Insomnia is not better explained by and does not occur exclusively during the course of another sleep wake disorder
- Not attributable to substances
- Coexisting mental disorders and medical conditions do not adequately explain the insomnia



39



## Definition and Severity Criteria

- The clinical significance of insomnia is determined by its severity, frequency, duration, and daytime sequelae.
- Both good and poor sleepers tend to overestimate sleep-onset latency and wake after sleep onset.
- Studies have found that insomniac sleep tends to be poorer than controls on both sleep diary and polysomnography.



40

**CDP** **Diagnosis of insomnia – Primary vs. Secondary**

- Basically comes down to the question of 'primary' vs. 'secondary' insomnia
- If 'secondary' should it be treated? Even when initially secondary, usually develops some independence over time
- Now use the term 'comorbid' insomnia
  - Ex: depression – insomnia as a prodromal symptom and risk factor for relapse
- DSM-V Insomnia Disorder
  - With non-sleep disorder mental comorbidity
  - With other medical comorbidity
  - With other sleep disorder

**hjf**  41

**CDP** **DSM-V Insomnia Disorder**

- Episodic – Symptoms last at least 1 month but less than 3 months
- Persistent – Symptoms last 3 months or longer
- Recurrent – Two or more episodes with the space of 1 year

**hjf**  42

**CDP** **Factors Involved in Insomnia: Behavioral Model of Insomnia**

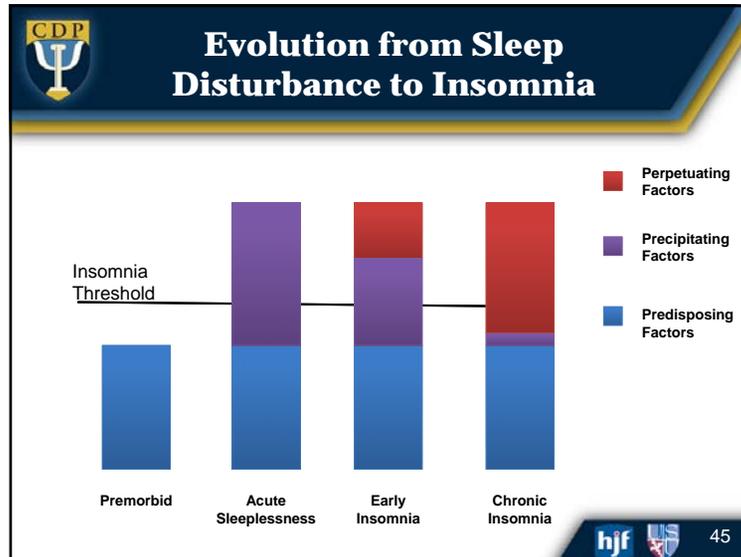
- Predisposing Factors
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- Precipitating Factors
  - \_\_\_\_\_
    - Illness or injury
    - Acute stress reactions
    - Environmental Changes
- Perpetuating Factors
  - \_\_\_\_\_
  - \_\_\_\_\_

**hjf**  43

**CDP** **Factors Involved in Insomnia: Behavioral Model of Insomnia**

Predisposing	Precipitating	Perpetuating
<ul style="list-style-type: none"> <li>• Genetics               <ul style="list-style-type: none"> <li>• Arousal level</li> <li>• Weak sleep generation system</li> </ul> </li> <li>• Worry or rumination tendency</li> <li>• Sleep Schedule</li> <li>• Environment</li> <li>• Previous Episodes</li> </ul>	<ul style="list-style-type: none"> <li>• Situational Stressors</li> <li>• Illness/Injury</li> <li>• Acute stress reaction</li> <li>• Environmental Changes</li> </ul>	<ul style="list-style-type: none"> <li>• Maladaptive Habits</li> <li>• Dysfunctional/Alarming beliefs, attitudes and cognitions</li> </ul>

**hjf**  44



**CDP**

## Mechanisms Interfering with Sleep Onset

- Physiological Hyperarousal
  - During pre-sleep and nocturnal awakenings Insomniacs have
    - faster heart rates
    - elevated frontalis muscle tension,
    - greater electrodermal conductance
  - Insomniacs display higher daytime and nighttime body temperature
  - Most studies have failed to show correlation between lowered physiological arousal and sleep improvement

hjf 46

**CDP**

## Mechanisms Interfering with Sleep Onset

- Emotional Hyperarousal
  - Insomniacs hold more unrealistic expectations about their sleep requirements and stronger beliefs about consequences of insomnia than normal sleepers
  - Insomniacs cognitions are more negatively toned than those of good sleepers
  - Insomniacs may be more emotionally reactive to stressor and may take longer to recover from exposure to such events

hjf 47

**CDP**

## Mechanisms Interfering with Sleep Onset

- Cognitive Hyperarousal
  - Poor sleepers attribute insomnia to cognitive arousal (55%) ten times more than physiological arousal (5%). 35% claim that both are important factors
    - Pre-sleep anticipation
    - Negative emotions about sleep
    - Intrusive thoughts
    - Catastrophizing
    - Rigid sleep rules
  - Exposure to mild stressor delayed sleep onset in good sleepers but improved sleep onset in insomniacs--may interfere with already elevated sleep related cognitions

hjf 48

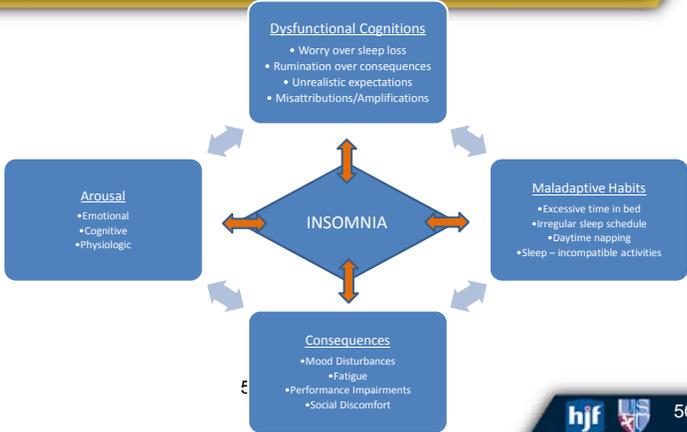
**Mechanisms Interfering with Sleep Onset**

- **Conditioning**
  - For good sleepers, bedroom/bedtime stimuli are potent cues associated with drowsiness and sleep onset.
  - For poor sleepers, these stimuli are often associated with frustration, arousal and sleeplessness



hjf 49

**An Integrative Model of Insomnia**



**Dysfunctional Cognitions**

- Worry over sleep loss
- Rumination over consequences
- Unrealistic expectations
- Misattributions/Amplifications

**Arousal**

- Emotional
- Cognitive
- Physiologic

**Maladaptive Habits**

- Excessive time in bed
- Irregular sleep schedule
- Daytime napping
- Sleep – incompatible activities

**Consequences**

- Mood Disturbances
- Fatigue
- Performance Impairments
- Social Discomfort

hjf 50

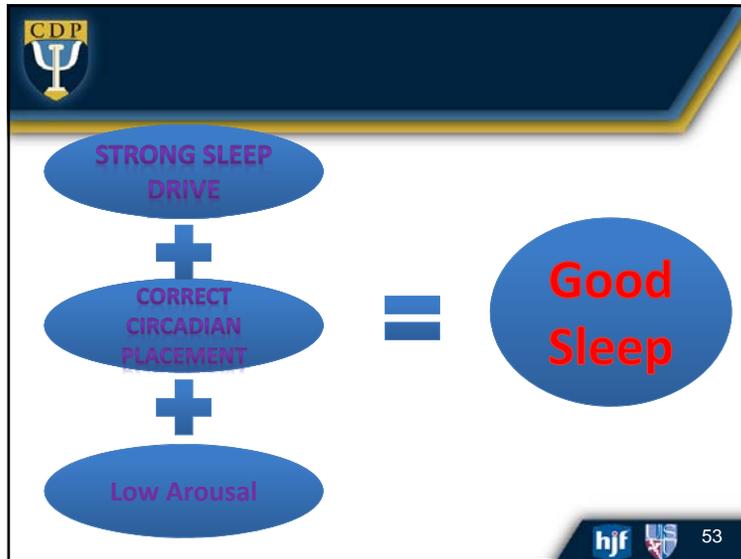
**Cognitive Behavioral Therapy for Insomnia**

hjf 51

Chronic insomnia is a major public health problem affecting millions of individuals, along with their families and communities. Evidence supports the efficacy of cognitive-behavioral therapy and benzodiazepine receptor agonists\* in the treatment of this disorder, at least in the short term. Very little evidence supports the efficacy of other treatments, despite their widespread use.

- 2005 NIH State of the Science Conference on Manifestations and Management of Chronic Insomnia in Adults

hjf 52



- ## CBTI Targets
- Behaviors
    - Increase sleep drive
    - Optimize congruency between circadian clock and placement of sleep opportunity (time in bed)
    - Strengthen the signals from the circadian clock
    - Strengthen the bed as cue for sleep (conditional insomnia)
    - Reduce physiological arousal
  - Cognitions
    - Reduce sleep effort
    - Reduce cognitive arousal
    - Address dysfunctional beliefs about sleep
    - Address obstacles in adherence
- The slide includes the CDP logo in the top left and the 'hjf' logo with the number 54 in the bottom right.

## CBTI Components

Technique	Goal
Stimulus Control	Strengthen bed & bedtime as sleep cues
Sleep Restriction	Restrict time in bed to increase sleep drive and consolidate sleep
Relaxation, buffer, worry time	Arousal reduction
Sleep Hygiene	Address substances, exercise, eating and environment
Cognitive Restructuring	Address thoughts and beliefs that interfere with sleep and adherence
Circadian Rhythm Entrainment	Shift or strengthen the circadian sleep wake rhythm

The slide includes the CDP logo in the top left and the 'hjf' logo with the number 55 in the bottom right.

- ## Components of Cognitive Behavioral Treatment of Insomnia
- **Educational:**
    - Promoting Good Sleep Practices and Accurate Information
  - **Behavioral:**
    - Changing Maladaptive Sleep Habits
  - **Cognitive:**
    - Practicing Healthy Thinking About Sleep
  - **Medication:**
    - Planning a Schedule to Discontinue Sleep Aids
- The slide includes the CDP logo in the top left and the 'hjf' logo with the number 56 in the bottom right.



## CBT – I Overview of Sessions

- Session 1: Assessment of Insomnia
- Session 2: Psychoeducation, sleep logs, sleep hygiene
- Session 3: Stimulus control and Sleep restriction
- Session 4: Sleep titration
- Session 5: Sleep titration
- Session 6: Sleep titration
- Session 7: Sleep titration
- Session 8: Relapse Prevention



### SLEEP DIARY

Name: \_\_\_\_\_

Week: (Beginning date) to (Ending date) Example: \_\_\_\_\_

Fill in the Day of the Week above each column

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
1. I napped from ____ to ____ (note times of all naps).	2:00 to 2:45 pm						
2. I took ____ mg of sleep medication as a sleep aid.	ProSom 1 mg						
3. I took ____ oz. of alcohol as a sleep aid.	8oz						
4. I went to bed at ____ o'clock.	12:45						
5. I turned the lights out at ____ o'clock.	10:30						
6. I plan to awaken at ____ o'clock.	11:15						
7. After turning the lights out, I fell asleep in ____ minutes.	6:15						
8. My sleep was interrupted ____ times (specify number of nighttime awakenings).	45						
9. My sleep was interrupted for ____ minutes (specify duration of each awakening).	3						
10. I woke up at ____ o'clock (note time of last awakening).	20						
11. I got out of bed at ____ o'clock (specify the time).	30						
12. When I got up this morning I felt ____.	15						
(1 = Exhausted, 2 = Tired, 3 = Average, 4 = Rather Refreshed, 5 = Very Refreshed)							
13. Overall, my sleep last night was ____.	1						
(1 = Very Restless, 2 = Restless, 3 = Average, 4 = Sound, 5 = Very Sound)							

NOTES:



### TWO WEEK SLEEP DIARY

- INSTRUCTIONS:
1. Write the date, day or the week and type of day (Work, School, Off or Vacation).
  2. Put the letter "M" in the box when you have any caffeinated beverage or supplement that includes caffeine. Put "N" when you take ANY medications, put "A" when you drink alcohol, put "E" when you exercise.
  3. Put a blue E to show when you get to bed. Shade in the box that shows when you think you fell asleep.
  4. Shade in all the boxes that show when you are asleep include all naps.

SAMPLE ENTRY: On Monday when I worked, I spent on my lunch break at 1 PM, had a glass of wine with dinner at 6 PM, fell asleep watching TV from 10 PM, went to bed at 10:00 pm, fell asleep around midnight. I took 100 mg of sleep medication at 11:00 pm, woke up at 7:00 am, had a shower and went to work at 8:00 am.

Today's Date	Type of Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Sample	Work	M	E					
WEEK ONE								
WEEK TWO								



## Sleep Diary Exercise

Please fill in the last three nights sleep information

Did you have trouble recalling all of the data?



## Increase Adherence to Sleep Diary

- Sleep diary is an important aspect of therapy and the information will be used throughout treatment
- Emphasize the importance of daily recording close to getting out of bed
  - Location, location, location



## Educational Component

- The educational components involves teaching basic sleep hygiene principles.
- Adherence to good sleep hygiene practices is generally poor among insomniacs
- Outcome studies show that sleep hygiene education alone is unlikely to be sufficient for chronic insomnia



## Sleep Hygiene

- Consistent bed and wake times
  - Important for entraining circadian rhythms
  - Avoid weekend schedules that differ by more than 1 hour than weekdays
- Minimize napping
  - Reduces homeostatic drive available for nighttime sleep
  - If any, keep under 30 minutes



## Sleep Hygiene

- Environment
  - Light, noise, temperature
- Role of regular exercise
  - Avoid 1-2 hours before bed because of increase in core temperature
- Avoid looking at the clock
  - NEVER helps!



## Sleep Hygiene

- Caffeine
  - Sources (more than just coffee)
  - Can linger >10 hours in the brain so avoid after lunch
- Tobacco & other substances
- Alcohol – often used as a sleep aid
  - Helps with sleep onset but leads to fragmented sleep



## Relaxation therapies

- Reducing Arousal with Relaxation
  - Progressive muscle relaxation - Jacobson
  - Diaphragmatic breathing
  - Autogenic training - Schultz & Luthe
  - Hypnosis
  - Imagery
  - Biofeedback - EMG & EEG



## Behavioral Component

- Insomnia sufferers typically develop strategies for coping with their sleep problem which, in the long run, perpetuate their problem
- The Behavioral Component consists of:
  - *Stimulus Control*
  - *Sleep Restriction*
- There is extensive research support for the effectiveness of these procedures (Morin, 1993).



## Stimulus control instructions (Bootzin, 1972)

- Original formulation based on operant conditioning principles
  - The bed and bedroom lose their stimulus value as a cue for sleep because of non-sleep activities in bed
- Classical conditioning formulation takes into consideration the idea of conditioned hyperarousal
- Overall principles:
 

*The bed is for sleep and sleep is for the bed*



## Stimulus control instructions (Bootzin, 1972)

- Avoid sleep-incompatible activities in bed
  - Ex: TV, reading, paying bills
  - Don't worry, think, plan, etc. in bed
- Avoid sleeping outside of bed
- Maintain a regular sleep schedule and get up at the same time every morning
- Go to bed only when **sleepy**



## Stimulus control instructions (Bootzin, 1972)

- If unable to sleep, get out of bed\*\*\*
  - After about 15-20 minutes, or whenever mental or emotional arousal sets in
  - Engage in relaxing activities until ready for sleep
    - Have activities planned in advance
  - Get back into bed, but repeat as often as necessary
  - Establishing new patterns of conditioning usually takes **3-4 weeks**



## Stimulus Control Instructions

- Go to bed only when sleepy (not just fatigued or tired)
- Use the bed and bedroom for sleep and sex only
- If unable to sleep, get out of bed and return to bed only when sleepy
- Wake up at the same time every day regardless of how much you slept
- Do not nap



## Enhancing Adherence to SC

- Difficulty identifying sleepiness
- Difficulty getting out of bed
- Bed partner related obstacles
  - Different bed times
  - Disturbing the partner
- Difficulty with the scheduled wake up time



## Sleep restriction therapy (Spielman et al., 1983)

- Based on the principle that people with insomnia often use sleep extension
- When *sleep opportunity* exceeds *sleep ability*, wakefulness is the result - less efficient sleep
- Restricting time in bed leads to an increase in sleep efficiency by using sleep deprivation as a tool



## Sleep restriction therapy (Spielman et al., 1983)

- Determine average sleep time with sleep logs (sleep ability)
- Limit time in bed (TIB) (sleep opportunity) to average sleep time
  - Start with desired wake time and count backwards
  - 4-5 hour TIB as a minimum for most people
  - Plan activities to fill extra time
- Continue with sleep logs



## Sleep restriction therapy (Spielman et al., 1983)

- Re-evaluate sleep logs once per week (can also use sleep need questionnaire)
- If sleep efficiency >85-90%, increase TIB by 15-30 minutes
- Otherwise maintain current schedule
- If sleep efficiency drops below 80% reduce TIB by 15-30 minutes
- Takes at least 4-6 weeks for most people



## Sleep Need Questionnaire

Based on the previous week:

Did you feel tired or fatigued during the day or evening?

NEVER (1) \_\_\_ RARELY (2) \_\_\_ SOMETIMES (3) \_\_\_ FREQUENTLY (4) \_\_\_ ALWAYS (5) \_\_\_

Were you sleep or drowsy during the day or evening?

NEVER (1) \_\_\_ RARELY (2) \_\_\_ SOMETIMES (3) \_\_\_ FREQUENTLY (4) \_\_\_ ALWAYS (5) \_\_\_

Did you take any naps or fall asleep briefly during the day or evening?

NEVER (1) \_\_\_ RARELY (2) \_\_\_ SOMETIMES (3) \_\_\_ FREQUENTLY (4) \_\_\_ ALWAYS (5) \_\_\_

Did you feel you had been getting an adequate amount of sleep?

NEVER (5) \_\_\_ RARELY (4) \_\_\_ SOMETIMES (3) \_\_\_ FREQUENTLY (2) \_\_\_ ALWAYS (1) \_\_\_

Adapted with permission from Arthur J. Spielman, PhD



## Sleep Need Questionnaire

### Scoring

To determine the next weeks TIB calculate sleep efficiency

If SE > 85% - modify TIB according the following scores

- a) Score 9 or less – No Change in TIB
- b) Score 10-12 – TIB increased by 15 minutes that week
- c) Score 13 or more – TIB increased by 30 minutes for that week

If SE < 80% -- Reduce TIB but only if the score on the Sleep Need Questionnaire is 9 or less

Otherwise do not change TIB



## Sleep restriction therapy (Spielman et al., 1983)

- Can be difficult to follow for some individuals
- Need to prepare clients for extra sleep deprivation
  - Extra caution when driving or other potentially dangerous situations
  - May be contraindicated for some (ex: epilepsy)
  - Can coincide with time off during first 1-2 weeks
  - Modafinil 100-200mg at a.m. may be used for extreme daytime sleepiness
- Assess motivation and potential barriers



## Cognitive Component

- Many insomniacs entertain a variety of dysfunctional cognitions that may exacerbate what might have been a transient sleep problem.
- The cognitive therapy component is designed to correct unrealistic sleep expectations, revising false attributions about the causes of insomnia, and reappraising perceptions of its consequences on daytime functioning.



## Cognitive Factors in Insomnia

- *Faulty Appraisal* of transient sleep difficulties is a common triggering point of chronic insomnia
- *Misattributions* of daytime impairments to poor sleep can feed into a self-fulfilling prophecy.
- *Unrealistic Expectations* regarding sleep requirements are common.
- *Excessive ruminations, magnification, catastrophizing, overgeneralization, dichotomous thinking, and selective recall* contribute to a self-perpetuating insomnia cycle.



## Approaches

- Cognitive Therapy
  - Identification of Dysfunctional Sleep Thoughts
  - Changing beliefs and attitudes about sleep
- Other Cognitive Approaches
  - Paradoxical Intention
  - Cognitive Control
  - Thought Blocking/Stopping



## Cognitive treatment approaches

- Role of cognitive arousal in insomnia
  - Pre-sleep mental activity (“I can’t shut my mind off”)
  - Planning for the next day
  - Worry about being able to sleep
  - Worry about next day consequences of poor sleep



## Education about sleep

- Role of the 2-process model
- Normal variation in sleep need
- Age-related changes in sleep
- Explanation of sleep hygiene



## Cognitive restructuring

- Standard Beck/cognitive therapy approach
  - Teach client to identify sleep-related thoughts
    - Keep a thought record
  - Examine the accuracy of these beliefs
  - Consider alternative ways of thinking about sleep
  - Can work to change core beliefs, which likely extend beyond just sleep



### Three-Column Automatic Thoughts Record Form

Situation (Specify Time and Date)	Automatic Thought (What was going through your mind?)	Emotions (Rate each emotion's intensity on 0-100 scale)
7/22 – Watching TV in the evening	“I have to sleep well tonight, I have a big presentation at work tomorrow”	Anxious (60)
7/23 – Lying in bed awake at 0200	“This has to stop! I can't go on living like this. This is going to make me sick or kill me” “I HAVE to get some sleep!”	Anxious (80) Discouraged/sad (50)

85



### Five-Column Automatic Thoughts Record Form

Situation (Date and Time)	Automatic Thoughts (what is going through your mind?)	Emotions (rate each emotion's intensity on a 0-100 scale)	Alternative Thoughts (How can you see this situation differently?)	Emotions (rate each emotion's intensity on a 0-100 scale)
1/8 – Wide awake in the middle of the night	“oh no, not again! What type of day will I have tomorrow, I definitely won't be able to function well”	Anxious (90)	“There is really no point in worrying about this right now...I can't force sleep anyway...” “I can usually still get some work done even after a poor night's sleep, worrying will only make things worse and keep me awake longer” “Even if feeling tired is unpleasant I can find ways to cope”	Anxious (10)

Ask yourself...“What is the evidence for and against this automatic thought?”, “What are the chances that the consequence will happen?”, “How does thinking this make me feel?”

86



### Paradoxical Intention

- In bed comfortable with lights out
- Try to keep eyes open “just a little longer”
- Congratulate self on staying awake
- Don't try to sleep but let sleep overtake you
- Remind self that staying awake is the general idea so being awake is succeeding
- Don't actively prevent sleep; let sleep overtake you

hjf  87



### Cognitive Control: Setting aside “worry time”

- For many, bedtime is the first chance to reflect on the day and plan for the next one
- Set aside a 15-20 min time each day for focused planning/worry
- Reduces need to engage in thinking in bed

hjf  88



## Constructive Worry

CONCERNS	SOLUTIONS
Concern A <b>I am worried about my mother's failing health</b>	(1) I went to her last appointment and talked to her doctor
	(2) I made sure she is using her daily pill pack properly
	(3) My sister and I agreed to alternate calling her daily
Concern B <b>I am worried about my family's ability to cope during my deployment</b>	(1) My spouse is attending deployed spouse support groups for emotional support
	(2) My brother and my neighbor have checked in and reported back that everything is okay
	(3) We talk regularly and they seem to be okay

89

- 
- ## Constructive Worry
- Make a list of primary concerns
  - Make list of “active” efforts to work on concerns listed
    - If new ideas to “work the problem” add to list
    - If no new ideas, focus on rest to resume work on problem tomorrow
- hjf  90

- 
- ## Relapse Prevention
- (1) Maintain regular sleep and wake times
  - (2) Do not compensate for sleep loss
  - (3) If insomnia resumes, immediately return to stimulus control
    - a. Don't compensate for bad night of sleep
    - b. Never stay in bed for more than 15 minutes if awake
  - (4) If insomnia persists for several days, begin sleep restriction therapy
    - a. Remember, if not tonight – then tomorrow night
  - (5) If insomnia continues (2 weeks), make appointment to resume treatment
- hjf  91

- 
- ## A complete CBT-I package
- Integration of behavioral and cognitive techniques
  - Range from 1 to 8 sessions
  - Individual or group format
  - Delivery via the internet?
- hjf  92



## Assessment and Treatment of Sleep Disturbance/Insomnia



## Assessment Goals

- Differential Diagnosis
  - Is CBT for Insomnia appropriate
  - Is referral to a sleep specialist or primary care provider needed
    - Obstructive Sleep Apnea
    - Restless Leg Syndrome
    - Other medical or psychiatric condition
- Begin Case Conceptualization and Treatment Planning
- Enhance motivation for treatment



## Case Conceptualization

- What factors may be weakening the patients sleep drive?
  - Extended time in bed
  - Dozing off in the evening
  - Daytime napping
- What factors may be weakening the signal from the biological clock?
  - Irregular bed and wake time
  - Sleep window out of sync with circadian tendency



## Case Conceptualization

- What manifestations of hyperarousal are present?
  - Conditioned arousal
  - Excessive sleep effort
  - Erroneous beliefs about sleep
  - Hyperactive mind in bed
- What unhealthy sleep behaviors are present?
  - Substances
  - Nocturnal eating
  - Exercise timing



## Case Conceptualization

- What comorbidities may impact the patient's sleep and how?
  - Sleep, medical and psychiatric conditions
    - OSA, Depression, PTSD
- What medications might impact the patient's sleep/sleepiness?
  - Carryover effects, tolerance, psychological dependence



## Case Conceptualization

- What are the predisposing, precipitating and perpetuating factors
  - High trait anxiety
  - Interpersonal stress, job stress, loss, life changes
  - Increase sleep effort, extended time in bed
- What other factors are relevant to the patient's presentation?



## Assessment Measures

- Retrospective
  - Clinical Interview
  - Epworth Sleepiness Scale
  - Dysfunctional Beliefs and Attitudes Scale
  - Insomnia Severity Index
- Prospective
  - Sleep Diary



## Assessment of Sleep Disruption/Insomnia

- Functional Analysis (Antecedents, Consequences, etc.)
- Sleep History
- Self-Report Measures (e.g., Sleep Diary, Sleep Beliefs)
- Medication Use
- Dietary, Smoking, and Exercise Habits
- Screening for Other Sleep Disorders
- Medical History
- Psychological Screening
- Objective Measures of Sleep (e.g., PSG, Actigraph)



## Assessment of Sleep Differential Diagnoses

- Sleep-related breathing disorder
- Periodic Limb Movements
- Restless Leg Syndrome
- Circadian Rhythm sleep disorders
- Parasomnias
- Narcolepsy
- Emotional Disturbances
  - Depression
  - Anxiety Disorders
  - PTSD



## Bedroom Environment

- Sleeping with bed partner
- Mattress
- Quiet
- stereo/radio bedroom
- Desk in bedroom/Computer
- Exercise in bedroom
- TV
- Read
- Snack
- Temperature



## Symptoms of Sleep Problems

- RLS
  - Crawling or aching feeling in legs
  - An inability to keep legs still
- PLMS
  - Leg twitches or jerks during the night
  - Waking up with cramps in legs
  - Bed partner report
  - Find covers all kicked off



## Restless Leg Syndrome (RLS)

- Neurological disorder leading to irresistible urge to move to stop uncomfortable sensations
- May affect other body parts
- Many individuals also report limb jerking during sleep



## Restless Leg Syndrome (RLS)

- Neurological disorder leading to irresistible urge to move to stop uncomfortable sensations
- May affect other body parts
- Many individuals also report limb jerking during sleep



## Periodic Limb Movement (PLM)

- Repetitive limb movements during sleep and is the only movement disorder that occurs only during sleep
- Often complain of excessive daytime sleepiness, fall asleep during day and have trouble maintaining sleep at night
- More common in people over age 65



## Periodic Limb Movement (PLM)

- Repetitive limb movements during sleep and is the only movement disorder that occurs only during sleep
- Often complain of excessive daytime sleepiness, fall asleep during day and have trouble maintaining sleep at night
- More common in people over age 65



## Symptoms of Sleep Problems

- OSA
  - Snoring
  - Pauses in your breathing at night
  - Choking at night
  - Gasping for air during the night
  - Morning headaches, chest pain, or dry mouth
  - Partner report



## OSA

- Snoring: Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?
- Tired: Do you often feel tired, fatigued, or sleepy during the daytime?
- Observed
- Blood Pressure



## Symptoms of Sleep Problems

- Nightmares
- Dream-like images (hallucinations) in am
- Awakening from sleep screaming and confused
- Sleepwalking
- Narcolepsy
  - Sudden “attacks” of sleep during the day
  - Sudden muscular weakness in situations of high stress



## Nightmare Disorder

- A. Repeated awakenings from the major sleep period or naps with detailed recall of extended and extremely dysphoric dreams, usually involving active efforts to avoid threats to survival, security, or physical integrity. The awakenings generally occur during the second half of the sleep period.
- B. On awakening from the dysphoric dreams, the person rapidly becomes oriented and alert (in contrast to the confusion and disorientation seen in Sleep Terror Disorder and some forms of epilepsy).
- C. The dream experience, or the sleep disturbance resulting from the awakening, causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The nightmares do not occur exclusively during the course of another mental disorder (e.g., a delirium, Posttraumatic Stress Disorder) and are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.



## Sleep-Related Hallucinations

- **Hypnagogic hallucinations**
  - Hypnagogic occur during transition from wake to sleep
- **Hypnapompic hallucinations**
  - Hypnapompic occur during the waking up process
- Most common in people with narcolepsy



## Sleep/Night Terrors

- A disorder that predominantly affects children
- Causes feelings of terror or dread
- Typically occurring in the first few hours of sleep during stage 3 or 4 NREM sleep.
- May involve loud screams and panic; in extreme cases, it may result in bodily harm or property damage by running about or hitting walls.
- Night terrors should not be confused with nightmares, which occur during the dream phase of sleep known as REM sleep.
- The exact cause is unknown, but night terrors may be triggered by fever, lack of sleep, periods of emotional tension, stress, or conflict.
- Most children are unable to explain what happened the next morning and often have no memory of the event when they wake up the next day.



## Somnambulism (sleepwalking)

- Up to 15 percent of adults occasionally get up and amble around the house in their sleep.
- Close relatives of sleepwalkers are 10 times more likely to sleepwalk than the general population.
- One study published in 2003 in the journal Molecular Psychiatry found that 19 percent of adult sleepwalkers had been hurt during their nocturnal forays.



## Narcolepsy

- Excessive Daytime Sleepiness (daily x 3 months)
- Cataplexy (triggered by emotion)
- Hypnagogic hallucinations (SOREM insertion)
- Sleep paralysis
- Automatic behavior (e.g., confused speech)
- Disrupted nocturnal sleep (SOL and WASO)
- Confirm by PSG



## Symptoms of Sleep Problems

- Sour taste in mouth
- Grinding teeth at night (Bruxism)
- Rotating Shift work
- Feeling panicked during the night
- Nose blocking up
  
- Medical History



## Bruxism

- More commonly known as teeth grinding
- Usually includes clenching of jaw
- Happens to most people at some point
- Bruxism is a habit, not a reflex
- Maybe triggered by medical problem, stress or trauma.



## Breathing related sleep disorders

- Obstructive Sleep Apnea
- Central Sleep Apnea
  - Cheyne-Stokes Breathing
- Sleep-related Hypoventilation



## Parasomnias

- NREM Parasomnias
  - Confusional Arousals
  - Sleepwalking (somnambulism)
  - Sleep Terrors
  - Bruxism
- REM Parasomnias
  - REM Sleep Behavior Disorder
  - Catathrenia
  - Sleep Paralysis
  - Nightmare Disorder



## Assessment Role Play



## Sample Dysfunctional beliefs & attitudes about sleep

- There is little I can do to improve my sleep at my age.
- Without a good night's sleep, I just can't function.
- I need 8 hours of sleep to be at my best.
- Napping helps me catch up for a sleepless night.
- I just can't sleep without medication.



## Objective Measures of Sleepiness

### Multiple Sleep Latency Test (MSLT)

- Darkened room, instructions: let sleep occur 5 naps, each up to 20 minutes
- Latency to Sleep onset by standard polysomnography
  - Mild sleepiness – latency 10-15 minutes
  - Moderate sleepiness – latency 5-10 minutes
  - Severe sleepiness – latency <5 minutes

### Maintenance of Wakefulness Test (MWT)

- Darkened room, instructions: try to stay awake, 5 opps, each up to 40 minutes
- Latency to Sleep onset by standard polysomnography
  - Mild sleepiness – latency 10-15 minutes
  - Moderate sleepiness – latency 5-10 minutes
  - Severe sleepiness – latency <5 minutes



## Breathing Related Sleep Disorders

- Obstructive Sleep Apnea
- Central Sleep Apnea
  - Idiopathic central sleep apnea
  - Cheyne-Stokes breathing
  - Central sleep apnea comorbid with opioid use
- Sleep Related Hypoventilation
  - Idiopathic hypoventilation
  - Congenital central alveolar hypoventilation
  - Comorbid sleep-related hypoventilation



## Treatment

- Constant Positive Airway Pressure (CPAP)
- Bilevel Positive Airway Pressure (BPAP)
- Surgery (uvulopalatopharyngo plasty – UPPP)
- Mouthpiece



**CDP**  
**Uvulopalatopharyngoplasty  
 UPPP**

Before  
Narrow Breathing Passage

After  
Widely Open Breathing Passage

AIR FLOW

**hjf** 125

**CDP**  
**Circadian Rhythms:  
 Zeitgebers, Owls and Larks**

- “Social jet lag”
- Zeitgebers
- How our parents still control our bedtime
  - Suprachiasmatic nucleus
  - Peripheral circadian oscillators
- Chronotypes, which are you?
  - Larks
  - Owls

**hjf** 126

**CDP**  
**Circadian Rhythm Alignment**

8 10 12 2 4 6 8 10

NORMAL SLEEP CYCLE TMin↑

Delayed Sleep Phase Still Alert DELAYED SLEEP TMin↑ Can't Wake up

Hard to stay awake ADVANCED SLEEP TMin↑ Can't Sleep Advanced Sleep Phase

**hjf** 127

**CDP**  
**Manage circadian misalignment**

- Circadian rhythm misalignment is often overlooked
  - Delayed sleep phase most common, except in older adults
- Clues that there is a delayed phase component
  - Sleep onset is faster if bedtime is later
  - Tend to go to sleep later on weekends / vacations
- Have them keep sleep logs, with instructions to sleep ad lib for a few days (i.e. go to bed only when tired, sleep in as late as your body allows)

**hjf** 128



## Manage circadian misalignment

- Use sleep logs to estimate mean sleep onset time and wake up time
- If there is a mismatch between endogenous rhythms and the external schedule....
- Treatment option 1: shift your schedule to match your rhythms
  - Often not an option, particularly in the military



## Manage circadian misalignment

- Treatment option 2: shift rhythms to match the schedule
  - [Melatonin](#) – available OTC .3, .5, 3, 5 mg
    - Not very effective as a hypnotic, but better as a chronobiotic
    - Take 2-3 hours before mean sleep onset time and shift earlier 1 hour every 3-4 days until they reach target bedtime
    - Gradually move bedtime and waking time earlier



## Melatonin

- Melatonin is not a sleep aide
  - It is more like a darkness signaler
- Melatonin should not be taken in daylight
  - Can cause depression
- Melatonin is a sleep signal augmenter
  - It should only be taken for two weeks max



## Melatonin

- Melatonin should probably not be used in;
  - People who are driving or operating heavy machinery (unless previously tested for their response to melatonin and are taking <0.5mg)
  - Pregnant or nursing women (does cross to fetus/infant)
  - Women seeking to become pregnant
  - Children
  - Asthmatics and patients with gastrointestinal disease (may be inflammatory)
  - Patients using other medications (unless supervised by a physician)





## Manage circadian misalignment

- Treatment option 2: shift rhythms to match the schedule
  - [Light therapy](#) – light serves as a cue to set circadian rhythms by reducing daytime melatonin
  - Bright light exposure can shift rhythms either direction, depending on the timing
  - Estimate minimum in temperature rhythm as 2 hrs before ad lib wakeup time
  - Light therapy starting 1 hour after this time for 1-2 hours
  - Avoid bright light before this time



## Light Therapy

- Bright Light should probably not be used in:
  - People with existing eye disease
  - People using photosensitizing medications
- Bright Light can induce:
  - Migraines (in about 1/3 of migraine sufferers)
  - Mania (rare)



## Manage circadian misalignment

- Until circadian issues are resolved, CBT-I will be less effective
- Even in circadian rhythm cases there are likely psychophysiological elements that will need to be addressed



## PTSD Nightmares & Overview of Evidence Based Therapies





## Nightmare Disorder

- A. Repeated awakenings from the major sleep period or naps with detailed recall of extended and extremely dysphoric dreams, usually involving active efforts to avoid threats to survival, security, or physical integrity. The awakenings generally occur during the second half of the sleep period.
- B. On awakening from the dysphoric dreams, the person rapidly becomes oriented and alert (in contrast to the confusion and disorientation seen in Sleep Terror Disorder and some forms of epilepsy).
- C. The dream experience, or the sleep disturbance resulting from the awakening, causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The nightmares do not occur exclusively during the course of another mental disorder (e.g., a delirium, Posttraumatic Stress Disorder) and are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.



## Discerning Between Sleep Events

- **Bad dreams** – relatively common, negative affect, person does not awaken from sleep
- **Night terrors** – individual is difficult to awaken, confused upon awakening, often inconsolable, partial-full lack of recall of event (often related to stress, medical problems)



## Discerning Between Sleep Events

- **Idiopathic nightmares** – awaken oriented, full recall of event, distressed, difficult to resume sleep
- **Post-trauma nightmares** – clear precipitating event, awaken oriented, usually terrified, often vivid recall of event (not always), difficult to resume sleep, often include gross body movements



## Nightmare Assessment Questions

- Did you have nightmares before the trauma?
- Did the nightmare awaken service member?
- How frequent are nightmares? Weekly?
- Which negative affect? Fear or anxiety?
  - Disgust, anger, sadness, guilt, frustration
- How severe are the nightmares?
- Have your nightmares changed over time?



## Nightmare self report questionnaires

- Nightmare distress questionnaire (Belicki, 1992)
- Nightmare Frequency questionnaire (Krakow et al, 2002)
- Nightmare effects survey (Krakow et al, 2002)
- These are not diagnostic tools, but will help in determination of frequency, severity of nightmares
- May be used to track nightmares over time



## How are PTSD nightmares different?

- Likely to be a replay of the traumatic event
- May occur earlier in the evening
- More likely to occur with gross body movements



## Nightmare Prevalence

- 3-4% of general population report of nightmares "sometimes" or more frequently
- Recent research suggests that 71% of those with PTSD endorse nightmares "sometimes" or more
- 96% of those with PTSD and panic disorder endorse nightmares "sometimes" or more

- Neylan, T.C., et al (1998). Sleep disturbances in the Vietnam generation: findings from a nationally representative sample of male Vietnam veterans. *American Journal of Psychiatry*, 155, 929-933.
- Leskin, G.A., Woodward, S. H., Young, H. E., & Sheikh, J. I. (2002). Effects of comorbid diagnoses on sleep disturbance in PTSD. *Journal of Psychiatric Research*, 36(6), 449-452.



## PTSD Nightmares are problematic

- Recent research suggests that individuals with posttraumatic nightmares experience more depression, have poorer sleep quality and greater posttraumatic symptoms

- Davis, J.L., Pruiksma, K.E., Rhudy, J.L., Byrd, P.M. (2011). A comparison of lifelong and post-trauma nightmares in a civilian trauma sample: nightmare characteristics, psychopathology and treatment outcome. *Dreaming*, 21(1), 70-80.



## EVIDENCE BASED TREATMENTS FOR PTSD NIGHTMARES




145



## Evidence Based Treatments Medications

- Prazosin is recommended for treatment of posttraumatic stress disorder (PTSD)-associated nightmares. **(Level A)**
- Clonidine may be considered for treatment of PTSD-associated nightmares. **(Level C)**
- The following medications may be considered for treatment of PTSD-associated nightmares, but the data are low grade and sparse: trazodone, atypical antipsychotic medications, topiramate, low dose cortisol, fluvoxamine, triazolam and nitrazepam, phenelzine, gabapentin, cyproheptadine, and tricyclic antidepressants. Nefazodone is not recommended as first line therapy for nightmare disorder because of the increased risk of hepatotoxicity. **(Level C)**
- Venlafaxine is not suggested for treatment of PTSD-associated nightmares. **(Level B)**
- No recommendation is made regarding clonazepam because of sparse data




146



## Evidence Based Treatments Non-Pharmacological

- Cognitive behavioral therapy (CBT)
  - Image rehearsal therapy (IRT) is recommended for treatment of nightmare disorder. **(Level A)**
  - Lucid dreaming therapy (LDT) may be considered for treatment for nightmare disorder. **(Level C)**
  - Exposure, relaxation and rescripting therapy (ERRT) may be considered for treatment of PTSD-associated nightmares. **(Level C)**
  - Sleep dynamic therapy may be considered for treatment of PTSD-associated nightmares. **(Level C)**
  - Self-exposure therapy may be considered for treatment of nightmare disorder. **(Level C)**
  - Systematic desensitization is suggested for treatment of idiopathic nightmares. **(Level B)**
- Progressive deep muscle relaxation training is suggested for treatment of idiopathic nightmares. **(Level B)**
- Hypnosis may be considered for treatment of PTSD-associated nightmares. **(Level C)**
- Eye movement desensitization and reprocessing (EMDR) may be considered for treatment of PTSD-associated nightmares. **(Level C)**
- The testimony method may be considered for treatment of PTSD-associated nightmares. **(Level C)**
- No recommendation is made regarding individual psychotherapy because of sparse data.




147



## EBP for Nightmares in Military/Veterans

- There are several protocols for imagery rehearsal and/or rescripting therapies for trauma nightmares
  - Exposure, Relaxation and Rescripting Therapy
  - Imagery Rehearsal Therapy




148



## Session 1

- Overview of Treatment
- Psychoeducation
  - Trauma
  - Nightmares
  - Sleep habits
- Relaxation training
- Homework
  - Practice relaxation
  - Sleep habit modification
  - Monitor sleep



149


## Session 2

- Review homework
- Exposure to Nightmare
- Note themes in nightmare
- Rescription of Nightmare
- Homework
  - Practice relaxation
  - Improve sleep habits
  - Rehearse rescripted dream
  - Monitor sleep



150


## Target nightmare

- Choose recurring nightmare and write out with explicit detail (sights, sounds, smells, tastes) including thoughts and feelings
- Choose a change in middle or end of nightmare
- Write down full nightmare with script change
- Rehearse rescripted nightmare



151


## Patient Handout (nightmare)

- Original Version
- In the space provided below, please describe the distressing dream in as many details as possible. Include sensory descriptions (sights, smells, sounds, tastes, etc.). Please note the feelings, images, and thoughts associated with this dream, being as specific as possible. Note when the dream begins and when it ends. In my dream,

---



---



---



---



---



---



152



## Patient Handout (Rescripted)

- **Changed Version**
- In the space provided below, please describe the changed dream in as many details as possible. Include sensory descriptions (sights, smells, sounds, tastes, etc.). Please not the feelings, images, and thoughts associated with this dream, being as specific as possible. Note when the dream begins and when it ends. In my changed dream,

---



---



---



---



---



---



## Session 3

- Review homework
- Assess completion and problems with each area
- Query regarding changes
  - Sleep
  - Nightmares
  - PTSD
- Review treatment gains
- Maintenance and relapse prevention
  - Sleep
  - Nightmares
  - PTSD



## Questions and Discussion

Thank You



## Recommended Reading

- Belenky G, Wesensten NJ, Thorne DR, et al. Patterns of performance degradation and restoration during sleep restriction and subsequent recovery: a sleep dose-response study. *J Sleep Res* 2003; 12:1–13.
- Perlis, M et al. *Cognitive behavioral therapy for insomnia: A session by session guide*. 2008. Springer Press
- Morin, C *Insomnia: A Clinician's Guide to Assessment and Treatment*. 2003. Springer Press
- Davis, J.L. (2009). *Treating Post-Trauma Nightmares: A cognitive-behavioral approach*. New York, New York: Springer Publishing Company.
- Thompson, K. E., Hamilton, M., & West, J. A. (1995). Group Treatment For Nightmares In Veterans With Combat-Related PTSD. *National Center for PTSD Clinical Quarterly* 5(4).



## Medications for Insomnia

- Benzodiazepine agents approved by FDA

Drug	Half-Life (hours)	Absorption	Typical dose (mg)	Active metabolite
Halcion (triazolam)	2-5	Fast	0.125-0.25	No
Restoril (temazepam)	8-12	Moderate	7.5-30	No
ProSom (Estazolam)	12-20	Moderate	1-2	Minimal
Doral (Quazepam)	50-200	Fast	7.5-15	Yes
Dalmane (Flurazepam)	50-200	Fast	15-30	Yes



## Medications for Insomnia

- Nonbenzodiazepine agents approved by FDA

Drug	Half-Life (hours)	Absorption	Typical dose (mg)	Active metabolite
Sonata (zaleplon)	1-1.5	Fast	5-20	No
Ambien (zolpidem)	1.5-2.6	Fast	2.5-10	No
Ambien ER (zolpidem CR)	2.8	Fast	6.25-12.5	No
Rozerem (Ramelteon)	1-2.6	Fast	4-8	Yes
Lunesta (Eszopiclone)	6	Fast	1-3	Yes
Silenor (Doxepin)	4	Fast	3-6	Yes



## Long term use of hypnotics

- Short-term and intermittent use remains best practice
- Long-term (6 months) tx of chronic primary insomnia with Lunesta 3mg lead to enhanced quality of life, reduced work limitations and improved sleep satisfactions without rebound insomnia (Walsh et a. 2007)



## Long-term use of hypnotics

- Ambien ER 12.5 mg 3-7 nights per week in 19-64 year olds with Chronic Primary Insomnia lead to improvement in sleep and next day concentration with no evidence of rebound (Krystal et. Al, 2008)



- Treat medical or psychiatric conditions before prescribing hypnotics
- Most Circadian rhythm-based disorders are effectively managed with bright light and/or melatonin
- Given demonstrated effectiveness of CBTI any patient being considered for long-term treatment with medications have benefit of CBTI



## General Rules for long-term use of hypnotics

- Use lowest effective dose and shortest clinical indicated duration of use
- Do not prescribed long-term use of hypnotics for chronic insomnia without including an adequate trial of CBT-I
- Do not hesitate to prescribe long-term use of new nonbenzo hypnotic agents when indicated for an appropriately evaluated insomnia
- Reevaluate patient periodically to determine if use is still indicated.



## Sleep Management During Deployment



Sleep loss alone does not cause permanent health problems, nor does it cause mentally healthy people to become mentally ill. Reduced sleep (from 8 to 4 hours) does not cause physical harm. Hallucinations may occur, but they disappear after recovery sleep.

**CDP**

## Sleep Management

- Sustained Operations – Continuous work episodes > 24 hours in duration
  - Often have periods of relative quiet but must be easily aroused for operations
- Consult with leadership to “enhance human performance”

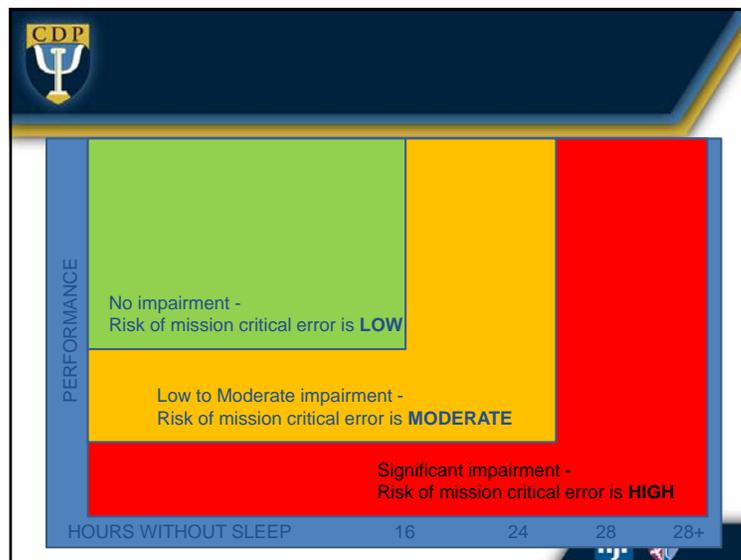
hjf 165

**CDP**

## Sleep Management

- Pre-Deployment
  - Know the mission work requirements and how they might affect sleep
  - Environmental factors
- Deployment Phase –
  - Follow planned sleep-rest/work cycle
- Pre-Combat Phase –
  - 1 week to adjust to time zone
  - Follow circadian rhythm to work in peak
- Combat Phase –
  - Stick to work/rest plan if possible
  - Only sleep can satisfy need for sleep
- Post Combat Phase –
  - Sleep up to 10 hours then resume schedule

hjf 166



**CDP**

## Signs of Performance Degradation

- Mood and Motivational Changes
- Impaired attention
- Memory loss for recent events
- Variable and slowed responses
- Illusions/Hallucinations
- Failure of Routines/Impaired Task Performance
- Exaggerated feeling of physical exertion
- Lack of insight to impairment
- Failed verbal communication
- Jet Lag/Shift work fatigue
- Physical signs

hjf 168



## Preventing Performance Degradation

- Reduce sleep debt
  - Determine sleep opportunities in advance
  - Establish and maintain a sleep-rest/work plan
  - 7- 8 hours sleep every 24 hours (keep in green zone)
  - Tiring is not a personality weakness
    - Know how well you tolerate sleep loss
  - Deal with inability to sleep in pre-deployment, deployment and post combat phases aggressively



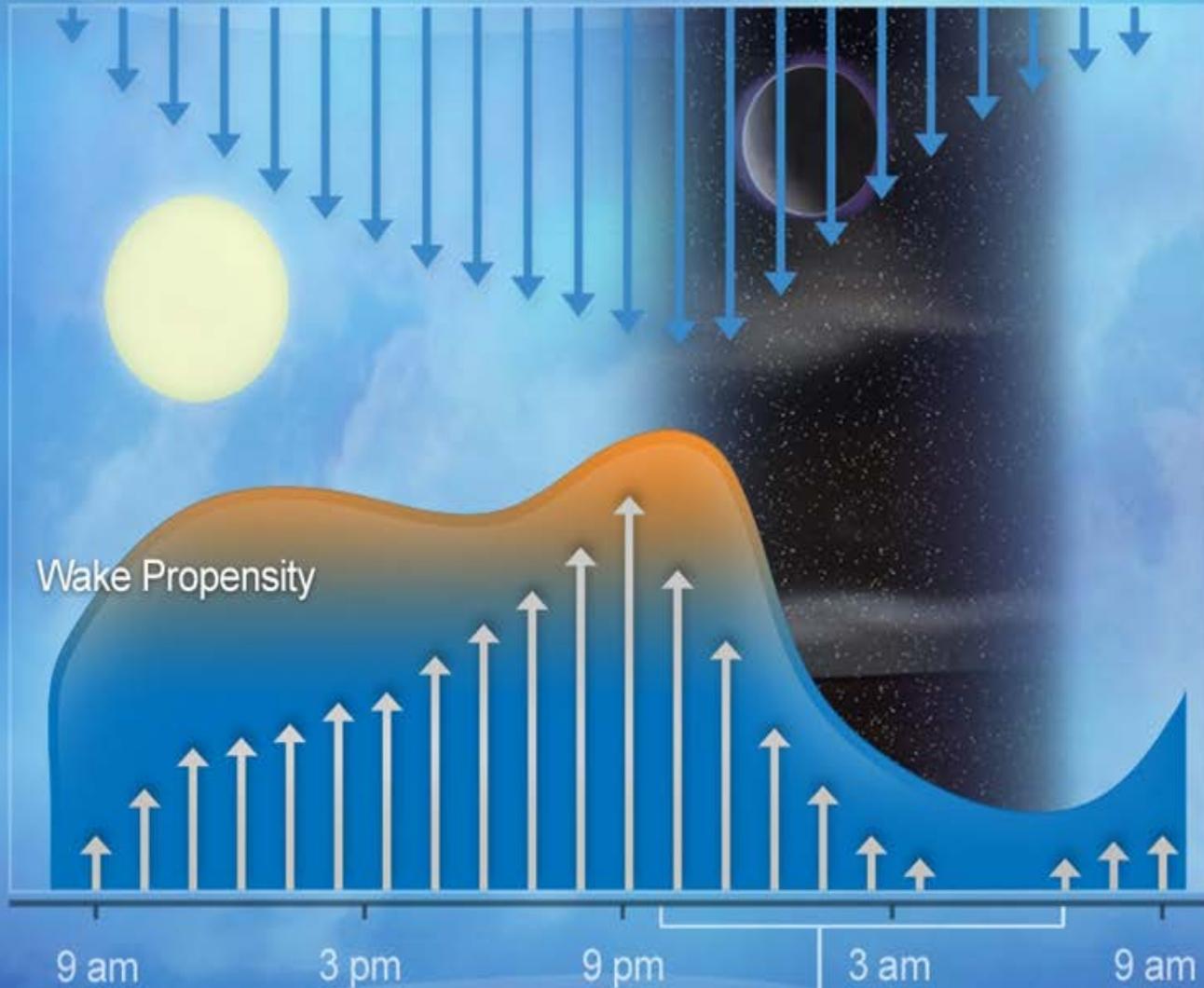
## Overcoming Performance Degradation

- “Cat naps” 10-30 minutes can add up
- Changes routines
- Rotate jobs
- Sleepy members do self paced jobs better
- Create buddy system for jobs if two members become tired at same time
- Post combat sleep should be no more than 10 hours



# Circadian and Homeostatic Regulation of Sleep

Sleep Load



Wake

Wake Propensity

Circadian Alerting Signal

9 am

3 pm

9 pm

3 am

9 am

Awake

Asleep

Sleep



## Sleep Hygiene Guidelines

---

### **Sleep only as much as needed to feel refreshed the following day**

Restricting time in bed helps consolidate and deepen sleep. Spending excessive time in bed can lead to fragmented and shallow sleep.

### **Have a routine wake up time, seven days a week**

A regular wake up time in the morning will help set your “biological clock” and leads to regular sleep onset.

### **Your bedroom should be comfortable and free from light and noise**

A comfortable bed and bedroom environment will reduce the likelihood that you will wake up during the night. Excessively warm or cold rooms can disrupt sleep as well. A quiet environment is more sleep promoting than a noisy one. Noises can be masked with background white noise (such as the noise of a fan) or with earplugs. Bedrooms may be darkened with black-out shades or sleep masks can be worn. Position clocks out-of-sight since clock-watching can increase anxiety about lack of sleep.

### **Caffeine: Avoid Caffeine 4 - 6 Hours Before Bedtime**

Caffeine disturbs sleep, even in people who do not subjectively experience such an effect. Individuals with insomnia are often more sensitive to mild stimulants than are normal sleepers. Caffeine is found in items such as coffee, tea, soda, chocolate, and many over-the-counter medications (e.g., Excedrin).

### **Nicotine: Avoid Nicotine Before Bedtime**

Although some smokers claim that smoking helps them relax, nicotine is a stimulant. Thus, smoking, dipping, or chewing tobacco should be avoided near bedtime and during the night.

### **Alcohol: Avoid Alcohol After Dinner**

A small amount of alcohol often promotes the onset of sleep, but as alcohol is metabolized sleep becomes disturbed and fragmented. Thus, alcohol is a poor sleep aid.

### **Sleeping Pills: Sleep Medications are Effective Only Temporarily**

Scientists have shown that sleep medications lose their effectiveness in about 2 - 4 weeks when taken regularly. Despite advertisements to the contrary, over-the-counter sleeping aids have little impact on sleep beyond the placebo effect. Over time, sleeping pills actually can make sleep problems worse. When sleeping pills have been used for a

long period, withdrawal from the medication can lead to an insomnia rebound. Thus, many individuals incorrectly conclude that they “need” sleeping pills in order to sleep normally.

### **Exercise/Hot Bath: Avoid Vigorous Exercise Within 2 Hours of Bedtime**

Regular exercise in the late afternoon or early evening seems to aid sleep, although the positive effect often takes several weeks to become noticeable. Exercising sporadically is not likely to improve sleep and exercise within 2 hours of bedtime may elevate nervous system activity and interfere with sleep onset. Spending 20 minutes in a tub of hot water an hour or two prior to bedtime may also promote sleep.

### **Napping: Avoid Daytime Napping**

Many individuals with insomnia “pay” for daytime naps with more sleeplessness at night. Thus, it is best to avoid daytime napping. If you do nap, be sure to schedule naps before 3:00pm.

### **Eating: A Light Snack at Bedtime May be Sleep Promoting**

A light bedtime snack, such a glass of warm milk, cheese, or a bowl of cereal can promote sleep. You should avoid the following foods at bedtime: any caffeinated foods (e.g., chocolate), peanuts, beans, most raw fruits and vegetables (since they may cause gas), and high-fat foods such as potato or corn chips. Avoid snacks in the middle of the nights since awakening may become associated with hunger.

### **Avoid Excessive liquids in the evening**

Reducing liquid intake will decrease the need for nighttime trips to the bathroom.

### **Do not try to fall asleep**

If you are unable to fall sleep within a reasonable time (15-20 minutes) or when you notice that you are beginning to worry about falling asleep, get out of bed. Leave the bedroom and engage in a quiet activity such as reading. Return to bed only when you are sleepy.

### **Don't have worry time in bed**

Plan time earlier in the evening to review the day, plan the next day or deal with any problems. Worrying in bed can interfere with sleep onset and cause you to have a shallow sleep.

	Answer	Plan
1. What factors weaken the sleep drive (e.g., napping)?		
2. What factors impact the circadian clock (e.g., mismatch between circadian tendency and sleep schedule)?		
3. What manifestations of hyperarousal are present?		
4. What unhealthy sleep behaviors are present? (Consider substances, eating, exercise, extended TIB etc.)		
5. What comorbidities affect the patient's presentation and how? (Consider sleep, medical and psychiatric comorbidities).		
6. What medications may impact the patient's sleep/sleepiness? (Consider carryover, tolerance, psychological dependence).		
7. What are the predisposing, precipitating, and maintaining factors?		
8. What other factors are relevant to the patient's presentation?		



## Sleep Disorders Interview

Name: \_\_\_\_\_ Gender: M F Marital Status: M Sep Single D W

Day Phone: \_\_\_\_\_ Date of Birth: \_\_\_/\_\_\_/\_\_\_ Education (Yrs):  
Yr Mth Day

Referral Source: \_\_\_\_\_ Interviewer: \_\_\_\_\_

### *Nature of Sleep-Wake Problem*

In a typical week... (*Ideally focus on the last week, if the last week was not typical, focus on the most recent typical week.*)

Do you have a problem with falling asleep? No Mild Moderate Severe

Do you have a problem with staying asleep? No Mild Moderate Severe

Do you have a problem with waking up too early in the morning? No Mild Moderate Severe

Do you have a problem with staying awake during the day? No Mild Moderate Severe

Many people that we see with similar problems report that their difficulty sleeping not only affects them at night but also during the day, have you found this to be true for you as well?

After a poor night's sleep, which of the following problems do you experience on the next day?

Daytime fatigue: \_\_\_ Low physical energy \_\_\_ Low mental energy \_\_\_ Exhausted \_\_\_

Sleepiness: \_\_\_ Propensity to fall asleep \_\_\_ Heavy eyes \_\_\_ Difficulty staying awake

Difficulty functioning: \_\_\_ Performance impairment \_\_\_ Poor concentration \_\_\_ Memory problems

Mood Problems: \_\_\_ Irritable \_\_\_ Tense \_\_\_ Nervous \_\_\_ Depressed \_\_\_ Angry

Physical Symptoms: \_\_\_ Muscle Aches/Pains \_\_\_ Headache \_\_\_ Heartburn \_\_\_ Light-headed

After a stressful or bad day, have you found that your sleep is worse or better?

*Because problems sleeping affect us not only at night but also during the day, we have found that it is helpful to talk not only about your sleep at night but also to discuss the impact of a bad night sleep on the next day and the impact of a stressful day on your sleep at night. One of the most effective ways I have found to get a good understanding of all the factors that may be playing a role in your insomnia is to have you walk me through the 24 hours of a typical work day. So lets start with what time you intend to wake up on a typical work day...*

At what time do you last awaken in the morning (wake up)? \_\_\_\_\_ o'clock

How do you usually wake up? Alarm, automatically, child/pet other environmental?

What is your usual arising time on weekdays (get up)? \_\_\_\_\_ o'clock

What do you typically have for breakfast?

When do you have your first caffeinated beverage?

How much caffeine do you drink on a typical day?

Do you take any medications or vitamins?

What time do you typically leave for work and how is your commute; do you find yourself dozing off?

Describe a typical morning at work. How is your job, what do you do, is your job sedentary or pretty physical, what is the likelihood that you would nod off in the morning at work?

Tell me about breaks at work; do you take breaks? How often and how long? What do you do on breaks?

Do you use tobacco? About how much tobacco do you use in a typical day?

Do you eat lunch at work? What is your typical lunch and how much time do you have? Do you ever nap or unintentionally nod off during lunch?

Describe a typical afternoon at work. Is there a time in the afternoon when you seem most likely to nod off? In what setting?

How many caffeinated beverages do you typically drink in the afternoon?

How is your commute home? Have you ever dozed off or felt very groggy driving home?

How often do you exercise? What type of exercise do you do? What time of day do you typically exercise?

How often do you intentionally nap? Where do you usually nap and for how long?

When do you typically eat dinner?

How stressful is your typical evening at home?

How many alcoholic beverages do you drink on a typical night? Have you noticed any changes in your alcohol consumption since your sleep problems began?

What is your typical nighttime routine? What do you do (watch tv, read, play videogames, work/play on the computer)? Who is around with you?

How likely are you to doze or unintentionally nod off during the evening? Where and when does this happen?

When is your last caffeinated beverage?

When do you use tobacco for the last time each night?

How do you decide when to go to bed for the night? Do you have a bed time or do you typically go to bed just whenever you feel sleepy? Do you fall asleep outside of your bed, before deciding to go to bed?

Let's talk about your bed room environment, imagine standing in the doorway to your bedroom, let's talk about what you see and how it makes you feel.

Do you have a television in your room?

Do you have exercise equipment in your room?

Do you have a TV, radio, or phone in your bedroom?

Is there a desk with paperwork to be done in your bedroom?

Is your bedroom quiet?

Is your mattress comfortable?

How is your room temperature?

Are you sleeping with a bed partner?

What is your bed partners sleep like?

What do you do in your bedroom besides sleep?

Do you have conversations with your partner in the bedroom or bed?

How do you feel in your bedroom? (anxious, frustrated, sad, restful, calm)

*Now let's talk about your bedtime routine. What do you usually do in the 30-60 minutes leading up to your bedtime?*

What do you typically do in bed prior to sleeping (tv, read etc)

How long, once you turn out the lights with the intention of falling asleep does it usually take you to fall asleep?

What sort of things seem to interfere with your ability to fall asleep?

Once you fall asleep do you wake up during the night?

What sort of things seem to wake you in the middle of the night?

How often do you wake during the night?

How long are you awake in the middle of the night?

*In a moment I am going to ask you some more specific questions about things that might happen during the course of your sleep, however is there anything that comes to mind now about your typical day, the impact of sleep problems, things that interfere with your sleep or the impact of sleep on your daily functioning?*

Now can you tell me how your schedule changes on days that you do not work?

Do your bed and wake times differ? If so, how does your sleep quality change with the different amount or hours of sleep?

How does your bedtime routine differ on nights before your days off?

Are you more or less likely to nap on days off?

How is your daytime functioning and mood different on your days off?

### ***Sleeping Aids***

*So let me just clarify a few things we covered in reviewing your typical day...*

In the past 4 weeks have you used sleeping medication?

If yes, which drugs?

Prescribed, over-the-counter, or both?

How many nights/week do you use the medication?

If no, have you ever used sleeping medication?

When did you *first* use sleep medication?

When did you *last* use sleep medication?

In the past 4 weeks, have you used alcohol as a sleep aid? Yes No

If yes, what type and how many ounces?

How many nights/week?

If no, have you ever used alcohol as a sleep aid?

### ***Sleep Problem History***

How long have you been suffering from insomnia? \_\_\_\_ years \_\_\_\_ months

Were there any stressful life events related to its onset?

Gradual or sudden onset?

What have been the course of your insomnia problem since its onset (e.g., persistent, episodic, seasonal, etc.)?

What do you do when you can't fall asleep or return to sleep?

Is your sleep better/worse/same when you go away from home?

What types of factors make your sleep problem worse (e.g., stress at work, travel plans, emotional tension)?

What types of factors improve your sleep (e.g., vacation, sex, distractions)?

How concerned are you about sleep/insomnia?

What impact does insomnia have on your mood?

What impact does insomnia have on your alertness?

What impact does insomnia have on your performance?

How do you cope with these daytime sequelae?

Have you stopped doing anything (other than sleeping) because of insomnia?

How would your life be different if you didn't have insomnia (e.g., work harder, take care of children)?

Have you received treatment in the past for insomnia (other than medication)?

What prompted you to seek insomnia treatment at this time?

### ***Symptoms of Other Sleep Disorders***

Have you or your bed partner ever noticed one of the following, and if so, how often in a typical week would you estimate you experience these symptoms?

- A. *Restless legs*: Crawling or aching feelings in your legs (calves) and inability to keep legs still?
- B. *Periodic limb movements*: Leg twitches or jerks during the night, waking up with cramps in your legs?
- C. *Apnea*: Snoring, pauses in breathing at night, shortness of breath, choking at night, morning headaches, chest pain, dry mouth?
- D. *Narcolepsy*: Sleep attacks, sleep paralysis, hypnagogic hallucinations, cataplexy?
- E. *Gastro-esophageal reflux*: Sour taste in mouth, heartburn, reflux?
- F. *Parasomnias*: Nightmares, night terrors, sleepwalking/talking, bruxism?
- G. *Sleep-wake schedule disorder*: Rotating shift or night shift work?

**Medical History/Medication Use**

Current medical problems:

Current medications:    Name            Amount            Frequency Taken            Purpose

Hospitalizations/Surgery:

Height:                      Weight (lbs):                      Recent Weight Gain/Loss?

**History of Psychopathology/Mental Health Treatment (modified SCID)**

Are you currently receiving psychological or psychiatric treatment for emotional or mental health problems?            Yes    No

Have you or anyone in your family ever been treated for emotional or mental health problems in the past?            Yes    No

Have you or anyone in your family ever been a patient in a psychiatric hospital?            Yes    No

Has alcohol or any drug ever caused a problem for you?            Yes    No

Have you ever been treated for alcohol/substance abuse problems?            Yes    No

Has anything happened lately that has been especially hard for you?            Yes    No

What about difficulties at work or with your family?            Yes    No

Scale for below ? = Inadequate information    1 = Absent or false    2 = Subthreshold    3 = Present

In the last month, has there been a period of time when you were feeling depressed or down most of the day nearly every day?            ?    1    2    3

What about being a lot less interested in most things or unable to enjoy the things you used to enjoy? If yes, was it nearly every day?            ?    1    2    3

For the past couple of years, have you been bothered by depressed mood most of the day, more days than not? More than half the time?            ?    1    2    3

Have your ever had a panic attack, when you suddenly felt frightened, anxious or extremely uncomfortable? If yes, 4 attacks within 1 month?            ?    1    2    3

Have you ever been afraid of going out of the house alone, being in crowds, standing in a line, or traveling on buses or trains?            ?    1    2    3

Have you ever been bothered by thoughts that didn't make any sense and kept coming back to you even when you tried not to have them?            ?    1    2    3

In the last 6 months, have you been particularly nervous or anxious?            ?    1    2    3

Do you worry a lot about terrible things that might happen?            ?    1    2    3

During the last 6 months, would you say that you have been worrying most of the time (more days than not)?            ?    1    2    3

If psychopathology is present, evaluate its onset and temporal course in relation to the sleep disturbance.

Does insomnia occur exclusively during the course of worry/depression episodes?    Yes    No







# SLEEP DIARY

Name: \_\_\_\_\_

Week: \_\_\_\_\_ to \_\_\_\_\_  
(Beginning date) (Ending date)

Example



Mon.

*Fill in the Day of the Week above each column*



1. I napped from ____ to ____ (note times of all naps).	2:00 to 2:45 pm								
2. I took ____ mg of sleep medication as a sleep aid.	ProSom 1 mg								
3. I took ____ oz. of alcohol as a sleep aid.	Beer 12 oz.								
4. I went to bed at ____ o'clock.	10:30								
5. I turned the lights out at ____ o'clock.	11:15								
6. I plan to awaken at ____ o'clock.	6:15								
7. After turning the lights out, I fell asleep in ____ minutes.	45								
8. My sleep was interrupted ____ times (specify number of nighttime awakenings).	3								
9. My sleep was interrupted for ____ minutes (specify duration of each awakening).	20 30 15								
10. I woke up at ____ o'clock (note time of last awakening).	6:15								
11. I got out of bed at ____ o'clock (specify the time).	6:40								
12. When I got up this morning I felt ____ . <small>(1 = Exhausted, 2 = Tired, 3 = Average, 4 = Rather Refreshed, 5 = Very Refreshed)</small>	2								
13. Overall, my sleep last night was ____ . <small>(1 = Very Restless, 2 = Restless, 3 = Average, 4 = Sound, 5 = Very Sound)</small>	1								

**NOTES:**

## Sleep Diary Instructions

In order to better understand your sleep problem and to assess your progress during treatment, we'd like you to collect some important information about your sleep habits.

- **Before you go to sleep at night**, please answer Questions 1 - 6.
- **After you get up in the morning**, please answer the remaining questions, Questions 7 - 13.

**It is very important that you complete the diary every evening and morning!!!** Please don't attempt to complete the diary later. If you have any difficulties completing the diary, please contact one of the BHP staff members at (210) 670-5968 and we'll be glad to assist you.

It's often difficult to estimate how long you take to fall asleep or how long you're awake at night. Keep in mind that we simply want your best estimates.

If any unusual events occur on a given night (e.g., emergencies, phone calls) please make a note of it on the diary (at the bottom of the sheet).

Below are some guidelines to help you complete the Sleep Diary.

1. Napping: Please include **all** times you slept during the day, even if you didn't intend to fall asleep. For example, if you fell asleep for 10 minutes during a movie, please write this down. Remember to specify a.m. or p.m., or use military time.
2. Sleep Medication: Include both prescribed and over-the-counter medications. Only include medications used as a sleep aid.
3. Alcohol as a sleep aid: Only include alcohol that you used as a sleep aid.
4. Bedtime: This is the time you physically got into bed, with the intention of going to sleep. For example, if you went to bed at 10:45 p.m. but turned the lights off to go to sleep at 11:15 p.m., write down 10:45 p.m.
5. Lights-Out Time: This is the time you actually turned the lights out to go to sleep.
6. Time Planned to Awaken: This is the time you plan to get up the following morning.
7. Sleep-Onset Latency: Provide your best estimate of how long it took you to fall asleep after you turned the lights off to go to sleep.
8. Number of Awakenings: This is the number of times you remember waking up during the night.
9. Duration of Awakenings: Please estimate how many minutes you spent awake for each awakening. If this proves impossible, then estimate the number of minutes you spent awake for all awakenings combined. Don't include your very last awakening in the morning, as this will be logged in number 10.
10. Morning Awakening: This is the very last time you woke up in the morning. If you woke up at 4:00 a.m. and never went back to sleep, this is the time you write down. However, if you woke up at 4:00 a.m. but went back to sleep for a brief time (for example, from 5:00 a.m. to 5:15 a.m.), then your last awakening would be 5:15 a.m.
11. Out-of-Bed Time: This is the time you actually got out of bed for the day.
12. Restedness upon Arising: Rate your restedness using the scale on the diary sheet.
13. Sleep Quality: Rate the quality of your sleep using the scale on the diary sheet.





## Insomnia Severity Index

The Insomnia Severity Index has seven questions. The seven answers are added up to get a total score. When you have your total score, look at the 'Guidelines for Scoring/Interpretation' below to see where your sleep difficulty fits.

For each question, please **CIRCLE** the number that best describes your answer.

*Please rate the CURRENT (i.e. LAST 2 WEEKS) SEVERITY of your insomnia problem(s).*

Insomnia Problem	None	Mild	Moderate	Severe	Very Severe
1. Difficulty falling asleep	0	1	2	3	4
2. Difficulty staying asleep	0	1	2	3	4
3. Problems waking up too early	0	1	2	3	4

4. How **SATISFIED/DISSATISFIED** are you with your **CURRENT** sleep pattern?

Very Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied
0	1	2	3	4

5. How **NOTICEABLE** to others do you think your sleep problem is in terms of impairing the quality of your life?

Not at all Noticeable	A Little	Somewhat	Much	Very Much Noticeable
0	1	2	3	4

6. How **WORRIED/DISTRESSED** are you about your current sleep problem?

Not at all Worried	A Little	Somewhat	Much	Very Much Worried
0	1	2	3	4

7. To what extent do you consider your sleep problem to **INTERFERE** with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) **CURRENTLY**?

Not at all Interfering	A Little	Somewhat	Much	Very Much Interfering
0	1	2	3	4

### Guidelines for Scoring/Interpretation:

Add the scores for all seven items (questions 1 + 2 + 3 + 4 + 5 + 6 + 7) = \_\_\_\_\_ your total score

Total score categories:

0–7 = No clinically significant insomnia

8–14 = Subthreshold insomnia

15–21 = Clinical insomnia (moderate severity)

22–28 = Clinical insomnia (severe)



**MORNINGNESS-EVENINGNESS QUESTIONNAIRE (MEQ)****Instructions:**

- Please read each question very carefully before answering.
- Please answer each question as honestly as possible.
- Answer ALL questions.
- Each question should be answered independently of others. Do NOT go back and check your answers.

**1. What time would you get up if you were entirely free to plan your day?**

5:00 – 6:30 AM	5
6:30 – 7:45 AM	4
7:45 – 9:45 AM	3
9:45 – 11:00 AM	2
11:00 AM – 12 NOON	1
12 NOON – 5:00 AM	0

**2. What time would you go to bed if you were entirely free to plan your evening?**

8:00 – 9:00 PM	5
9:00 – 10:15 PM	4
10:15 PM – 12:30 AM	3
12:30 – 1:45 AM	2
1:45 – 3:00 AM	1
3:00 AM – 8:00 PM	0

**3. If there is a specific time at which you have to get up in the morning, to what extent do you depend on being woken up by an alarm clock?**

Not at all dependent	4
Slightly dependent	3
Fairly dependent	2
Very dependent	1

**4. How easy do you find it to get up in the morning (when you are not woken up unexpectedly)?**

Not at all easy	1
Not very easy	2
Fairly easy	3
Very easy	4

**5. How alert do you feel during the first half hour after you wake up in the morning?**

Not at all alert	1
Slightly alert	2
Fairly alert	3
Very alert	4

**6. How hungry do you feel during the first half-hour after you wake up in the morning?**

Not at all hungry	1
Slightly hungry	2
Fairly hungry	3
Very hungry	4

**7. During the first half-hour after you wake up in the morning, how tired do you feel?**

Very tired	1
Fairly tired	2
Fairly refreshed	3
Very refreshed	4

**8. If you have no commitments the next day, what time would you go to bed compared to your usual bedtime?**

Seldom or never later	4
Less than one hour later	3
1-2 hours later	2
More than two hours later	1

**9. You have decided to engage in some physical exercise. A friend suggests that you do this for one hour twice a week and the best time for him is between 7:00 – 8:00 am. Bearing in mind nothing but your own internal “clock”, how do you think you would perform?**

Would be in good form	4
Would be in reasonable form	3
Would find it difficult	2
Would find it very difficult	1

**10. At what time of day do you feel you become tired as a result of need for sleep?**

8:00 – 9:00 PM	5
9:00 – 10:15 PM	4
10:15 PM – 12:45 AM	3
12:45 – 2:00 AM	2
2:00 – 3:00 AM	1

**11. You want to be at your peak performance for a test that you know is going to be mentally exhausting and will last for two hours. You are entirely free to plan your day. Considering only your own internal “clock”, which ONE of the four testing times would you choose?**

8:00 AM – 10:00 AM	4
11:00 AM – 1:00 PM	3
3:00 PM – 5:00 PM	2
7:00 PM – 9:00 PM	1

**12. If you got into bed at 11:00 PM, how tired would you be?**

Not at all tired	1
A little tired	2
Fairly tired	3
Very tired	4

**13. For some reason you have gone to bed several hours later than usual, but there is no need to get up at any particular time the next morning. Which ONE of the following are you most likely to do?**

Will wake up at usual time, but will NOT fall back asleep	4
Will wake up at usual time and will doze thereafter	3
Will wake up at usual time but will fall asleep again	2
Will NOT wake up until later than usual	1

**14. One night you have to remain awake between 4:00 – 6:00 AM in order to carry out a night watch. You have no commitments the next day. Which ONE of the alternatives will suite you best?**

Would NOT go to bed until watch was over	1
Would take a nap before and sleep after	2
Would take a good sleep before and nap after	3
Would sleep only before watch	4

**15. You have to do two hours of hard physical work. You are entirely free to plan your day and considering only your own internal “clock” which ONE of the following time would you choose?**

8:00 AM – 10:00 AM	4
11:00 AM – 1:00 PM	3
3:00 PM – 5:00 PM	2
7:00 PM – 9:00 PM	1

**16. You have decided to engage in hard physical exercise. A friend suggests that you do this for one hour twice a week and the best time for him is between 10:00 – 11:00 PM. Bearing in mind nothing else but your own internal “clock” how well do you think you would perform?**

Would be in good form	1
Would be in reasonable form	2
Would find it difficult	3
Would find it very difficult	4

**17. Suppose that you can choose your own work hours. Assume that you worked a FIVE hour day (including breaks) and that your job was interesting and paid by results). Which FIVE CONSECUTIVE HOURS would you select?**

5 hours starting between 4:00 AM and 8:00 AM	5
5 hours starting between 8:00 AM and 9:00 AM	4
5 hours starting between 9:00 AM and 2:00 PM	3
5 hours starting between 2:00 PM and 5:00 PM	2
5 hours starting between 5:00 PM and 4:00 AM	1

**18. At what time of the day do you think that you reach your “feeling best” peak?**

5:00 – 8:00 AM	5
8:00 – 10:00 AM	4
10:00 AM – 5:00 PM	3
5:00 – 10:00 PM	2
10:00 PM – 5:00 AM	1

**19. One hears about “morning” and “evening” types of people. Which ONE of these types do you consider yourself to be?**

Definitely a “morning” type	6
Rather more a “morning” than an “evening” type	4
Rather more an “evening” than a “morning” type	2
Definitely an “evening” type	0

## The Epworth Sleepiness Scale

The Epworth Sleepiness Scale is widely used in the field of sleep medicine as a subjective measure of a patient's sleepiness. The test is a list of eight situations in which you rate your tendency to become sleepy on a scale of 0, no chance of dozing, to 3, high chance of dozing. When you finish the test, add up the values of your responses. Your total score is based on a scale of 0 to 24. The scale estimates whether you are experiencing excessive sleepiness that possibly requires medical attention.

### How Sleepy Are You?

How likely are you to doze off or fall asleep in the following situations? You should rate your chances of dozing off, not just feeling tired. Even if you have not done some of these things recently try to determine how they would have affected you. For each situation, decide whether or not you would have:

- No chance of dozing =0
- Slight chance of dozing =1
- Moderate chance of dozing =2
- High chance of dozing =3

Write down the number corresponding to your choice in the right hand column. Total your score below.

Situation	Chance of Dozing
Sitting and reading	•
Watching TV	•
Sitting inactive in a public place (e.g., a theater or a meeting)	•
As a passenger in a car for an hour without a break	•
Lying down to rest in the afternoon when circumstances permit	•
Sitting and talking to someone	•
Sitting quietly after a lunch without alcohol	•
In a car, while stopped for a few minutes in traffic	•

Total Score = \_\_\_\_\_

### Analyze Your Score

#### Interpretation:

**0-7:** It is unlikely that you are abnormally sleepy.

**8-9:** You have an average amount of daytime sleepiness.

**10-15:** You may be excessively sleepy depending on the situation. You may want to consider seeking medical attention.

**16-24:** You are excessively sleepy and should consider seeking medical attention.

Reference: Johns MW. A new method for measuring daytime sleepiness: The Epworth Sleepiness Scale. *Sleep* 1991; 14(6):540-5.



## Dysfunctional Beliefs and Attitudes about Sleep (DBAS)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Several statements reflecting people's beliefs and attitudes about sleep are listed below. Please indicate to what extent you personally agree or disagree with each statement. There is no right or wrong answer. For each statement, circle the number that corresponds to your own personal belief. Please respond to all items even though some may not apply directly to your own situation.

Strongly Disagree		Strongly Agree
0	1   2   3   4   5   6   7   8	9   10

1. I need 8 hours of sleep to feel refreshed and function well during the day.

0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

2. When I don't get proper amount of sleep on a given night, I need to catch up on the next day by napping or on the next night by sleeping longer.

0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

3. I am concerned that chronic insomnia may have serious consequences on my physical health.

0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

4. I am worried that I may lose control over my abilities to sleep.

0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

5. After a poor night's sleep, I know that it will interfere with my daily activities on the next day.

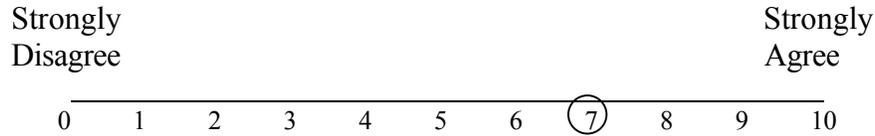
0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

6. In order to be alert and function well during the day, I believe I would be better off taking a sleeping pill rather than having a poor night's sleep.

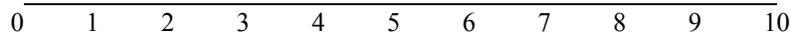
0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------

7. When I feel irritable, depressed, or anxious during the day, it is mostly because I did not sleep well the night before.

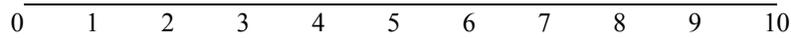
0	1   2   3   4   5   6   7   8	9   10
---	-------------------------------	--------



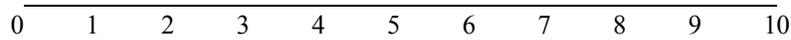
8. When I sleep poorly on one night, I know it will disturb my sleep schedule for the whole week.



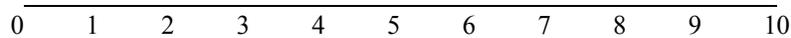
9. Without an adequate night's sleep, I can hardly function the next day.



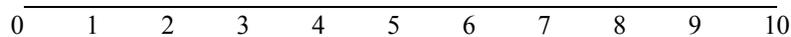
10. I can't ever predict whether I'll have a good or poor night's sleep.



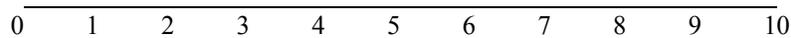
11. I have little ability to manage the negative consequences of disturbed sleep.



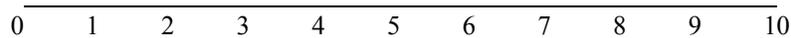
12. When I feel tired, have no energy, or just seem not to function well during the day, it is generally because I did not sleep well the night before.



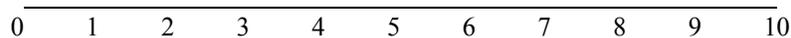
13. I believe insomnia is essentially the result of a chemical imbalance.



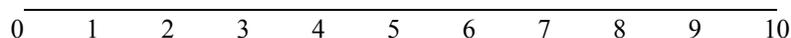
14. I feel insomnia is ruining my ability to enjoy life and prevents me from doing what I want.



15. Medication is probably the only solution to sleeplessness.



16. I avoid or cancel obligations (social, family) after a poor night's sleep.



## Restless Legs Syndrome Rating Scale

The International Restless Legs Syndrome Study Group. Validation of the International Restless Legs Syndrome Study Group Rating Scale for restless legs syndrome. *Sleep Med* 2003;4(2):121-132.

### INSTRUCTIONS FOR EXAMINER

A. Patients must meet International Restless Legs Syndrome Study Group (IRLSSG) criteria for the diagnosis of Restless Legs Syndrome (RLS) before administration of the questionnaire as follows:

#### ***International RLS Study Group criteria for the diagnosis of RLS***

- Desire to move the extremities usually associated with discomfort or disagreeable sensations in the extremities.
- Motor Restlessness—patients move to relieve the discomfort, for example walking, or to provide a counter-stimulus to relieve the discomfort, for example, rubbing the legs.
- Symptoms are worse at rest with at least temporary relief by activity.
- Symptoms are worse later in the day or at night.

**Exception**—If the patient previously met IRLSSG criteria and has undergone a spontaneous remission or is participating in a drug study with subsequent significant alteration of symptoms.

**Exception**—The patient at one time got relief of symptoms by activity but is now so severe that no such relief is possible.

**Exception**—The patient at one time was worse later in the day or at night, but is now so severe that symptoms are equal day and night.

**Exception**—The questionnaire may also be administered to normal controls.

B. Please fill in the following information:

Examiner Name: _____	Patient Name: _____
Today's Date: _____	Sex: _____ Date of Birth: _____
Year Symptoms Began: _____	
Medications: _____	Dosage: _____
_____	_____
_____	_____
_____	_____

## Restless Legs Syndrome Rating Scale

C. Have the patient rate his/her symptoms for the following ten questions. The patient and not the examiner should make the ratings, but the examiner should be available to clarify any misunderstandings the patient may have about the questions. Either the examiner or the patient may mark the answers on the form.

1. Overall, how would you rate the RLS discomfort in you legs or arms?
  - (4) Very severe
  - (3) Severe
  - (2) Moderate
  - (1) Mild
  - (0) None
  
2. Overall, how would you rate the need to move around because of your RLS symptoms?
  - (4) Very severe
  - (3) Severe
  - (2) Moderate
  - (1) Mild
  - (0) None
  
3. Overall, how much relief of your RLS arm or leg discomfort do you get from moving around?
  - (4) No relief
  - (3) Slight relief
  - (2) Moderate relief
  - (1) Either complete or almost complete relief
  - (0) No RLS symptoms and therefore question does not apply
  
4. Overall, how severe is your sleep disturbance from your RLS symptoms?
  - (4) Very severe
  - (3) Severe
  - (2) Moderate
  - (1) Mild
  - (0) None
  
5. How severe is your tiredness or sleepiness from your RLS symptoms?
  - (4) Very severe
  - (3) Severe
  - (2) Moderate
  - (1) Mild
  - (0) None

## Restless Legs Syndrome Rating Scale

6. Overall, how severe is your RLS as a whole?

- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

7. How often do you get RLS symptoms?

- (4) Very severe (This means 6 to 7 days a week.)
- (3) Severe (This means 4 to 5 days a week.)
- (2) Moderate (This means 2 to 3 days a week.)
- (1) Mild (This means 1 day a week or less.)
- (0) None

8. When you have RLS symptoms, how severe are they on an average day?

- (4) Very severe (This means 8 hours per 24 hour day or more.)
- (3) Severe (This means 3 to 8 hours per 24 hour day.)
- (2) Moderate (This means 1 to 3 hours per 24 hour day.)
- (1) Mild (This means less than 1 hour per 24 hour day.)
- (0) None

9. Overall, how severe is the impact of your RLS symptoms on your ability to carry out your daily affairs, for example carrying out a satisfactory family, home, social, school, or work life?

- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

10. How severe is your mood disturbance from your RLS symptoms—for example angry, depressed, sad, anxious, or irritable?

- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

Very severe=31-40 points

Severe=21-30 points

Moderate=11-20 points

Mild=1-10 points

None=0 points

## **RLS Ordinal Scale for Patients**

INSTRUCTIONS FOR EXAMINER: Give the patient this piece of paper and have him or her rate their symptom severity for the preceding week overall.

1

**MILD**

2

3

**MODERATE**

4

5

**SEVERE**

6

7

**VERY SEVERE**

8