CENTER FOR DEPLOYMENT PSYCHOLOGY

Preparing Professionals to Support Warriors and Families

Sleep Disorders: An Overview of Sleep Disorders Common in Military Members

Center for Deployment Psychology
Uniformed Services University of the Health Sciences

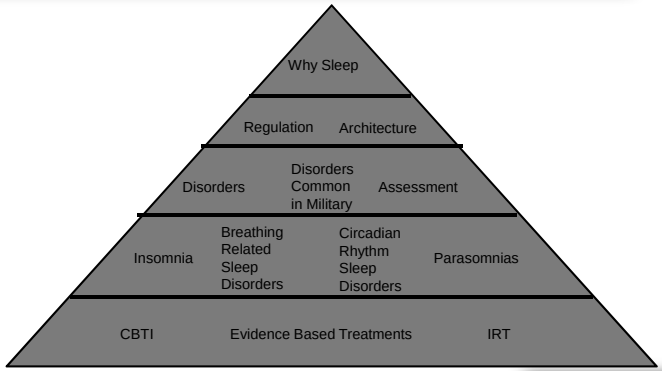
Disclaimer

The views expressed are those of the presenters and do not necessarily reflect the opinions of the Uniformed Services University of the Health Sciences, the Department of Defense, or the U.S. Government.

Learning Objectives

1. Discuss sleep disturbances and disorders common to the military population.
2. Summarize the goals and strategies of a thorough assessment for sleep disorders.
3. Identify appropriate treatments for sleep disorders common to the military population.

Understanding Sleep



Brim, 2013

Sleep
What is it good for?

"I'll sleep when I'm dead"
-Warren Zevon

Inactivity Theory

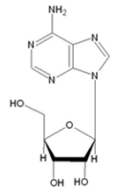
- Also called an adaptive or evolutionary theory
- Sleep serves a survival function and has developed through natural selection
- Animals that were able to stay out of harm's way by being still and quiet during times of vulnerability, usually at night…survived.

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



- Adenosine builds up while we are awake (and promotes a drive to sleep) and is cleared from the system while we sleep.

Brain Plasticity

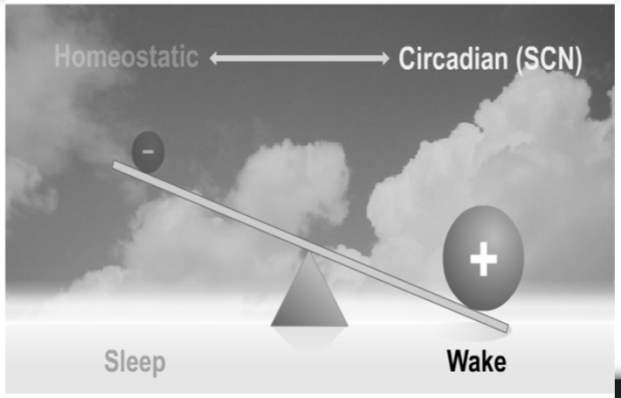
- One of the most recent theories is based on findings that sleep is correlated to changes in the structure and organization of the brain.

- Sleep plays a critical role in brain development with infants and children spending 12-14 hours a day sleep and a link to adult brain plasticity is becoming clear as well

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”



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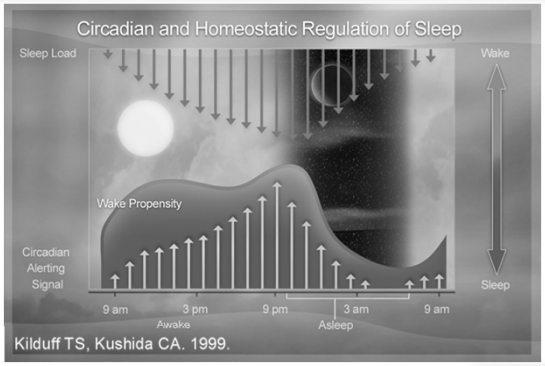
How is sleep regulated?



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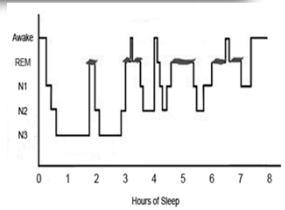
Sleep architecture

- 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



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Sleep-Wake Disorders

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Disorders

- The International Classification of Sleep Disorders-2 lists more than 80 distinct sleep disorders in 8 categories
- The DSM-5 Classification of Sleep Wake Disorders includes:
  - Insomnia
  - Narcolepsy
  - Breathing Related Sleep Disorders
  - Circadian Rhythm Sleep Disorders
  - Parasomnias

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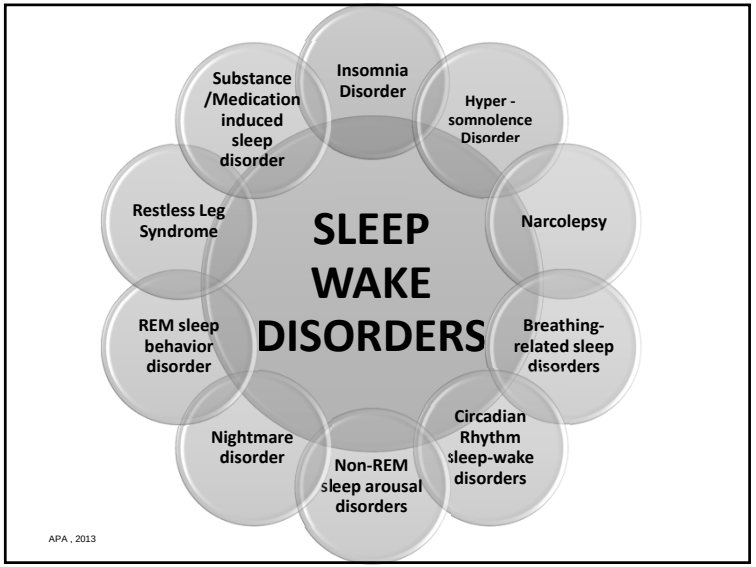

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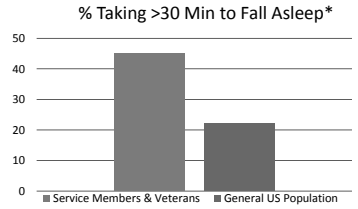
Disorders Common in the Military

- The most common complaint of military members returning from deployment is about sleep



* Plumb, Peachey, & Zelman, 2014; NSF Sleep in America Poll, 2005

Disorders Common in the Military

- There has been a rise in the number of service members receiving treatment for:
  - Insomnia
  - Obstructive Sleep Apnea
  - Circadian Rhythm Sleep Disorders
    - Delayed Sleep Phase
    - Shift work type
  - Nightmares

Assessment of Sleep Disturbance

Assessment Goals

- Differential Diagnosis
  - Insomnia vs other sleep disorders
- Is referral to a sleep specialist or primary care provider needed
  - Obstructive Sleep Apnea
  - Restless Leg Syndrome
  - Other medical or psychiatric condition

Assessment Measures

- Retrospective
  - Clinical Interview
  - Epworth Sleepiness Scale
  - Morning and Eveningness Questionnaire
  - Dysfunctional Beliefs and Attitudes Scale
  - Insomnia Severity Index
  - STOP
  - RLS
- Prospective
  - Sleep Diary

ESS

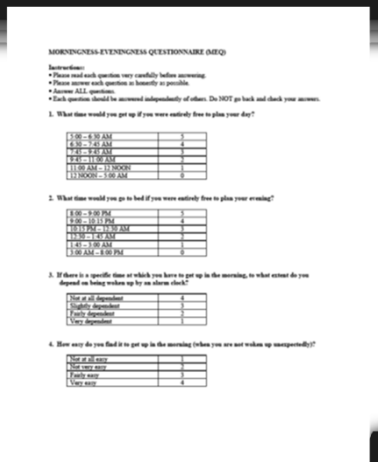
- How Sleepy <u>in the recent past</u>: Epworth Sleepiness Scale

  0= no chance of dozing 1= slight 2= moderate 3= high

Situation:

- Sitting and reading
- Watching TV
- Sitting, inactive in a public place (e.g. a theater or meeting)
- As a passenger in 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 lunch without alcohol
- In a car, while stopped for a few minutes in traffic

MEQ



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?

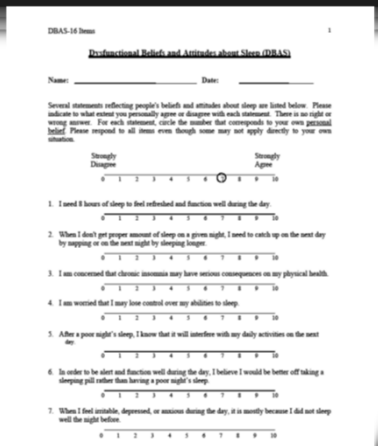
Not at all dependent	4
Slightly dependent	3
Fairly dependent	2
Very dependent	1

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

Horne & Ostberg (1976).

DBAS



DBAS-16 Items 1

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.

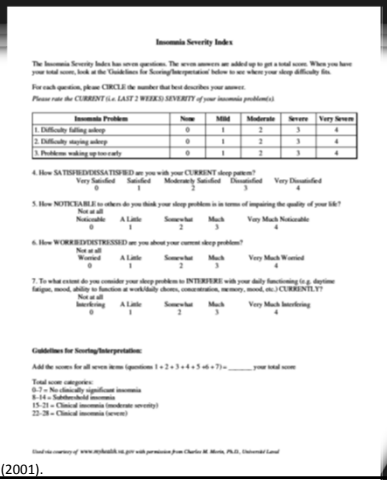
Strongly Disagree — Strongly Agree

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.
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.
3. I am concerned that chronic insomnia may have serious consequences on my physical health.
4. I am worried that I may lose control over my abilities to sleep.
5. After a poor night's sleep, I know that it will interfere with my daily activities on the next day.
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.
7. When I feel irritable, depressed, or anxious during the day, it is mostly because I did not sleep well the night before.

Espie, Inglis, Harvey, & Tessier (2000).

ISI



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 0 — Satisfied 1 — Moderately Satisfied 2 — Dissatisfied 3 — Very Dissatisfied 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 0 — A Little 1 — Somewhat 2 — Much 3 — Very Much Noticeable 4

6. How WORRIED/DISTRESSED are you about your current sleep problem?
Not at all Worried 0 — A Little 1 — Somewhat 2 — Much 3 — Very Much Worried 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 0 — A Little 1 — Somewhat 2 — Much 3 — Very Much Interfering 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)

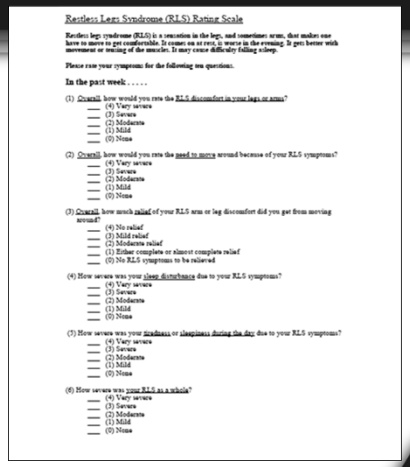
Used via courtesy of www.myhealth.va.gov with permission from Charles M. Morin, Ph.D., Université Laval

Bastien, Vallières, & Morin, (2001).

STOP

- Quick screen for Obstructive Sleep Apnea
  - 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

RLS



Restless Legs Syndrome (RLS) Rating Scale

Restless legs syndrome (RLS) is a sensation in the legs, and sometimes: arms, that makes one have to move to get comfortable. It comes on at rest, is worse in the evening. It gets better with movement or tensing of the muscles. It may cause difficulty falling asleep.

Please rate your symptoms for the following ten questions.

In the past week . . . . .

(1) Overall, how would you rate the RLS discomfort in your 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 did you get from moving around?
- (4) No relief
- (3) Mild relief
- (2) Moderate relief
- (1) Either complete or almost complete relief
- (0) No RLS symptoms to be relieved

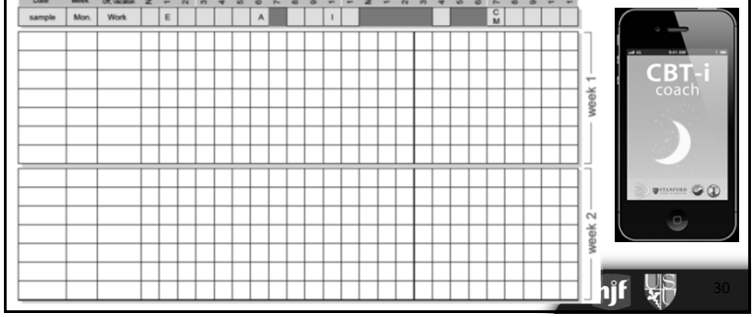
(4) How severe was your sleep disturbance due to your RLS symptoms?
- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

(5) How severe was your tiredness or sleepiness during the day due to your RLS symptoms?
- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

(6) How severe was your RLS as a whole?
- (4) Very severe
- (3) Severe
- (2) Moderate
- (1) Mild
- (0) None

International Restless Legs Syndrome Study Group

Sleep Diary



TWO WEEK SLEEP DIARY

INSTRUCTIONS:
1. Write the date, day of the week, and type of day: Work, School, Day Off, or Vacation.
2. Put the letter "C" in the box when you have coffee, cola or tea. Put "M" when you take any medicine. Put "A" when you drink alcohol. Put "E" when you exercise.
3. Put a line (|) to show when you go 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 at night or when you take a nap during the day.
5. Leave boxes unshaded to show when you wake up at night and when you are awake during the day.

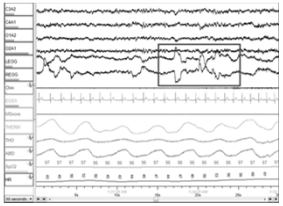
SAMPLE ENTRY BELOW: On a Monday when I worked, I jogged on my lunch break at 1 PM, had a glass of wine with dinner at 8 PM, fell asleep watching TV from 7 to 8 PM, went to bed at 10:30 PM, fell asleep around Midnight, woke up and couldn't get back to sleep at about 4 AM, went back to sleep from 5 to 7 AM, and had coffee and medicine at 7:00 in the morning.

Today's Date	Day of the week	Type of Day (Work, School, Off, Vacation)	Noon	1PM	2	3	4	5	6PM	7	8	9	10	11PM	Midnight	1AM	2	3	4	5	6AM	7	8	9	10	11AM
sample	Mon.	Work		E					A					I								C M				

week 1

week 2

Objective Measures of Sleep



- Polysomnography – (PSG) overnight sleep study
- Multiple Sleep Latency Test (MSLT) – measure of daytime wakefulness
- Actigraphy – monitors human movement cycles
- There's an app for that

Sleep Interview

- A complete assessment of sleep disorders will include an interview that includes:
  - Sleep history
  - Functional analysis (antecedents, consequences, etc.)
  - Dietary, substance use, and exercise habits
  - Bedroom environment including bed partner habits
  - Beliefs and attitudes about sleep
  - Medical history
  - Medication use
  - Psychological screening

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

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

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

Harvard University Sleep Lab Website

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

//healthysleep.med.harvard.edu/interactive/sleep_lab

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

APA, 2013

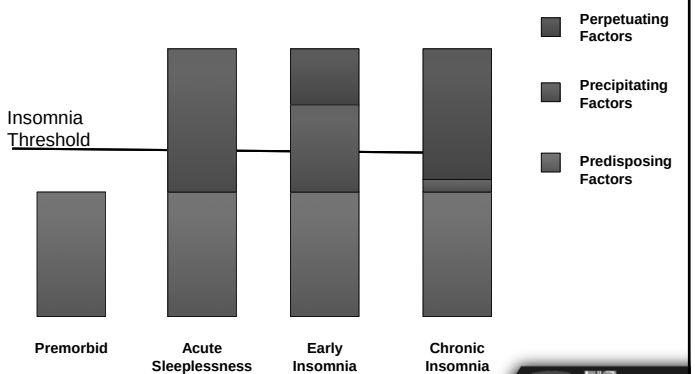
DSM-5 Insomnia Disorder

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

Factors Involved in Insomnia: Behavioral Model of Insomnia

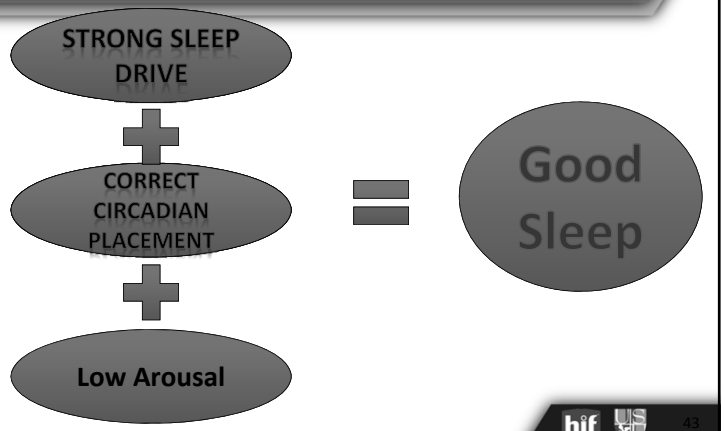
- Predisposing Factors
  - Arousal level
  - Genetics
  - Worry or rumination tendency
  - Previous Episodes
  - Sleep schedule
- Precipitating Factors
  - Situational Stressors
    - Illness or injury
    - Acute stress reactions
    - Environmental Changes
  - Sustained/Continuous Ops?
- Perpetuating Factors
  - Maladaptive Habits
  - Dysfunctional Cognitions

Evolution from Sleep Disturbance to Insomnia



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



Brim, 2013

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

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

Brim, 2013

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 (uvulopalatopharyngoplasty – UPPP)
- Mouthpiece

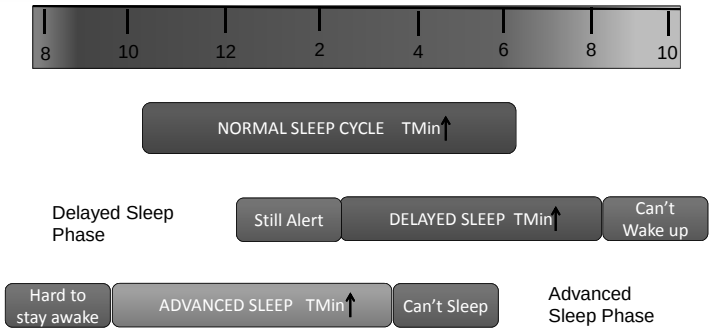
Circadian Rhythm Sleep Disorders

Circadian Rhythm Sleep Disorders

- Circadian rhythm sleep disorders
  - –Delayed sleep phase type
  - –Advanced sleep phase type
  - –Irregular sleep-wake type
  - –Non-24 hour sleep wake type
  - –Shift work type
  - –Unspecified
  - –Jet lag type - removed

APA, 2013

Circadian Rhythm Alignment



Treatments

- Melatonin Therapy
- Light Therapy
- Environmental Entrainment
- Consistent Bed-Wake Time

Parasomnias

Parasomnias

- Non-Rapid Eye Movement
  - –Sleepwalking type
  - –Sleep terror type
- Nightmares
- REM Sleep Behavior Disorder
- Restless Legs Syndrome

Somnambulism

•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.

•Treatment options
  - •Time
  - •Short-term benzodiazepine

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.

APA, 2013

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?

O'Reilly, 2009

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 Treatment Options

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

Rationale

- Nightmares are a learned behavior
- With repetition, nightmares become automatic involuntary behaviors
- Nightmares can be reduced by replacing them with a more desirable behavior

Main Components

- Brief protocol
- Psychoeducation
- Relaxation training
- Nightmare narrative (exposure)
- Restructure of nightmare
- Rehearse rescripted nightmare

Imagery Rehearsal Therapies

- Empirically supported for sexual assault survivors with PTSD (Hoge et al, 2004)
- Improve nightmare frequency in US Army Veterans (Mustafa et al, 2005)
- Meta-analysis confirmed that IRT improves nightmare frequency and sleep quality in a variety of trauma-related study samples and protocols (Casement & Swanson, 2012).
- Vietnam era veterans did not find IRT to be effective compared to an active control condition (Cook et al., 2010)
- The efficacy of IRT in Veterans with PTSD is still not fully determined.
- Use of Prazosin in conjunction with IRT

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).

CDP Website: Deploymentpsych.org

Features include:

- Descriptions and schedules of upcoming training events
- Blog updated daily with a range of relevant content
- Articles by subject matter experts related to deployment psychology, including PTSD, mTBI, depression, and insomnia
- Other resources and information for behavioral health providers
- Links to CDP's Facebook page and Twitter feed

Online Learning

The following online courses are located on the CDP website at:
http://www.deploymentpsych.org/content/online-courses
NOTE: All of these courses can be take for free or for CE Credits for a fee

- Cognitive Processing Therapy (CPT) for PTSD in Veterans and Military Personnel (1.25 CE Credits)
- Prolonged Exposure Therapy for PTSD in Veterans and Military Personnel (1.25 CE Credits)
- Epidemiology of PTSD in Veterans: Working with Service Members and Veterans with PTSD (1.5 CE Credits)
- Provider Resiliency and Self-Care: An Ethical Issue (1 CE Credit)
- Military Cultural Competence (1.25 CE Credits)
- The Impact of Deployment and Combat Stress on Families and Children, Part 1 (2.25 CE Credits)
- The Impact of Deployment and Combat Stress on Families and Children, Part 2 (1.75 CE Credits)
- The Fundamentals of Traumatic Brain Injury (TBI) (1.5 CE Credits)
- Identification, Prevention, & Treatment of Suicidal Behavior in Service Members & Veterans (2.25 CE Credits)
- Depression in Service Members and Veterans (1.25 CE Credits)

All of these courses and several others are contained in the Serving Our Veterans Behavioral Health Certificate program, which also includes 20+ hours of Continuing Education Credits for $350.

Provider Support

CDP's "Provider Portal" is exclusively for individuals trained by the CDP in evidence-based psychotherapies (e.g., CPT, PE, and CBT-I)

Features include:

- Consultation message boards
- Hosted consultation calls
- Printable fact sheets, manuals, handouts, and other materials
- FAQs and one-on-one interaction with answers from SMEs
- Videos, webinars, and other multimedia training aids

Participants in CDP's evidence-based training will automatically receive an email instructing them how to activate their user name and access the "Provider Portal" section at Deploymentpsych.org.

How to Contact Us

Center for Deployment Psychology
Department of Medical & Clinical Psychology
Uniformed Services University of the Health Sciences
4301 Jones Bridge Road, Executive Office: Bldg. 11300-602
Bethesda, MD 20813-4768

Email: General@DeploymentPsych.org
Website: DeploymentPsych.org
Facebook: http://www.facebook.com/DeploymentPsych
Twitter: @DeploymentPsych