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

Center for Deployment Psychology
Uniformed Services University of the Health Sciences

Understanding Sleep

Why Sleep
Regulation
Architecture
Disorders
Disorders Common in Military
Assessment
Insomnia
Breathing Related Sleep Disorders
Circadian Rhythm Sleep Disorders
Parasomnias
CBTI
Evidence Based Treatments
IRT

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.
Sleep
What is it good for?

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

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.
- 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”
How is sleep regulated?

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

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

APA, 2013
SLEEP WAKE DISORDERS

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:
  - Insomnia
  - Obstructive Sleep Apnea
  - Circadian Rhythm Sleep Disorders
    - Delayed Sleep Phase
    - Shift work type
    - Nightmares

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 in the recent past: 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

Horne & Ostberg (1976).

DBAS

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

**Screening Questionnaire: Restless Legs Syndrome (Benjamins Version)**

**Sleep Diary**

**TWO WEEK SLEEP DIARY**

**Hening, Walters, Allen, Montplaisir, Myers, & Ferrari-Strambi, (2004)**
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 and 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

- 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/

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 of more episodes with 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
Low Arousal 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

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

Breathing Related Sleep Disorders
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
  (uvulopalatopharyngopasty – UPPP)
- Mouthpiece

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

NORMAL SLEEP CYCLE  Tmin↑

- Delayed Sleep Phase
  - Still Alert
  - DELAYED SLEEP  Tmin↓
  - Can’t Wake up

- Advanced Sleep Phase
  - Hard to stay awake
  - ADVANCED SLEEP  Tmin↑
  - Can’t Sleep

Treatments

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

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

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**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.

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**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)

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**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?

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

IRT 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

Imagery Rehearsal Therapy (IRT) overview

- Brief protocol
- Psychoeducation
- Relaxation training
- Monitor daily sleep activities for 1 week
- Breathing retraining/Relaxation techniques
- Restructure of nightmare
- Rehearse rescripted nightmare AND relax frequently
Imagery Rehearsal Therapy

- Empirically supported for sexual assault survivors with PTSD
- Our data with Vietnam veterans less encouraging
- Pilot data with OEF/OIF veterans looks better
- Brief and generally well tolerated treatment for Chronic Nightmares
- Use of Prazosin in conjunction with IRT

Recommended Reading


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
Medications for Insomnia

• Benzodiazepine agents approved by FDA

<table>
<thead>
<tr>
<th>Drug</th>
<th>Half-Life (hours)</th>
<th>Absorption</th>
<th>Typical dose (mg)</th>
<th>Active metabolite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halcion (triazolam)</td>
<td>2-5</td>
<td>Fast</td>
<td>0.125 - 0.25</td>
<td>No</td>
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<tr>
<td>Reetril (temazepam)</td>
<td>8-12</td>
<td>Moderate</td>
<td>7.5 - 30</td>
<td>No</td>
</tr>
<tr>
<td>ProSom (Estazolam)</td>
<td>12-20</td>
<td>Moderate</td>
<td>1-2</td>
<td>Minimal</td>
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<tr>
<td>Doral (Quazepam)</td>
<td>50-200</td>
<td>Fast</td>
<td>7.5 - 15</td>
<td>Yes</td>
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<tr>
<td>Dalmane (Flurazepam)</td>
<td>50-200</td>
<td>Fast</td>
<td>15-30</td>
<td>Yes</td>
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</tbody>
</table>

• Nonbenzodiazepine agents approved by FDA

<table>
<thead>
<tr>
<th>Drug</th>
<th>Half-Life (hours)</th>
<th>Absorption</th>
<th>Typical dose (mg)</th>
<th>Active metabolite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonata (zaleplon)</td>
<td>1.15</td>
<td>Fast</td>
<td>5-20</td>
<td>No</td>
</tr>
<tr>
<td>Ambien (zolpidem)</td>
<td>1.5-2.6</td>
<td>Fast</td>
<td>2.5-10</td>
<td>No</td>
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<tr>
<td>Ambien ER (zolpidem CR)</td>
<td>2.8</td>
<td>Fast</td>
<td>6.25-12.5</td>
<td>No</td>
</tr>
<tr>
<td>Tozerem (Ramelteon)</td>
<td>1-2.6</td>
<td>Fast</td>
<td>4-8</td>
<td>Yes</td>
</tr>
<tr>
<td>Lunesta (Eszopiclone)</td>
<td>6</td>
<td>Fast</td>
<td>1-3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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

CDP Website: Deploymentpsych.org

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

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