



DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Treating Sleep Problems in PTSD and TBI

DCoE Monthly Webinar, Feb. 23, 2012

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Agenda

- Welcome and Introduction
- Presentations
 - Dr. Anthony Panettiere
 - Treating Sleep Problems in PTSD and TBI
 - Dr. Murray A. Raskind
 - Prazosin for Trauma Nightmares, Sleep Disruption and Global Clinical Status for Returning Veterans
 - Col. Christopher Robinson, MPH, Ph.D.
 - Co-occurring Conditions Toolkit: Mild Traumatic Brain Injury and Psychological Health
- Question and Answer Session / Discussion

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- Throughout the webinar, you are welcome to submit questions via the Adobe Connect or Defense Connect Online question box located on the screen.
- The question box is monitored during the webinar and questions will be forwarded to our presenters for response during the Question and Answer Session during the last half hour of the webinar.
- Our presenters will respond to as many questions as time permits.



DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Treating Sleep Problems in PTSD and TBI

Sleep problems -- for example: trouble getting to sleep, trouble staying asleep, nightmares and excessive daytime sleepiness -- are common symptoms of both physical and mental health disorders. Although the nature and specificity of sleep problems in post-traumatic stress disorder and traumatic brain injury continues to be studied, promising behavioral and pharmacological treatments are recommended for health care providers.

During this webinar we will discuss both behavioral and pharmacological treatments for sleep problems associated with PTSD and TBI. Prazosin, a medication found to be effective in reducing combat-related nightmares, will be highlighted.





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Treating Sleep Problems in PTSD and TBI

Anthony Panettiere, M.D.

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Required Disclaimer

I have no relevant financial relationships and do not intend to discuss the off-label / investigative (unapproved) use of commercial products/devices.

Objectives

- Understand the features and physiology of normal sleep
- Explore the impact of traumatic brain injury (TBI) and post-traumatic stress disorder (PTSD) on sleep and sleep physiology
- Review the NICoE clinical case series and current approach to treatment

The National Intrepid Center of Excellence



An instrument of hope, healing, discovery and learning

NICoE Overview

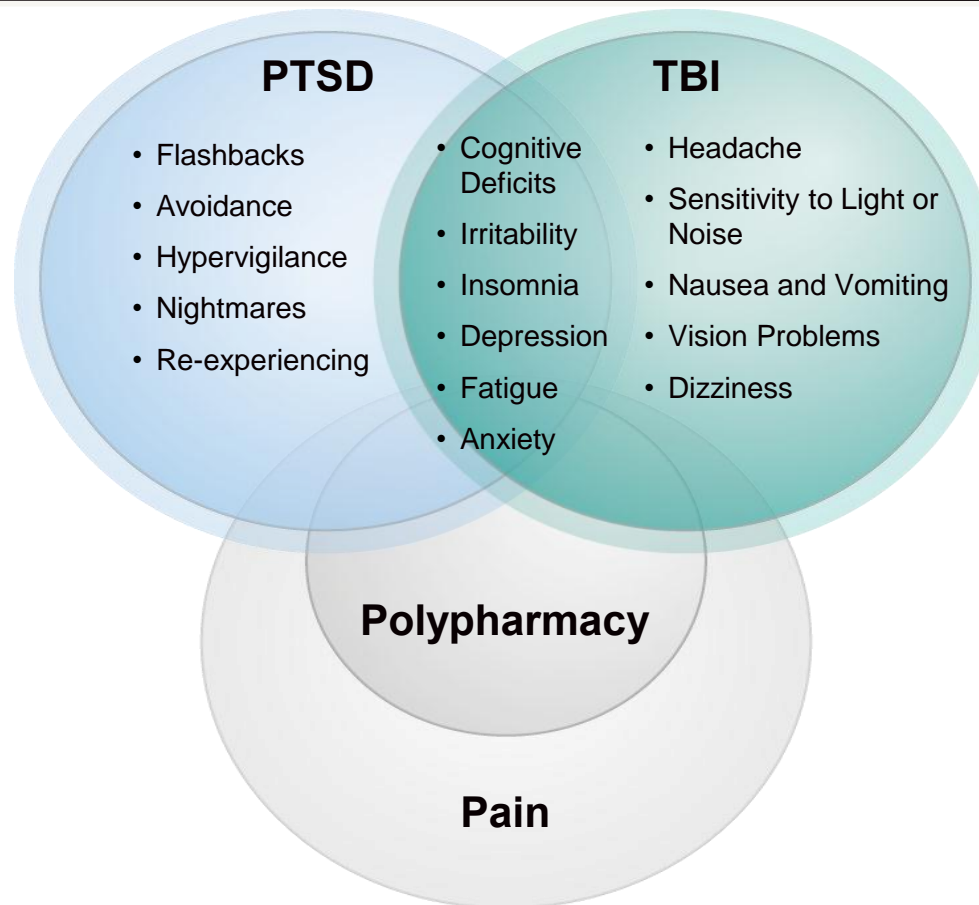


VISION: NICoE is an instrument of hope, healing, discovery and learning

MISSION: To be a leader in advancing traumatic brain injury and psychological health treatment, research and education

- **Clinical:** A model of holistic, interdisciplinary evaluation and treatment in a family-focused, collaborative environment that promotes physical, psychological and spiritual healing with commitment to long-term follow-up and family contact
- **Research:** A Defense Department Institute with a unique patient base and the most current technical and clinical resources for initiating innovative pilot studies designed to advance evaluation and treatment of service members with the complex interaction of TBI and psychological health injury who are not responding to conventional therapy elsewhere in the military health system (MHS)
- **Training and Education:** A venue for the dissemination of next generation standards of care and resilience to providers as well as service members and families

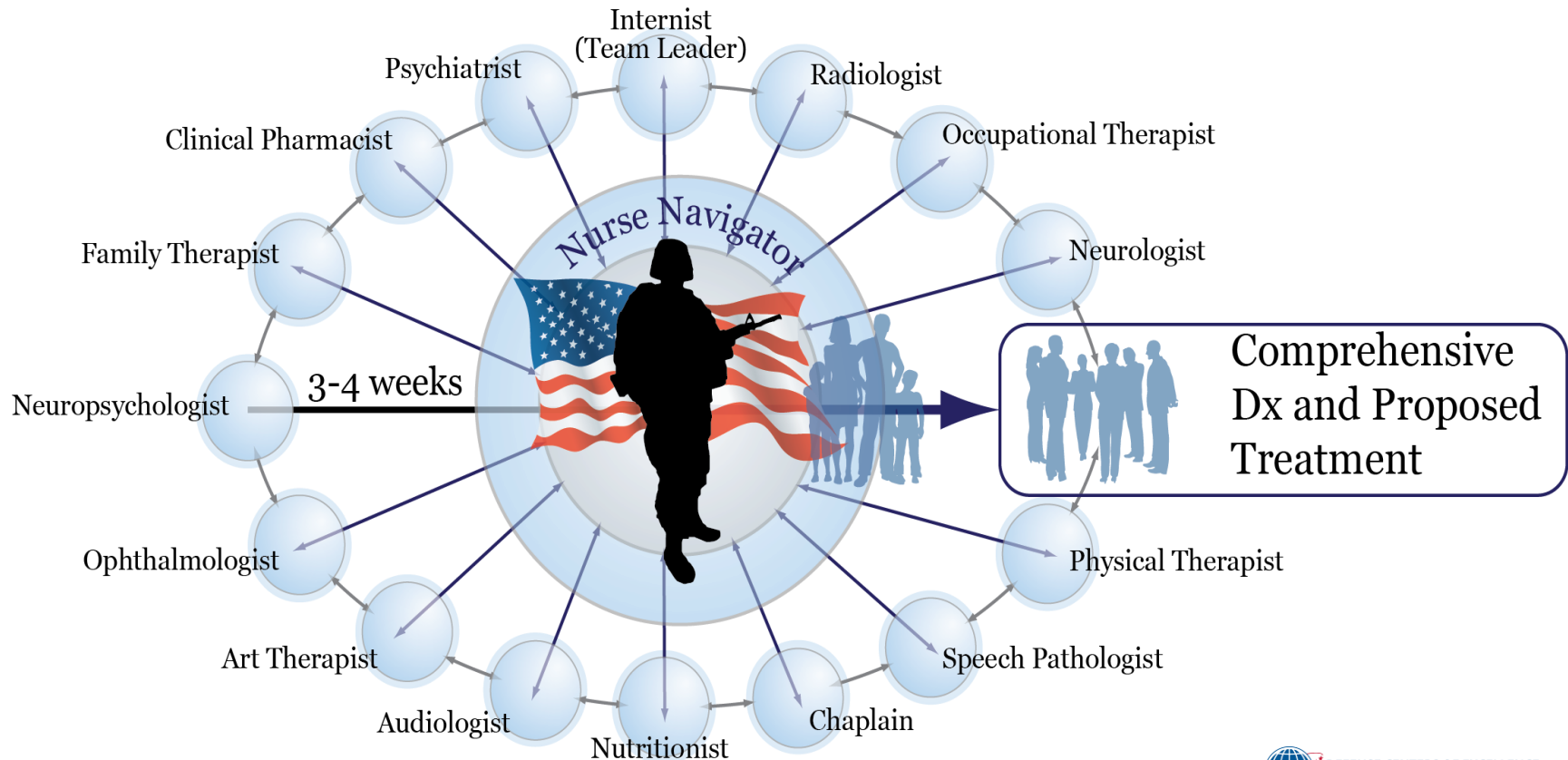
Medical Imperative: Challenging Co-morbidity



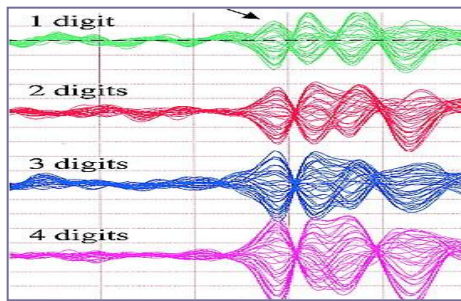
Collaborative, Patient-Centered Evaluation and Assessment



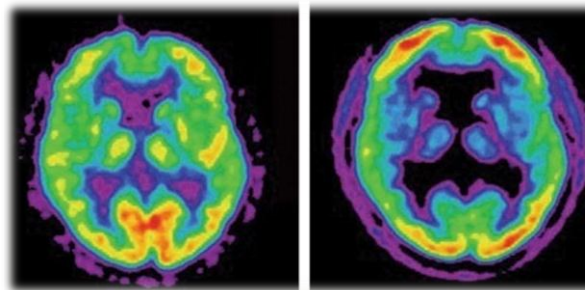
Four weeks of intensive diagnostics and treatment planning



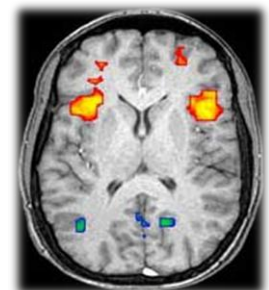
Major Diagnostic and Rehabilitation Equipment



Magneto Encephalography (MEG) Scanner



Positron Emission Tomography with Computed Tomography (PET/CT)



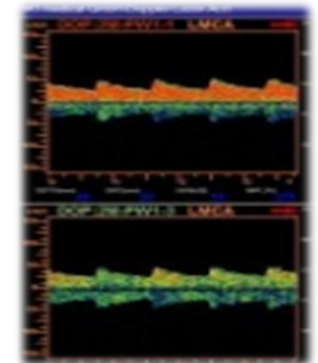
MRI (3-T) / Functional MRI



Diffusion Tensor Imaging (DTI)



CAREN (Computer Assisted Rehabilitation Environment) system



Trans-Cranial Doppler Ultrasound

History of a Good Sleeper

- Quietly asleep for most of the night
- Awakens feeling refreshed, physically and mentally
- No desire to nap during the day
- Beats alarm clock or easily awakens to alarm
- Regularly dreams
- Looks forward to going to bed

Sleep Disorder Workup

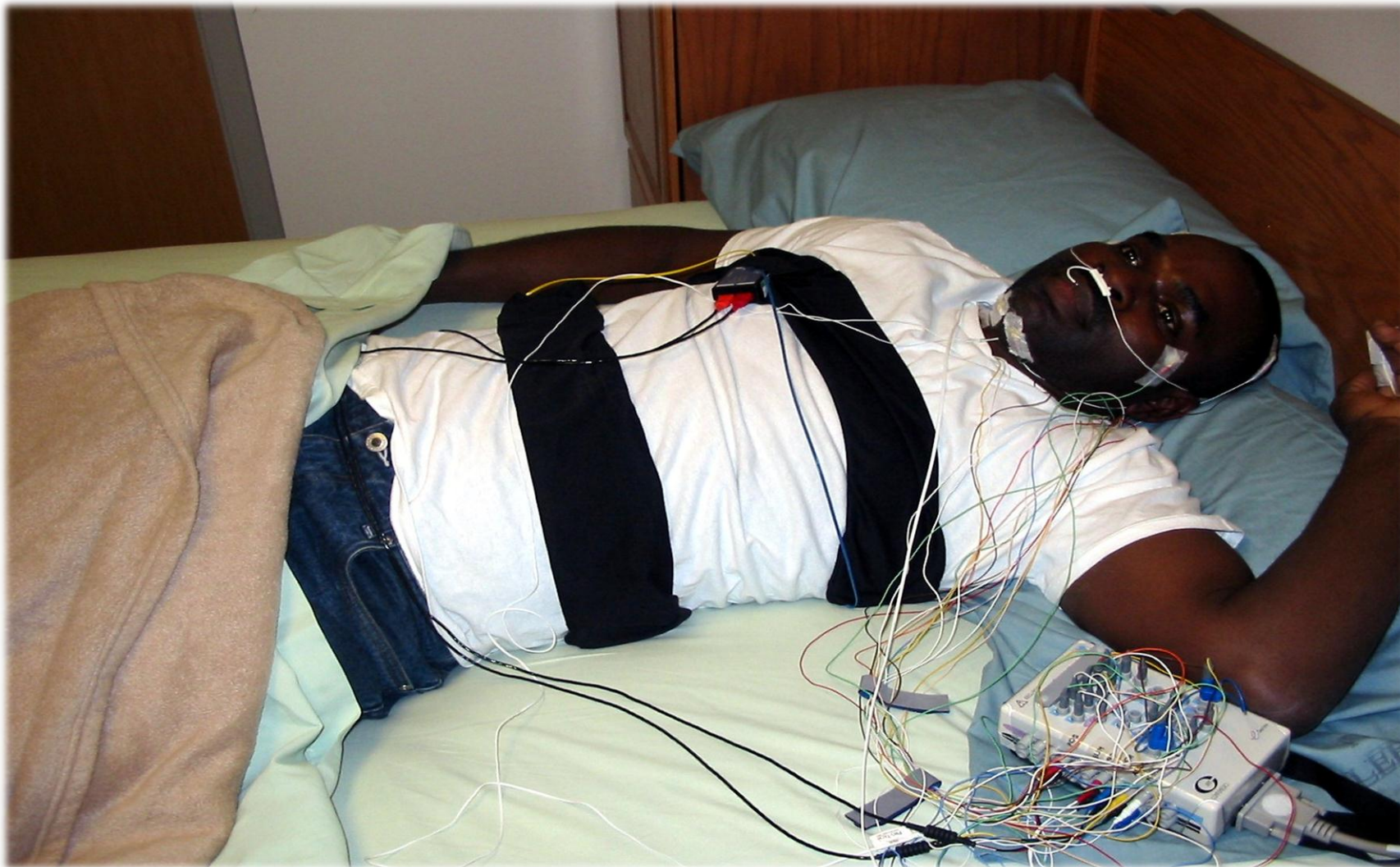
- Interview bed partner when possible
- Polysomnogram (PSG)
- Actigraphy

Polysomnogram (PSG)

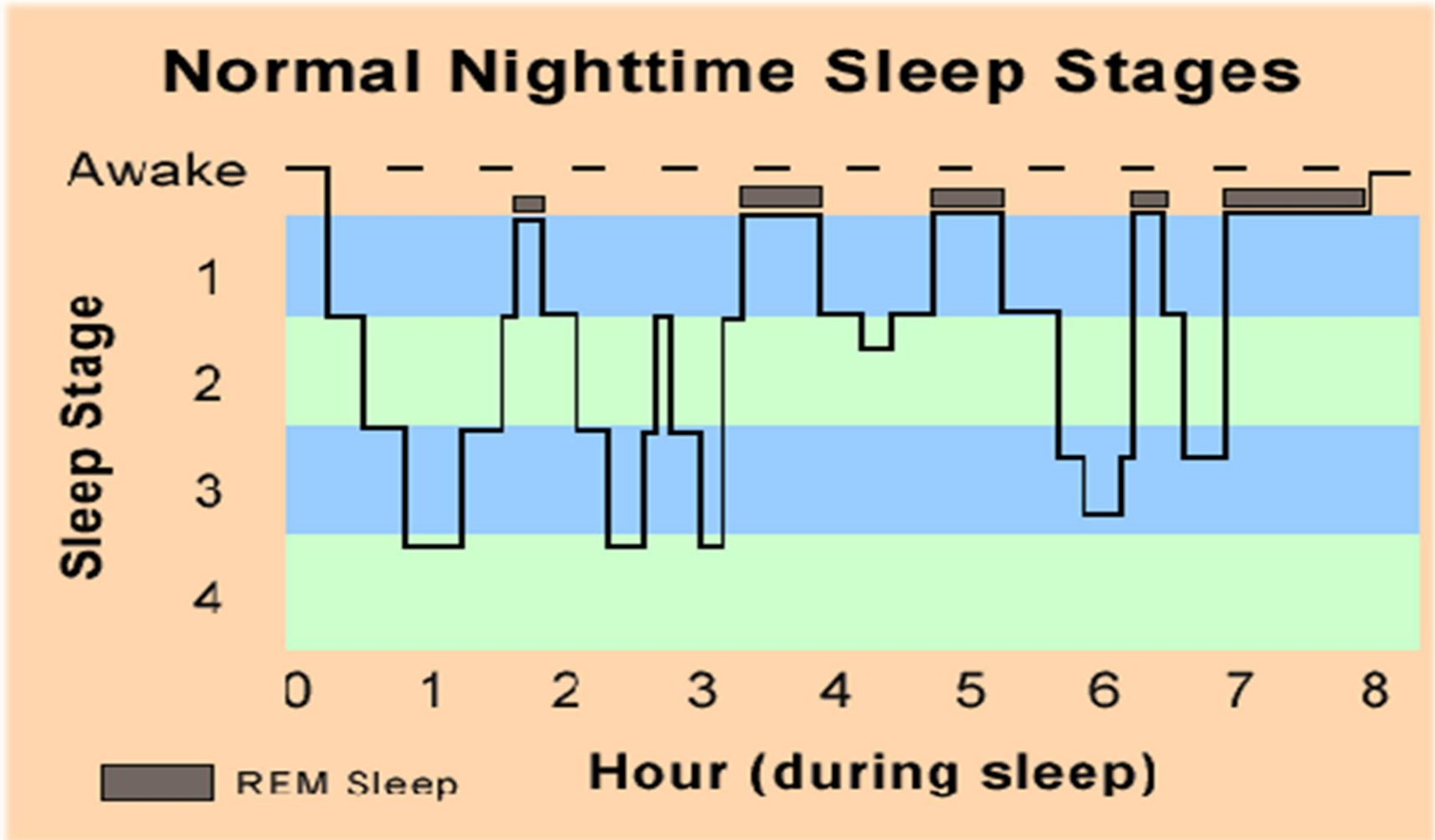
- Physiological monitoring of EEG, EKG, O2 Sat, limb movements, eye movements, chest movements, nasal airflow, snoring
- Qualitative sleep assessment

*Note: Electroencephalography (EEG)
Electrocardiogram (EKG)
Oxygen saturation (O2 Sat)*

Polysomnogram Patient Hookup



Sleep Architecture



Actigraphy

- Suspected sleep, based on relative immobility
- Quantitative sleep assessment



TBI Effects on Sleep



Reference: Lower evening melatonin levels --> delayed sleep onset (Neurology. 2010;74:1732-1738)

History in TBI / PTSD Patients

- Awakens feeling unrefreshed or worse
- Restless for much of the night
- Often fights off sleep during the day – needs caffeine or stimulants to maintain alertness
- Repeatedly awakens due to nightmares, pain or hypervigilance
- Ruminates before falling asleep
- May dread going to bed
- Worry over injuring or disrupting sleep of bed partner

TBI Effects on Sleep

- Excessive daytime somnolence (EDS) is most common TBI sleep symptom
- Related to nocturnal sleep disruption
 - Excessive stage 1, excessive awakenings, excessive stage shifts, reduced delta and REM sleep, and decreased sleep efficiency in various combinations in 24 to 92.5 percent of all patients).
 - Co-morbid PTSD makes etiology difficult to tease out

Reference: Sleep Disorders in Chronic Traumatic Brain Injury, J Clin Sleep Med 2007;3(4):357-362.

EDS Etiologies

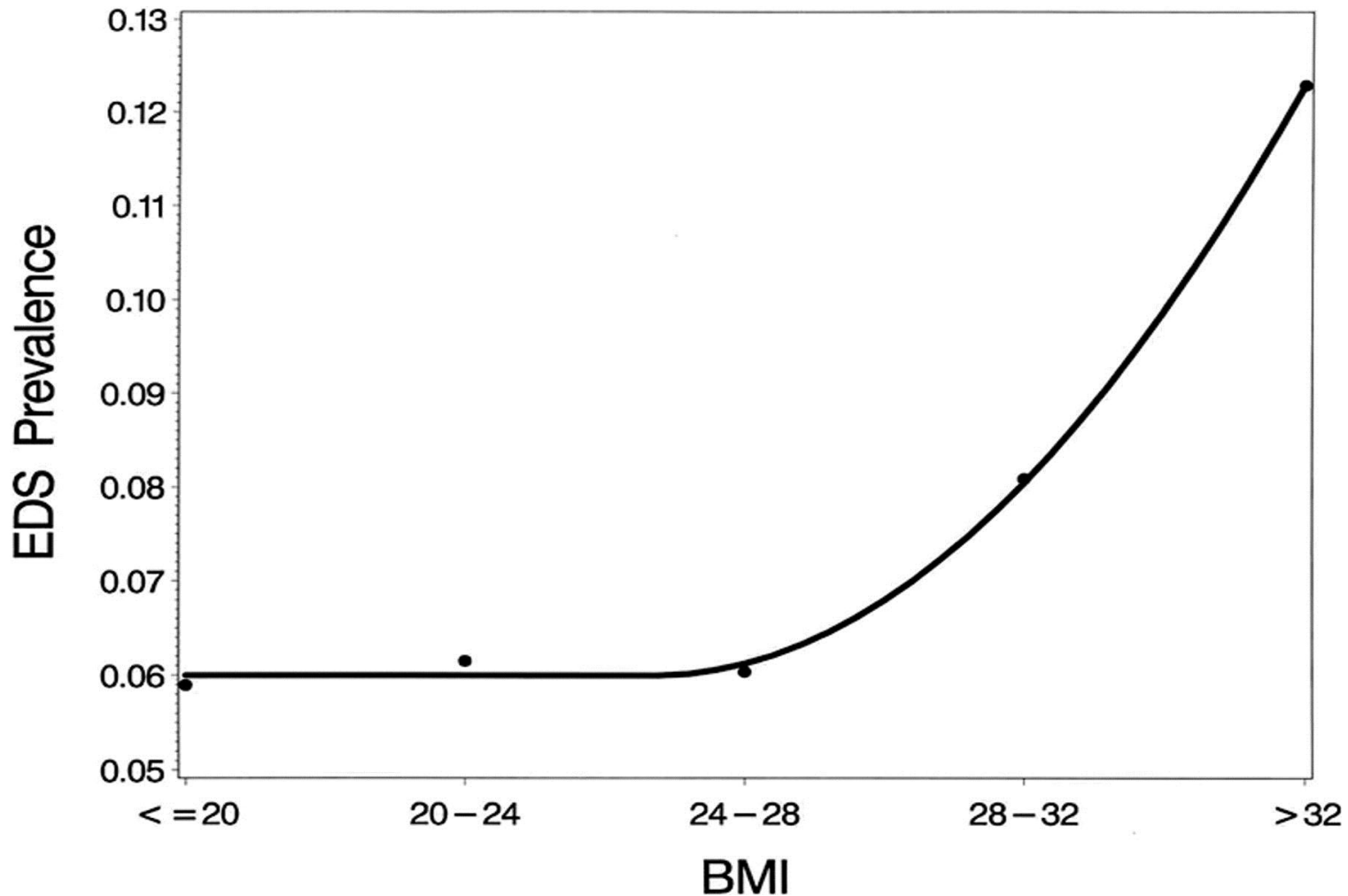
- 1) Depression
- 2) Increasing BMI > 24-28 (overweight)
- 3) Age (decreases between 30→75)
- 4) Perception of poor sleep
- 5) Sleep disordered breathing (SDB)

Reference: Excessive Daytime Sleepiness in a General Population Sample: The Role of Sleep Apnea, Age, Obesity, Diabetes, and Depression, The Journal of Clinical Endocrinology & Metabolism, August 1, 2005, vol 90, no 8, 4510-4515

Body Mass Index (BMI)

- Fairly reliable measurement of body fatness
 - Correlates well to underwater weighing
 - Not a diagnostic tool for determining health risk
- Formula: $\text{weight (lb)} \times 703 / \text{height} \times \text{height (in)}$
- $< 18.5 = \text{Underweight}$
- $18.5\text{-}24.9 = \text{Normal}$
- $25.0\text{-}29.9 = \text{Overweight}$
- $\geq 30 = \text{Obese}$

BMI-Specific Prevalence of EDS



Reference: Bixler E.O. et al. *Journal of Clinical Endocrinology & Metabolism* 2005;90:4510-4515

TBI Effects on Sleep

- Lower evening melatonin levels --> delayed sleep onset*
- Lower CSF hypocretin-1 levels acutely, normalized at six months, secondary to suspected transient posterior hypothalamic dysfunction
- Circadian rhythm disorders (melatonin and light instead of hypnotics)

Note: Cerebrospinal fluid (CSF)

*Reference: *Neurology. 2010;74:1732-1738*

Current Understanding of TBI and Sleep

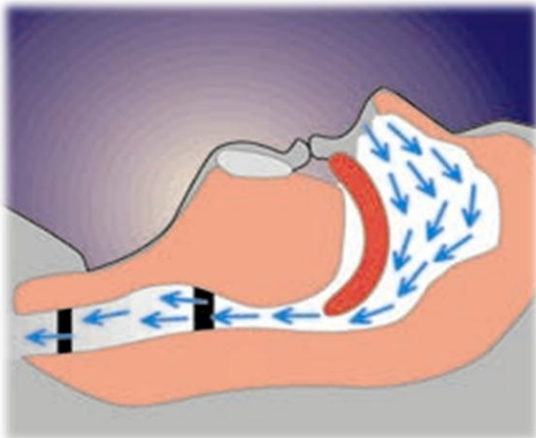
- In TBI cases (> three months), there is a high prevalence of sleep disorders (46 percent) and excessive sleepiness (25 percent)
- In this population of 40 patients of mostly mild and moderate TBI, there was a high prevalence of OSA (25 percent), post-traumatic hypersomnia (11 percent) and narcolepsy (7 percent)

Note: Obstructive sleep apnea (OSA)

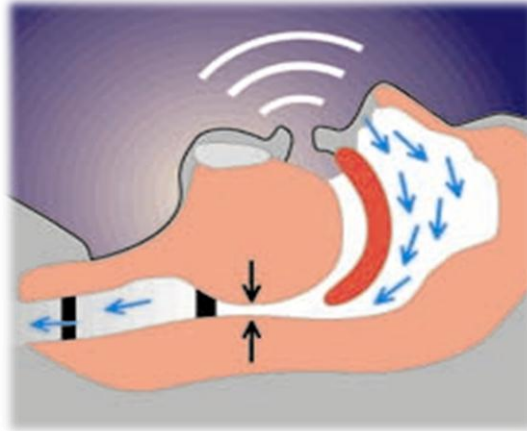
Reference: Journal of Clinical Sleep Medicine, Prevalence and Consequences of Sleep Disorders in Traumatic Brain Injury; 2007; 3(4): 349-356

Airways During Sleep

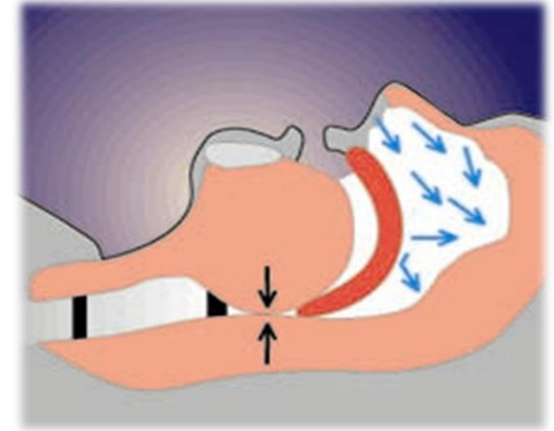
Normal



Snoring



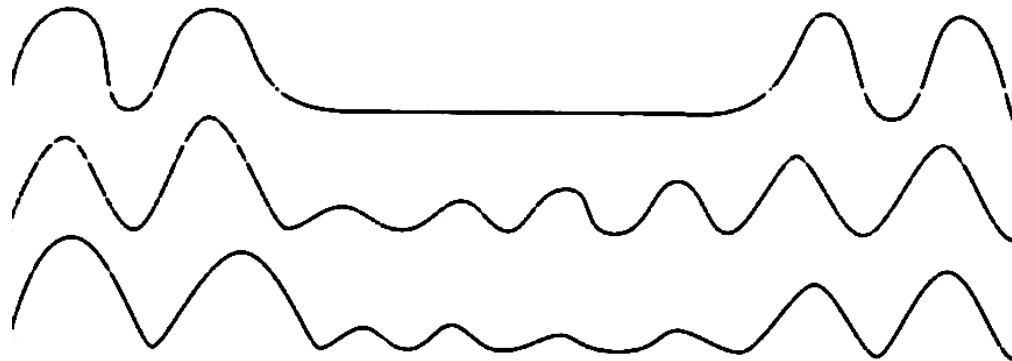
Sleep Apnea



Airflow

Ribcage

Abdomen



NICoE Sleep Findings

- PSG Results
 - SDB: 41.5 percent (n=39)
 - AHI range of 5.0-106
 - AHI mean of 17.9 (SD +/- 19.1)
 - Snoring alone: 33.0 percent (n=31)
 - Sleep architecture: 12.8 percent (n=12)
 - Normal 10.6 percent (n=10)
 - PLMS: 2.1 percent (n=2)

*Note: Apnea-hypopnea index (AHI)
Periodic limb movements of sleep (PLMS)*

SDB Breakdown

- Mean age of patients with SDB: 38.2 +/- 9.0
- Mean age of non-SDB patients: 30.6 +/- 6.4

- Mean BMI of patients with SDB: 29.8 +/- 3.6
- Mean BMI of non-SDB patients: 26.8 +/- 3.4

Expected SDB Prevalence

6,120 patients, age stratified

- SDB 36.9 percent for ages 40-59
 - Mean age of 52.2 +/- 5.3 years
 - NICoE: SDB of 60.0 percent with a mean age of 45 +/- 5.0 years (n=12)
- SDB 52.1 percent for ages >60
 - Mean age of 70.2 +/- 6.9 years
 - Not applicable to NICoE patient cohort

Expected SDB Prevalence

- 602 employed men and women, aged 30-60
- 24 percent of men and 9 percent of women
- 4 percent of men and 2 percent of women have OSAS (SDB and hypersomnolence)
 - 35.2 percent of men ages 30-39
 - NICOE: 45.7 percent -- 16/35
 - 54 percent of men ages 40-49 and 50-59
 - NICOE: 66.7 percent -- 12/18 for 40-49
 - NICOE: 66.7 percent -- 2/3 for 50-59
- BMI 1 SD (5.67) higher – three-fold increase in SDB

Note: Obstructive Sleep Apnea Syndrome (OSAS)

Reference: The Occurrence of Sleep-Disordered Breathing Among Middle-Aged Adults (N Engl J Med 1993; 328:1230-1235 April 29, 1993)

SDB and Psych

- 4,060,504 veterans studied from 1998-2001
- 118,105 identified as having sleep apnea (prevalence of 2.91 percent and mean age of 57.6 years)
- Compared with patients not diagnosed with sleep apnea, the sleep apnea group had a statistically significant ($P < .0001$) increased prevalence of:
 - Depression (21.8 percent)
 - Anxiety (16.7 percent)
 - PTSD (11.9 percent)
 - Dementia
 - Psychosis
 - Bipolar disorder

Reference: Sharafkhaneh A, Giray N, Richardson P, Young T, Hirshkowitz, M. Association of psychiatric disorders and sleep apnea in a large cohort. Sleep. 2005;28(11):1405–11.

NICoE Sleep Findings

TBI and PTSD Prevalence

- TBI and PTSD: 44.7 percent (n=42)
- TBI alone: 41.5 percent (n=39)
- PTSD alone: 9.6 percent (n=9)
- Neither: 4.3 percent (n=4)

NICoE Sleep Findings

Nightmare and Insomnia Prevalence

- Nightmares and insomnia: 52.1 percent (n=49)
- Nightmares alone: 23.4 percent (n=22)
- Insomnia alone: 6.4 percent (n=6)
- Neither: 18.1 percent (n=17)

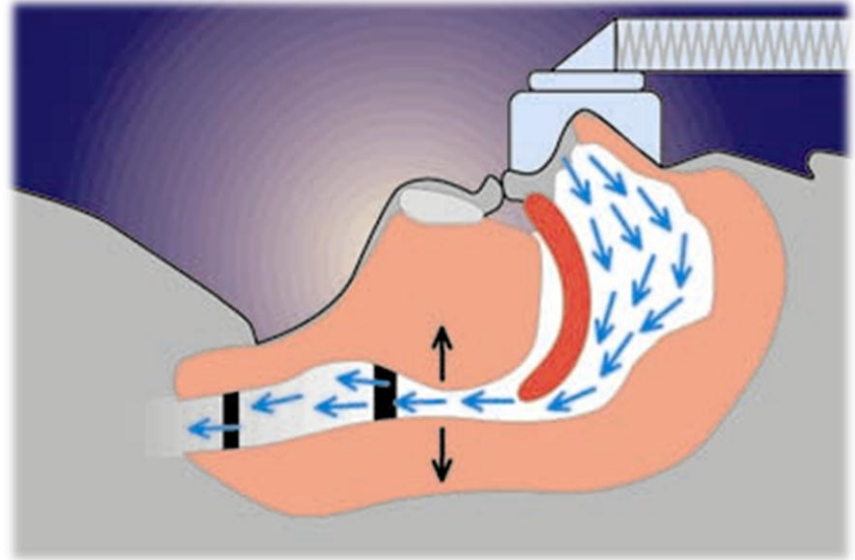
Sleep Prescriptions

For those with sleep disordered breathing (SDB)

- PAP therapy
- Oral appliance
- Weight loss
- Positional therapy
- Alcohol avoidance
- Surgery

Note: Positive airway pressure (PAP)

nCPAP Therapy



- Positive pressure maintains airway patency
- Very effective when used (compliance issues)

Note: Nasal continuous positive airway pressure (nCPAP)

Insomnia Definition

Difficulty with sleep initiation, maintenance and final awakenings that occur earlier than the desired wake-up time

- Adequate time and opportunity for sleep exists
- Associated daytime impairment

Insomnia Breakdown

Overall insomnia prevalence: 75.5 percent (71/94)

- Percentage PTSD with insomnia: 66.7 percent (6/9)
- Percentage TBI with insomnia: 61.5 percent (24/39)
- Percentage PTSD and TBI with insomnia: 92.9 percent (39/42)
- Percentage non-PTSD and TBI with insomnia: 75 percent (3/4)

Sleep Prescription

For those with insomnia

- Sleep restriction
- Stimulus control
- Light therapy
- Nightmare prescription with IRT +/- Prazosin
- Cognitive behavioral therapy (CBT)
- Regular exercise
- Mood disorder and pain treatment
- Sleep diary
- Avoid time monitoring
- Sleep hygiene

Wrapping It Up

In our review of 94 TBI and PTSD patients:

- Sleep disordered breathing, mainly obstructive apnea type, appears to be more prevalent compared to the general population across all assessed age ranges
- SDB was more prevalent in subgroups with either TBI (43.6 percent) alone, or PTSD and TBI (46.2 percent) compared to the PTSD group (7.7 percent) alone
- Insomnia was a common symptom (75 percent), most prevalent in our patients who had both TBI and PTSD (92 percent)

Wrapping It Up

Upcoming Research

- Analyze MRI, functional MRI and PET findings that might correlate with sleep study and symptom findings in TBI and PTSD patients

*Note: Magnetic resonance imaging (MRI)
Positron emission tomography (PET)*

Thank you!

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First Polling Question

Are you a health care provider?

Select "YES"

or

Select "NO"



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Prazosin for Trauma Nightmares, Sleep Disruption and Global Clinical Status for Returning Veterans

Murray A. Raskind, M.D.

Director, Department of Veterans Affairs Northwest Network
Mental Illness Research, Education and Clinical Center

Professor and Vice-Chair, Department of Psychiatry and Behavioral Sciences,
University of Washington School of Medicine



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Prazosin

- A generic lipid-soluble alpha-1 adrenoreceptor (AR) antagonist introduced in 1973 as “minipress” for treatment of hypertension
- Short duration of action (6-10 hours)
- Costs pennies per day

Questions

- Is prazosin effective for PTSD nightmares and sleep disruption?
- What are the effects of prazosin on PTSD sleep physiology?
- Does prazosin increase restorative sleep, reduce headache and improve cognitive test performance in blast-concussion mTBI in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans?

Neurobiologic Model of PTSD

- Brain adrenaline rush that saves lives in combat becomes persistent and maladaptive.
- Long-lasting upregulation of brain postsynaptic adrenoreceptor (AR) response to norepinephrine at the α_1 AR (in prefrontal cortex, amygdala) contributes to re-experiencing and hyperarousal symptoms.

CNS Effects of Alpha-1 Adrenoreceptor Stimulation Potentially Contribute to PTSD Symptoms

- Increase anxiogenic corticotrophin releasing factor (CRF) release
- Favor fight/flight cognition at prefrontal cortex¹
- Disrupts REM sleep, increases light sleep

Note: Central Nervous System (CNS)

Reference: ¹Arnsten A.F., et al., Biol Psychiatry 45:26-31, 1999

The Story Begins in Vietnam and the Department of Veterans Affairs Puget Sound African American Veterans Group

Don



Photo courtesy of Dr. Murray Raskind

Scott



Photo courtesy of Dr. Murray Raskind

Khe Sanh



Photo courtesy of Dr. Murray Raskind

Prazosin Treatment of PTSD Grew from Clinical Observations

- The first veteran treated for severe treatment-resistant, Vietnam-combat PTSD nightmares (1996) was given the beta-blocker propranolol (*Case report suggesting benefit -- Kolb, 1984*).
- After two weeks the veteran said, “Doc, we are going the wrong direction. My nightmares are even worse.”
- Intensifying dreams is an established adverse effect of beta-adrenergic blockade.

What To Do Next?

- Brain alpha-1 adrenergic effects are often opposed to brain beta-adrenergic effects.
- Would blocking brain alpha-1 adrenergic receptors with prazosin suppress nightmares?

Prazosin Appeared Helpful

- Prazosin was begun at 1 mg q.h.s. to avoid first-dose effect of orthostatic hypotension.
- After two weeks of gradual prazosin dose increase to 6 mg q.h.s., nightmares **disappeared!**
- This veteran continues to be nightmare-free (and alcohol-free) for past 12 years (no tolerance to prazosin effect in PTSD).
- Similar long-term benefit in many other veterans

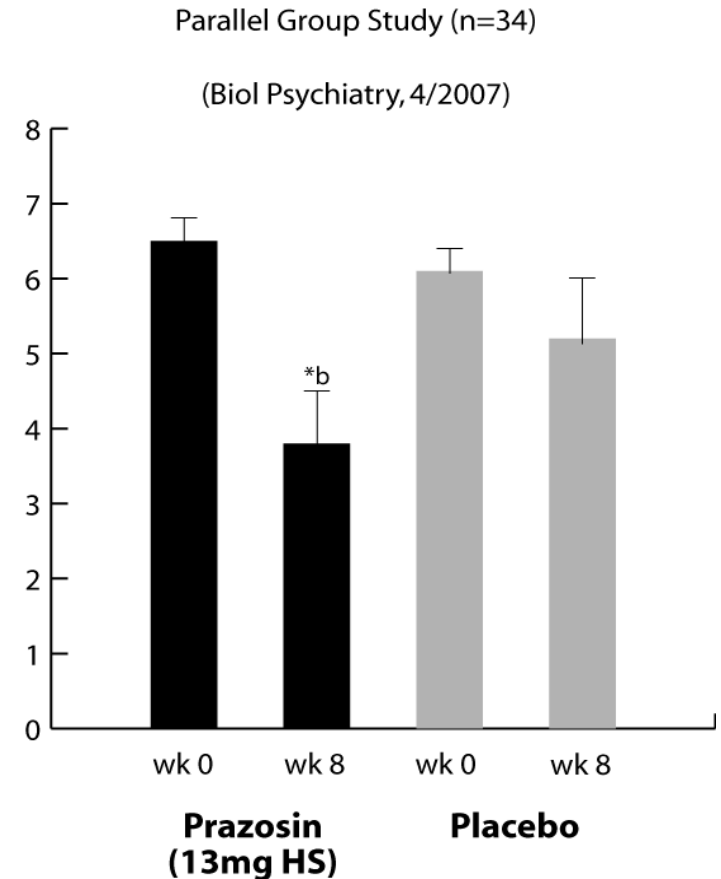
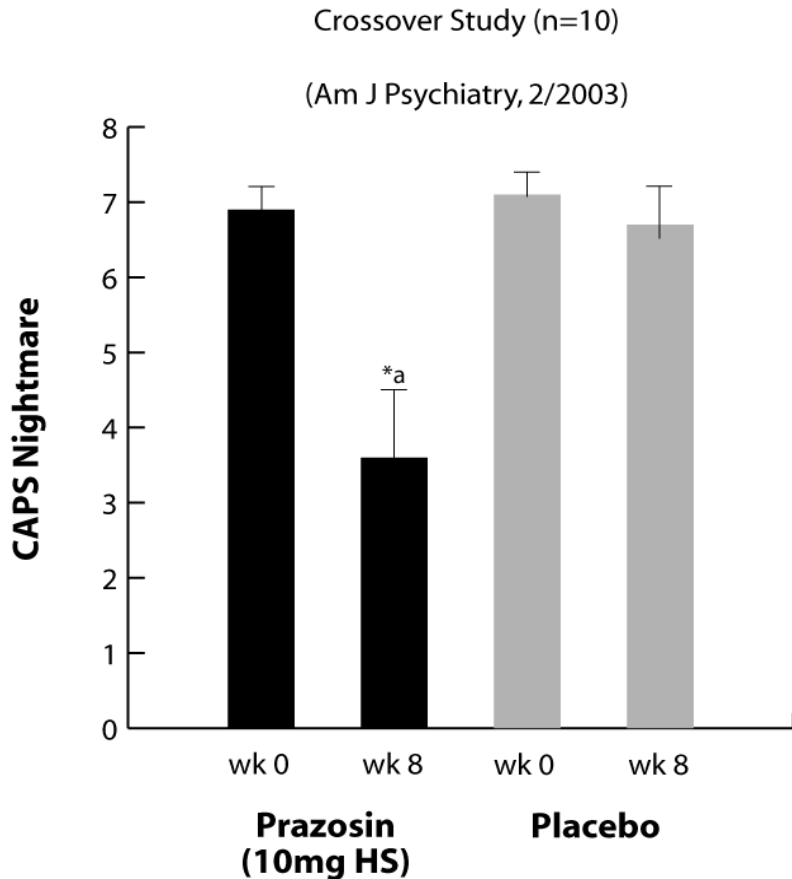
Note: q.h.s. = quaque hora somni, or every night at bedtime

First Efficacy Demonstration: Prazosin/Placebo Crossover Study

- Ten Vietnam-combat veterans (age = 53 ± 3 years) randomized to:
 - Placebo followed by prazosin (n=5)
 - Prazosin followed by placebo (n=5)
- Titration schedule:
 - 1 mg q.h.s. x 3 nights, 2 mg q.h.s. x 4 nights, 4 mg q.h.s. x 7 nights, 6 mg q.h.s. x 7 nights, 10 mg q.h.s. for 6 weeks

Note: q.h.s. = *quaque hora somni*, or every night at bedtime.

Two Prazosin RCTs in Vietnam Veterans with PTSD: CAPS Recurrent Distressing Dreams (Nightmares)

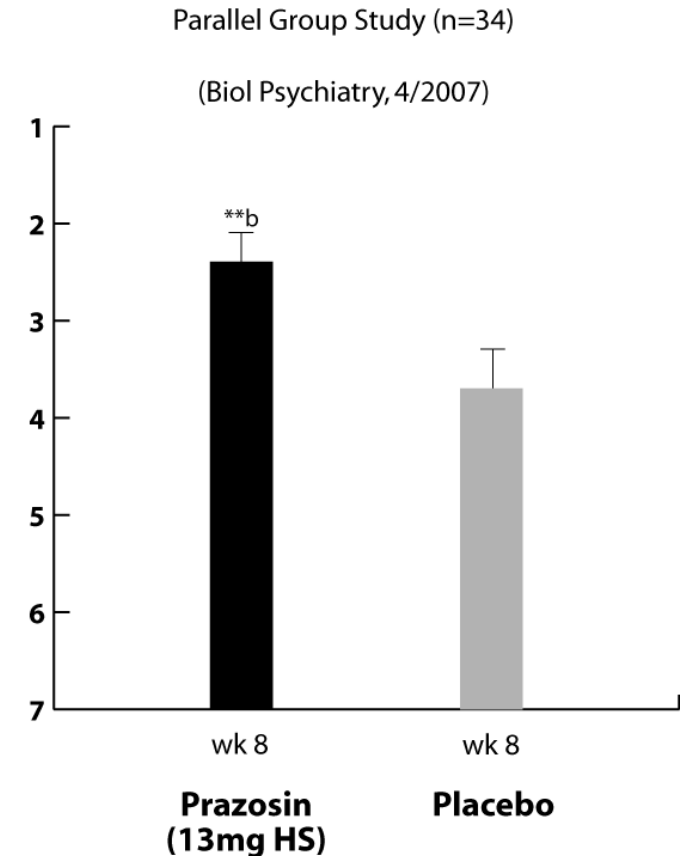
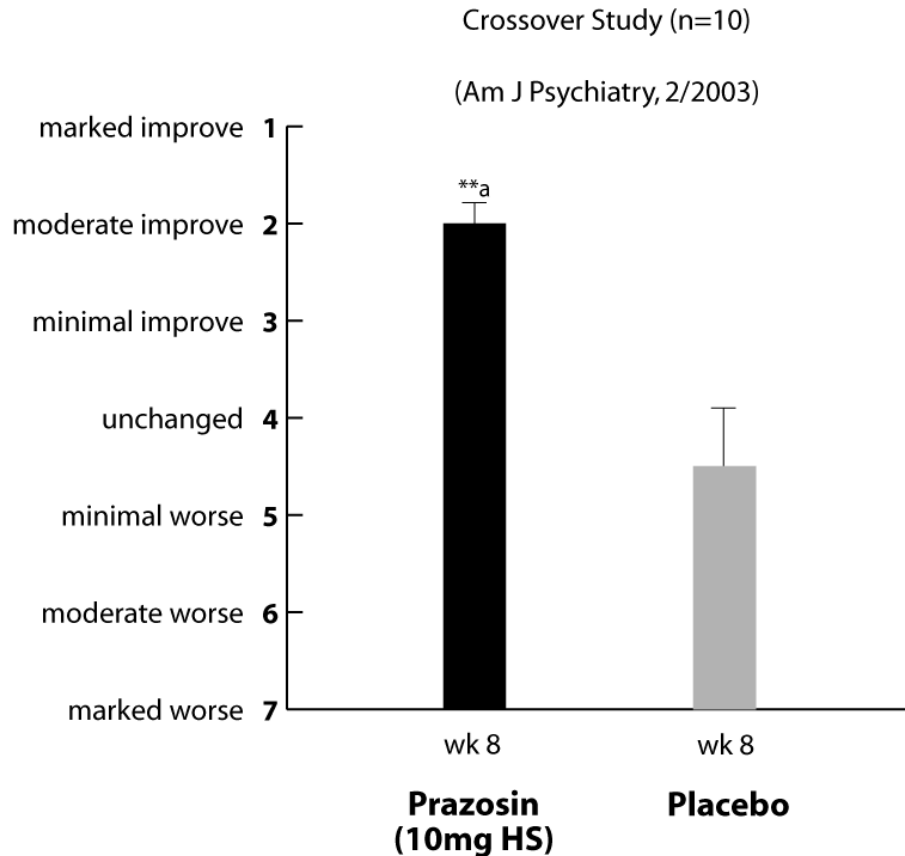


*a $p < 0.001$, effect size = 1.9

*b $p = 0.02$, effect size = 0.9

Note: Clinician Administered PTSD Scale (CAPS)
Randomized Clinical Trials (RCT)

Two Prazosin RCTs in Vietnam Veterans with PTSD: Clinical Global Impression of Change (CGIC)



¹ Change in sense of well being and ability to function

**a p<0.001, effect size = 1.4

**b p=0.002, effect size = 1.1

Note: Randomized Clinical Trials (RCT)

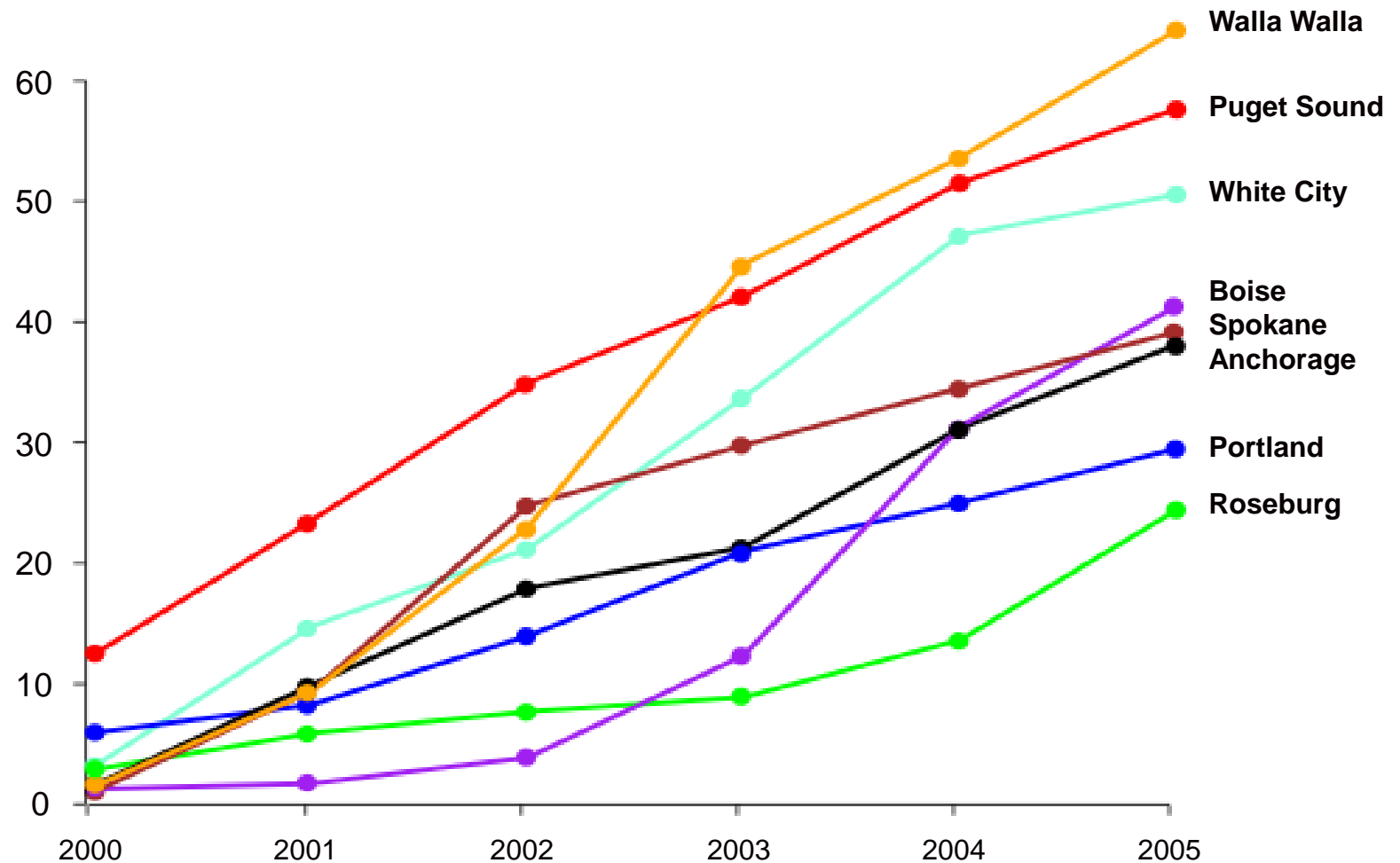
Individual PTSD Symptoms Responsive to Prazosin

CAPS Item	<i>p</i> value
▪ Recurrent distressing dreams	< 0.001
▪ Difficulty falling/staying asleep	< 0.01
▪ Physiological reactivity to trauma reminders	< 0.01
▪ Irritability or anger outbursts	< 0.05
▪ Intrusive trauma recollections	< 0.05
▪ Diminished interest/participation in activities	< 0.05
▪ Restricted affect...numbing	< 0.05
▪ Hypervigilance	< 0.1

Inferential Effectiveness

- Steadily increasing use of prazosin across the Northwest (and more gradually across the United States) supports effectiveness for PTSD.
- There have been intermittent prazosin shortages in 2006 and 2007.

Penetrance of Prazosin Among Veterans with PTSD Across Northwest VISN 20



Note: VISN 20 -- Veterans Integrated Service Network.

Geographic Variability in Diffusion of Prazosin for PTSD Nationally in Dept. of Veterans Affairs

What was the percentage of veterans with PTSD who received a prazosin prescription in 2006 as a function of distance from Dept. of Veterans Affairs Puget Sound?

- at Puget Sound 33 percent
- ≤ 499 miles 20 percent
- 500-999 miles 9 percent
- 1,000-2,499 miles 5 percent
- $\geq 2,500$ miles 3 percent

Sleep Physiology of Trauma

Nightmares and PTSD

- Trauma nightmares arise from **disrupted** REM sleep and light sleep (stages one and two).
- In animals, alpha-1 stimulation with methoxamine disrupts REM sleep and lengthens light sleep. These effects are reversed by prazosin.

Prazosin and Sleep Physiology: A Placebo-Controlled Crossover Study

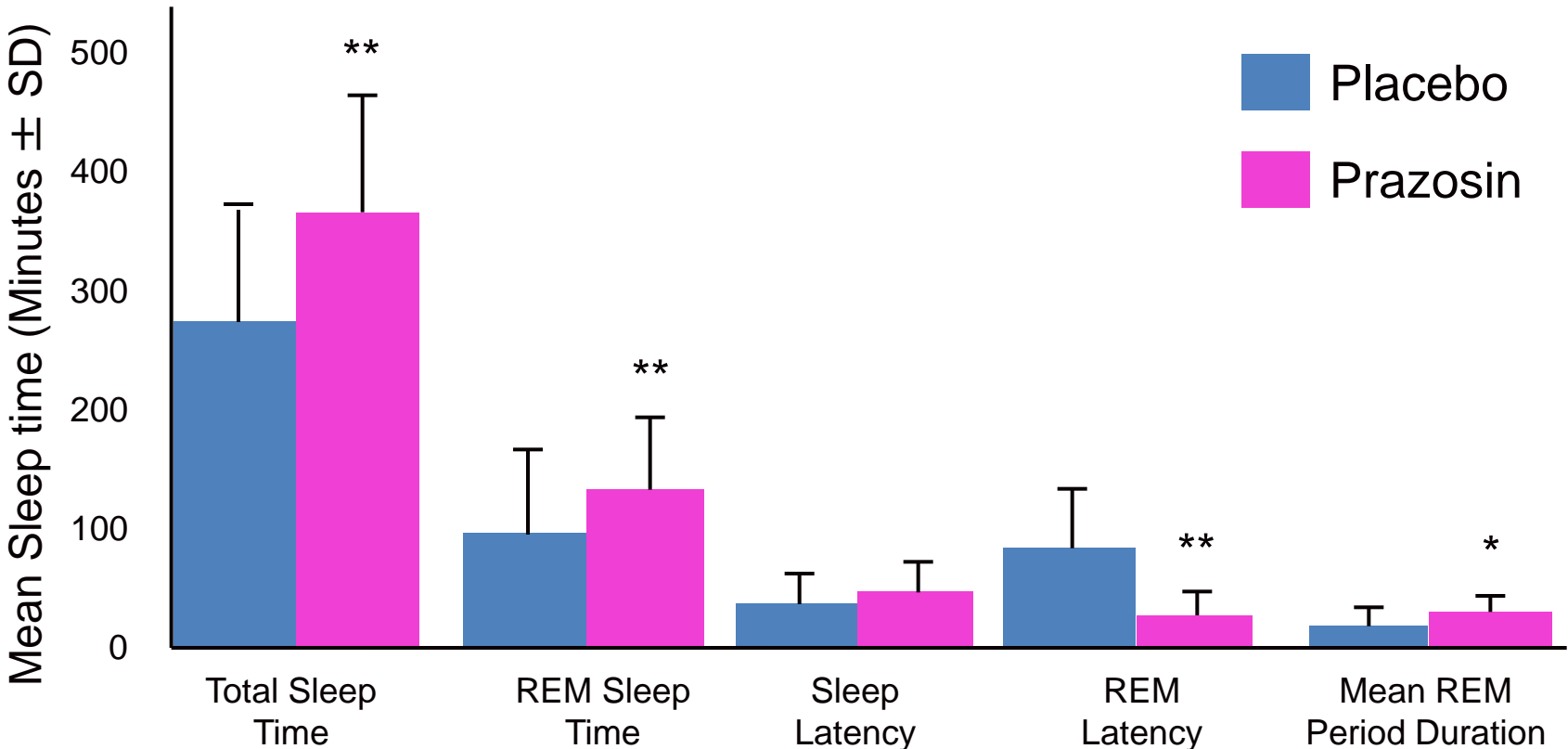
We evaluated the effects of bedtime prazosin versus placebo on sleep physiology and PTSD symptoms in 13 civilian trauma PTSD subjects with persistent trauma nightmares and sleep disturbance.

Prazosin and Sleep Physiology: A Placebo-Controlled Crossover Study

- REMview[®] device recorded sleep versus wake and REM versus non-REM.
- 10 of 13 participants provided a full three nights of REMview[®] data in both maintenance prazosin condition (3.1 ± 1.3 mg h.s.) and placebo condition.

Note: h.s. = hora somni, or before sleep.

Effects of Prazosin Versus Placebo on Sleep Measures in PTSD Subjects with Nocturnal Symptoms



*Significant difference between prazosin and placebo group by repeated measures ANOVA
*p < 0.05, **p < 0.01

Clinical Outcome Measures: Prazosin Superior to Placebo in Civilian Trauma PTSD

Outcome Measure	P value ^a	Effect Size (Cohen's d)
CAPS “Recurrent Distressing Dreams” (item #2)	0.027	0.96
Non-nightmare distressed awakenings	0.048	1.2
CGIC scores	0.002	1.5
PTSD Dream Rating Scale	0.006	1.4
PCL-C	0.025	0.79

Note: Clinician Administered PTSD Scale (CAPS)
 Clinical Global Impression Of Change (CGIC)
 PTSD Checklist Civilian Version (PCL-C)

Reference: ^aAnalysis of variance, significance of group by time interaction.

Ongoing Prazosin Randomized Clinical Trials

- A placebo-controlled augmentation trial for combat trauma PTSD. A Defense Department funded RCT in OEF/OIF active-duty soldiers (54 completed).
- CSP 563. Prazosin and Combat Trauma PTSD (PACT). VA funded. For combat veterans of any war at 13 VA sites (211 randomized, target 326 randomized).

*Note: Randomized Clinical Trials (RCT)
Cooperative Studies Program (CSP)*

Active-Duty OEF/OIF

Prazosin Randomized Clinical Trials

- Parallel group RCT (1:1) at Joint Base Lewis McChord, Wash.
- Active-duty OEF/OIF soldiers with combat operations PTSD (CAPS > 50) and distressing trauma nightmares (at least two nights per week)
- Maintenance psychotropic medications and psychotherapy OK.

*Note: Randomized Clinical Trials (RCT)
Clinician Administered PTSD Scale (CAPS)*

Design and Methodology

- Six-week dose titration to maximum 20 mg h.s. and 5 mg midmorning
- Study duration 15 weeks
- Primary outcome measures – CAPS “distressing dreams,” PSQI and CGIC
- Secondary outcome measures – total CAPS, PHQ-9, QOLI and Penn Alcohol Craving Scale

*Note: h.s. = hora somni, or before sleep, at bedtime
Clinician Administered PTSD Scale (CAPS)
Pittsburgh Sleep Quality Index (PSQI)
Clinical Global Impression of Change (CGIC)
Patient Health Questionnaire-9 (PHQ-9)
Quality of Life Inventory (QOLI)*

Prazosin for PTSD in OEF/OIF Soldiers, Baseline to Week 15, Midstudy Analysis (n=54)

	Prazosin		Placebo	Significance (2 tailed)
CAPS Total	-28	vs.	-12	$p < 0.05$
CAPS Nightmare	-3.1	vs.	-0.9	$p < 0.01$
CGIC, moderate and marked improvement (sense of well being and ability to function)	69%	vs.	18%	$p < 0.001$
PSQI	-6	vs.	-2	$p = 0.02$

Note: Clinician Administered PTSD Scale (CAPS)
Clinical Global Impression Of Change (CGIC)
Pittsburgh Sleep Quality Index (PSQI)

Prazosin May Enhance Success of Prolonged Exposure and Cognitive Processing Therapy in Combat-Trauma PTSD

Email Received September 2008

Dear Dr. Raskind,

You probably do not know me, but I was so impressed with a presentation that you gave about the utility of prazosin for nightmares with PTSD that I started using it for vets with mTBI/PTSD complex with great success. I have also been lobbying for more extensive use in VA.... I am writing to let you know that prazosin will be included in the VA/DoD treatment guidelines for mTBI

*Rob Ruff
Neurology Director for VA*

An Open Label Prazosin and Sleep Hygiene Trial for OEF/OIF Blast mTBI

- Robert C. Ruff, M.D., Director of VA Neurology
- Subjects: 80 OEF/OIF returnees with blast mTBI plus neuropsych and/or neurologic deficits (particularly olfactory deficits).
 - 74/80 had headaches and met criteria for PTSD
- Methods: All treated with prazosin to 7 mg q.h.s., plus sleep hygiene for nine weeks.
- Results: Significant improvement in headaches, sleep disturbance, marital discord and cognitive function by MoCA cognitive screen instrument.

Note: q.h.s. = quaque hora somni, or every night at bedtime

Montreal Cognitive Assessment (MoCA)

Reference: Ruff RL, Ruff SS, Wang WF. Improving sleep: initial headache treatment in OIF/OEF veterans with blast-induced mild traumatic brain injury. J Rehab Res Dev 46:1071-1084, 2009.

Prazosin for Somatic Symptoms Following mTBI in Operation Iraqi Freedom Veterans*

- 74 OIF veterans with blast trauma mTBI
- Mean blast experiences with loss of consciousness = 4.1
- Prazosin started at 1 mg q.h.s. and increased weekly by 1 mg to maintenance dose of 7 mg q.h.s.

Note: *Robert Ruff, M.D., Cleveland, VA;
q.h.s. = *quaque hora somni*, or every night at bedtime

Change in mTBI Symptoms Following Prazosin (mean \pm SD)

	Baseline	Week 9	<i>p</i> value
Headaches per month	12.4 \pm 8.1	4.8 \pm 2.9	< 0.001
Headache intensity	7.1 \pm 1.4	4.1 \pm 1.6	< 0.001
Daytime sleepiness (Epworth)	16.1 \pm 2.4	7.3 \pm 2.9	< 0.001
Percentage of subjects with restful sleep	7.0%	87.8%	< 0.001
Montreal Cognitive Assessment (MoCA)	24.1 \pm 2.0	28.1 \pm 2.2	< 0.001

Prazosin is Not a Cure

- Nightmares usually return soon after prazosin is discontinued (one-two days).
- Prazosin must be taken **every night**.
- Although modest dose increases sometimes necessary over years of treatment, loss of efficacy rarely observed.
- Adding a 10 a.m. dose (1 mg-5 mg) is helpful for persistent daytime re-experiencing and hyperarousal symptoms.

Prazosin: Adverse Effects

- Generally, very well tolerated
- “First dose” hypotension avoided with low dose initiation – but some vets need titration to 20 mg or more.
- Orthostatic dizziness more common in young women and persons already on a beta-blocker or erectile dysfunction drug.
- Concurrent use with trazodone may increase priapism risk.
- Nasal congestion, peripheral edema, headache, palpitations

Prazosin: Helpful Side Effects

- Gentle blood pressure reduction
- Enhances urine flow in older men with prostate hypertrophy
- Can enhance erectile function

Sedative Hypnotics in PTSD

- Benzodiazepines and zolpidem are widely used in the Department of Veterans Affairs (VA) but no evidence of efficacy for core PTSD symptoms.
- Can help sleep initiation to augment prazosin sleep normalization

When Prazosin Does Not Work

- The dose is too low – the effective prazosin dose for trauma-related nightmares and sleep disruption is highly variable. Some service members/veterans need 20 mg (or even more) to normalize sleep.
- “Normal” bizarre anxiety dreams are confused with trauma nightmares that re-enact the event and include sympathetic arousal.
- No drug is 100 percent effective for any condition.

Thank you!

- Throughout the webinar, you are welcome to submit questions via the Adobe Connect or Defense Connect Online question box located on the screen.
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- Our presenters will respond to as many questions as time permits.

Second Polling Question

Are you attending this webinar
to obtain CEUs or CMEs?

Select “YES”

or

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DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Co-occurring Conditions Toolkit: Mild Traumatic Brain Injury and Psychological Health

Col. Christopher Robinson, MPH, Ph.D.

Deputy Director, Psychological Health

Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury

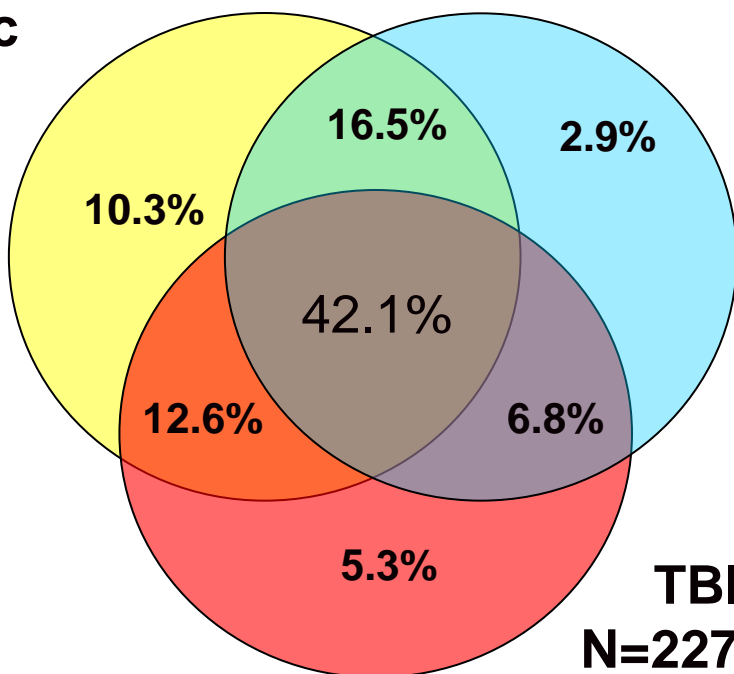


Required Disclaimer

I have no relevant financial relationships and do not intend to discuss the off-label / investigative (unapproved) use of commercial products/devices.

Co-morbidities Associated with mTBI

Chronic Pain
N=277
81.5%



PTSD
N=232
68.2%

- Sleep disorders
- Substance abuse
- Psychiatric illness
- Vestibular disorders
- Visual disorders
- Cognitive disorders

TBI
N=227
66.8%

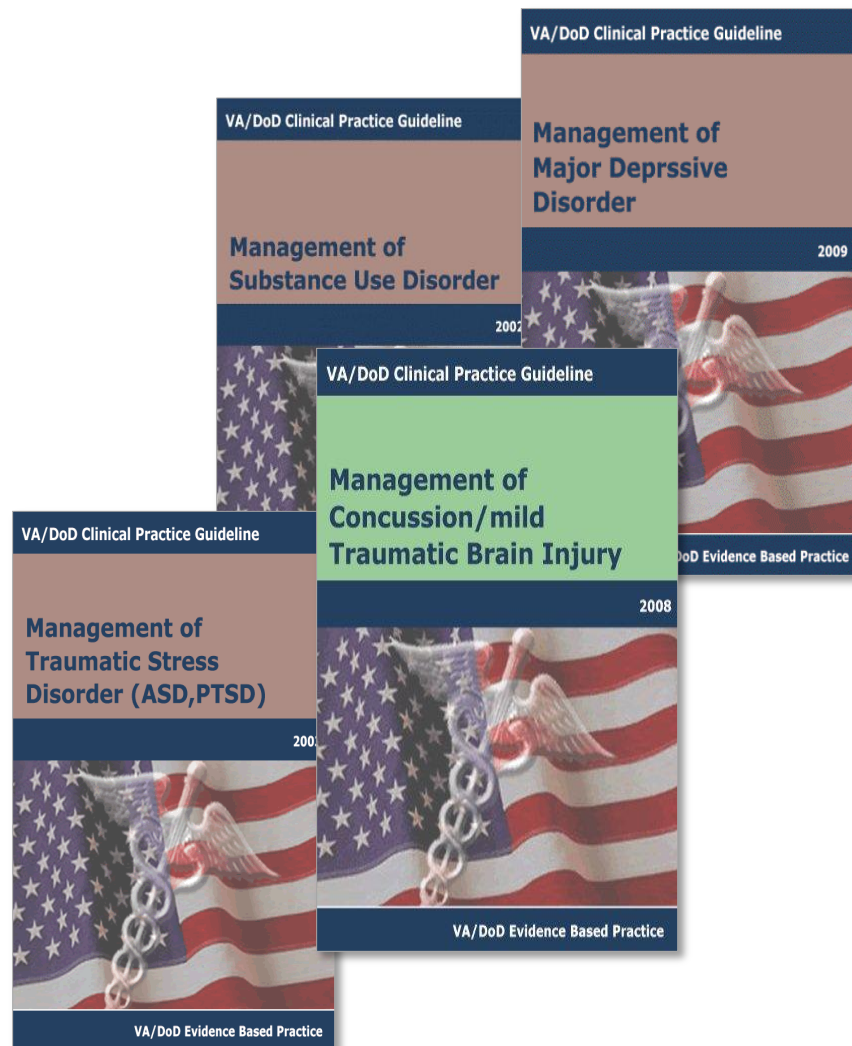
Note: mild traumatic brain injury (mTBI)

Reference: Lew, et al: "Prevalence of Chronic Pain, Posttraumatic Stress Disorder, and Persistent Postconcussive Symptoms in OIF/OEF Veterans: Polytrauma Clinical Triad", Dept. of Veterans Affairs, Journal of Rehabilitative Research and Development, Vol. 46, No. 6, 2009, pp. 697-702, Fig. 1

Department of Veterans Affairs Consensus Conference on mTBI, PTSD and Pain

Recommendations:

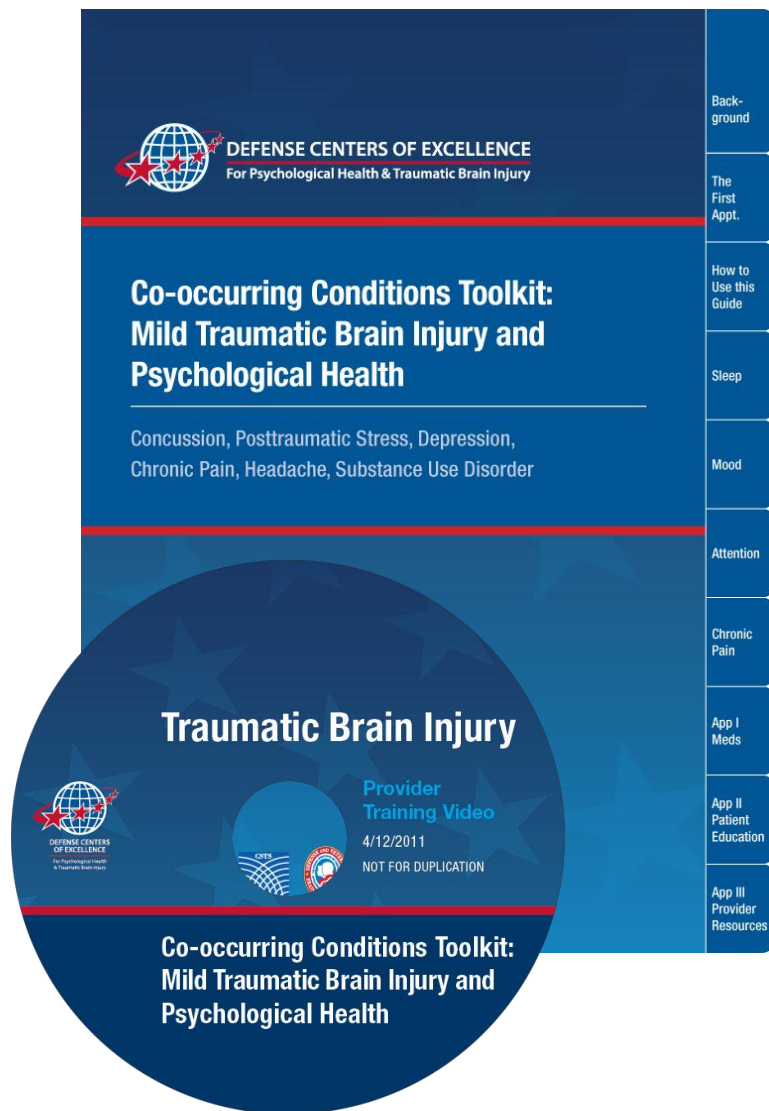
- The most effective treatment strategies include the current CPGs for the three co-morbidities.
- However, understanding the guidance in all three guidelines is a challenge to providers
- Need for the development of a brief clinical support tool that brings together the three guidelines in a way that clinicians can actually use.



Note: Clinical Practice Guideline (CPG)

Reference: Dept. of Veterans Affairs Consensus Conference on mTBI, PTSD and Pain, June 2009.

Co-occurring Conditions Toolkit



- **Assessing and managing patients with co-occurring TBI and psychological health concerns**
- **Clinical guidance from VA/DoD Clinical Practice Guidelines:**
 - Concussion
 - PTSD
 - Depression
 - Chronic Pain
 - Substance Use Disorder
 - Additional input from SME Panel
- **Tips for an effective first appointment**
- **Clinical assessment and treatment of symptoms (sleep, mood, attention and pain)**
- **Patient education tips**
- **Additional provider resources**
- **Training video/DVD now available to help providers learn how to use the toolkit**
- **To request copies of the toolkit or the DVD, please contact info@dvbic.org or call 800-870-9244**

Thank you!

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Question and Answer Session

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- Please take the Interactive Customer Evaluation found on the Monthly Webinar section of the DCoE website, or at: http://ice.disa.mil/index.cfm?fa=card&sp=122542&s=1019&dep=*DoD&sc=11
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Continuing Education Units (CEUs) and Continuing Medical Education (CME) Credits

- If you have pre-registered for this webinar and would like to obtain a continuing education certificate you will need to complete the online CEU/CME evaluation.
- Did you pre-register **PRIOR** to Monday, February 20, 2012?
 - **If Yes**, please visit <http://conf.swankhealth.com/dcoe>. At this site, you will be asked to complete the online CEU/CME evaluation and download your continuing education certificate.
- Did you pre-register **between Tuesday, February 21, 2012 and now?**
 - **If Yes**, your online CEU/CME evaluation and continuing education certificate **will NOT be available** until Monday, February 27.
- The Swank Health website will be open until March 19, 2012.
 - **If you did not pre-register**, you will **NOT** be able to receive CE credit for this event.

Save the Date

DCoE Monthly Webinar:

Identifying Concussion / mTBI in Service Members

March 22, 2012
1-2:30 p.m. (EST)

MARCH						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

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