

# VA TBI Model Systems/IMAP Newsletter

Issue 7 : Spring 2019

## SLEEP APNEA



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### Meet our Tampa VA TBI Model Systems Staff:

(L-R) Marc Silva, Jill Massengale, Risa Richardson, Brad Reckhemmer, Erin Brennan, Amanda Royer, Leah Drasher-Phillips, Padmaja Ramaiah, and Danielle O'Connor (not pictured)



### Want to be added to our newsletter mailing list?

Email [TampaTBIMS@VA.GOV](mailto:TampaTBIMS@VA.GOV) and include your name, address, and phone number and we will add you to our next mailing!

### Thank You to our Participants!

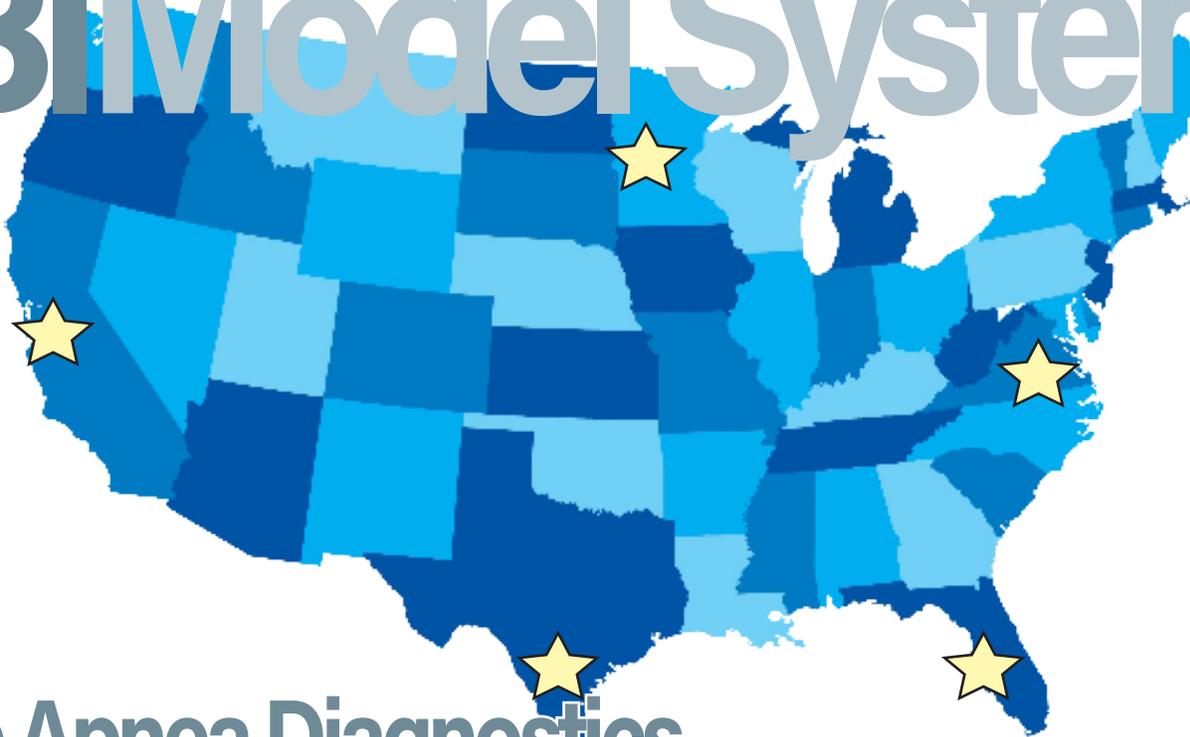
We dedicate this issue to our participants in the VA TBI Model System program of research and thank you for participating in this study. The information you share with us by phone and during in-person follow-ups has helped us better understand the long-term consequences of TBI. The knowledge we gather is shared with health care providers and policymakers to increase awareness of the need for ongoing TBI care. Our goal is to provide evidence that will improve the healthcare system of our Service Members and Veterans. This newsletter serves as a mechanism for sharing the information with our participants.

As of March 2019, over 1200 Service Members/Veterans and their families have volunteered to participate in this lifetime study. Our study participants include Vietnam Era veterans, Persian Gulf War veterans, and post-9/11 service members, many of whom are members of the elite special forces. Hearing your stories during our follow-up interviews is both inspiring and humbling. Thank you for your continued participation in this important research.

Thank you,

Risa Nakase-Richardson, Principal Investigator  
Marc A. Silva, Co-Principal Investigator

# TBIM Model Systems



## Sleep Apnea Diagnostics

### Background:

Scientists have established that TBI patients experiencing multiple medical problems (comorbidities) may affect outcome. Recent TBI Model Systems research has shown that sleep problems are common after traumatic brain injury and affect recovery including negatively influence participation in rehabilitation. Sleep apnea is a breathing problem that occurs during sleep. In

people without TBI, sleep apnea has been shown to cause further brain damage and problems with thinking, daily functioning, and overall health. Little is known about sleep apnea and TBI. Our recent work in the in Tampa has shown that sleep apnea is common. As such, earlier diagnosis and treatment is important for TBI survivors to maximize the recovery process.

formation for early identification of sleep apnea to remove its negative influence on the pace of recovery in the early stages after TBI.

**Sleep apnea is a treatable breathing-related medical condition that causes poor nighttime sleep, daytime drowsiness, depression, low mood, cognitive impairment, and brain damage.**

### The Goal:

The study is being led by the VA TBI Model Systems in Tampa at James A. Haley Veterans Hospital with five academic medical centers (University of Washington, Seattle, WA; Ohio State University, Columbus, OH; Craig Hospital, Denver, CO; Baylor Scott and White Rehabilitation and University of Texas Southwestern, Dallas, TX; Moss Rehabilitation, Philadelphia, PA) participating. The six centers concluded enrollment in February 2019 with 261 completing all sleep apnea tests. The study investigators were surprised that 75% of the participants in the study were diagnosed with sleep apnea primarily obstructive type (airway collapses during sleep). Data analyses are underway with results expected later this year.

Nakase-Richardson R, Schwartz D, Calero K, Magalang U, Bogner J, Whyte J, Watanabe T, Hoffman J, Fann J, Dahdah M, Bell K, Ketchum J, Gerber D, Monden K, Harrison-Felix C, Modarres M, Zeitzer J, Scholten J, Grammer G, Coulter J, Coulter J, Kieffer K, Martin K, Montemayor-Wong C, Picon L, Pieragowski A, Scott S, Massengale J. Comparative effectiveness of sleep apnea screening and diagnostic tools in TBI: An interagency collaboration funded by the Patient Centered Outcomes Research Institute (PCORI). Poster presented at the 2017 Military Health System Research Symposium; August 2017; Kissimmee, FL.



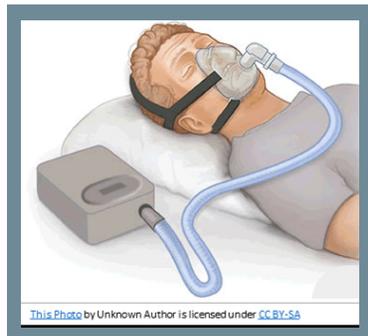
Dr. Risa Richardson, PCORI Sleep Funded Investigator as well as lead investigator for TBIMS/IMAP

### The Problem:

Better tools are needed to guide doctors in the right direction to screen and diagnose sleep apnea while patients are recovering in the hospital from their TBI. Partnering with survivors, caregivers, clinicians, and policymakers, we developed a study to compare sleep apnea screening and diagnostic tools in TBI rehabilitation settings for persons with moderate to severe TBI. This information will provide clinicians, providers, and patients with the best in-

# Happenings

## Treatment for Sleep Apnea is challenging



Obstructive sleep apnea (OSA) causes poor nighttime sleep, drowsiness during the day, worse mental health (including depression and worsening PTSD symptoms), cognitive impairment, and brain damage. As a result, persons with OSA are more likely to be

involved in workplace and motor vehicle accidents. As such, it may not be unexpected for OSA to be common among persons with brain injury. Fortunately, it can be treated and improve the consequences of OSA. Positive airway pressure (PAP) is the first treatment often prescribed due to the known benefits on health and well-being. PAP is a device that delivers pressurized air into one's nose and/or mouth to keep the airway open during sleep preventing obstruction. Little is known about how persons with TBI accept and use OSA treatments. Therefore, this study examined OSA treatment experiences in 65 Veterans with brain injury during inpatient rehabilitation. Most participants did not accept PAP therapy with only 34% using it as prescribed. Severity of OSA was the best predictor of treatment acceptance. Veterans with more severe disease (e.g., lower oxygen levels due to the obstructions) were more likely to accept

**Only 34% of patients used CPAP as recommended.**

treatment. In this small study, we discovered high rates of treatment refusal or poor acceptance. Identifying those at risk for poor treatment response is important to assist with exploring alternative treatments for OSA. Successful treatment is important for promoting restorative sleep and reducing the harmful health effects of untreated OSA.

Silva, M. A. (2018, October). Sleep apnea treatment adherence is poor among rehabilitation inpatients with acquired brain injury. In, R. Nakase-Richardson (Chair), Sleep Apnea and outcome after brain injury. Symposium conducted at the American Congress of Rehabilitation Medicine, Dallas, TX.

## Sleep Apnea risk in Mild TBI A CENC Study



Dr. Amanda Garcia  
presenting at MHSRS, 2018

Research from the Chronic Effects of Neurotrauma Consortium (CENC) research study is also exploring the link between sleep apnea and cognition. Unlike the VA TBI Model Systems, CENC is a longitudinal study of exclusively mild TBI, and comparing them to persons without TBI. The risk of sleep apnea was assessed in Veterans and Service Members who had been deployed to OEF/OIF. The study found that

those with a mild TBI history were at a higher risk of sleep apnea compared to those with no TBI history.

**Roughly 65% of participants are clinically considered "high risk" for sleep apnea.**

After taking into consideration things that predict cognitive functioning (age, education, gender, race) and TBI status, being at higher risk for OSA was associated with decline in cognitive functioning in areas of attention, executive functioning, speed of responding, and self-perception of cognition. This finding is important for many reasons. It highlights that some of the symptoms commonly attributed to mild TBI may be due to OSA. Since OSA is a modifiable health condition, treatments can be offered that improve cognition and underlying brain structures. Research is still needed to understand treatment acceptance in those with mild TBI relative to those with moderate to severe injury.

**Top Abstract Award at The 13th World Congress on Brain Injury**

Garcia A, Nakase-Richardson R, Vanderploeg R, Wilde L, Levin H, Dikmen S, Kenney K, Agyemang A, Troyanskaya M, Pastorek N. Obstructive Sleep Apnea Risk is Associated with Cognitive Impairment After Controlling for TBI: A Chronic Effects of Neurotrauma Consortium Study. Presented at the Military Health Services Research Symposium; August 2018; Orlando, FL.

# Quality of Sleep in Caregivers of TBI Survivors

Caring for an injured Service Member or Veteran can result in significant challenges on family member's own physical health, mental health, quality of life, employment, finances, social participation, and family and romantic relationships. As part of the 15-Year Longitudinal Study of TBI being conducted at Department of Defense military treatment facilities and community outreach initiatives, caregivers were recruited to share information about their caregiving roles and experiences. Thirty-one caregivers participated in the focus groups. Most were female, with an average age of 40, and were spouses (71%) of Service Member or Veteran with primarily mild TBI. A large proportion of the caregivers reported having sleep problems (45%). Among the caregivers of those with greater TBI severity (worse than mild), 73% indicated having sleep issues. Caregivers of those with lesser injury severity were less likely to report sleep problems (25-33%).

**"You're so emotionally drained and so tired that you can't sleep. It's like you're wounded."** -Caregiver of Moderate/Severe TBI Patient

## Caregivers described four types of sleep issues:

1. Cannot fall asleep due to being "wound up"
2. Waking up often during the night due to SMV being awake and/or worrying
3. Cannot sleep, and in some cases, using medication to assist
4. Waking up tired from poor quality of sleep in general

These results suggest that there is a high incidence of caregivers of Service Member or Veteran with TBI experiencing sleep problems. Other caregiver populations have reported high levels of fatigue and sleep disturbances. Understanding the nature of sleep disturbances among caregivers after TBI may help inform treatment targets to improve caregiver health and quality of life.

This study included a collaboration with researchers from the Defense and Veterans Brain Injury Center (DVBIC) and University of Michigan (UM), and used data from the larger 15-Year

Longitudinal TBI Study (a DVBIC study that was developed to respond to a Congressional mandate, Sec721 NDAA FY2007) and the DVBIC/UM TBI-CareQOL Measure Development Study (National Center for Advancing Translational Sciences UL1TR000433, DVBIC, and NIH R01NR013658).

Cotner, B. A, Carlozzi, N. E., Lange, R. French, L., O'Connor, D. R., Nakase-Richardson, R., Brickell, T. Quality of Sleep in Caregivers of Service Members and Veterans with Traumatic Brain Injury. Poster presented at the Military Health Services Research Symposium; August 2018; Orlando, FL.

## Sleep Resources

- **American Sleep Association**  
Includes patient information and resources as well as a Sleep Encyclopedia.  
[SleepAssociation.Org/Patients-General-Public](http://SleepAssociation.Org/Patients-General-Public)
- **Path to Better Sleep-Veteran Training**  
Here you can explore information on guiding yourself to better sleep through a course setting. There are worksheets, fact sheets, and exercises.  
[VeteranTraining.VA.GOV/Insomnia/Resources.asp](http://VeteranTraining.VA.GOV/Insomnia/Resources.asp)
- **Military and Sleep**  
Find many sleep and military related articles and Infographics  
[Health.Mil/Military-Health-Topics/Operation-Live-Well/Focus-Areas/Sleep](http://Health.Mil/Military-Health-Topics/Operation-Live-Well/Focus-Areas/Sleep)
- **Mild TBI Symptom Management Fact Sheet**  
Healthy Sleep, Find tips, Info on a Cognitive Behavioral Therapy for Insomnia phone application, and muscle relaxation techniques to help release muscle tension.  
[DVBIC.DCOE.Mil/Fact-Sheets](http://DVBIC.DCOE.Mil/Fact-Sheets)

- **American Sleep Apnea Association**  
Learn about treatments, join the community to hear about personal Sleep Apnea Stories and find out about assistance you can get to help with your sleep apnea.  
[SleepApnea.Org](http://SleepApnea.Org)
- **Past Versions**  
Find past versions of our TBIMS/IMAP Newsletter at the following Website  
[VA.TBINDSC.ORG/Default](http://VA.TBINDSC.ORG/Default)

## Recent TBI Model System Awards

- 2018 Brain Injury I-SIG of ACRM, David Strauss Award, American Congress of Rehabilitation Medicine
- 2018 Military and Veteran Networking Group, Best Poster Award, American Congress of Rehabilitation Medicine
- 2018 Second Place Founders Award, Southern Sleep Society Conference
- 2017 Brain Injury ISIG Early Career Poster Award, American Congress of Rehabilitation Medicine

## Contact Information

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\*Photos courtesy of James A. Haley Veterans' Hospital and TBI Model Systems Staff

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