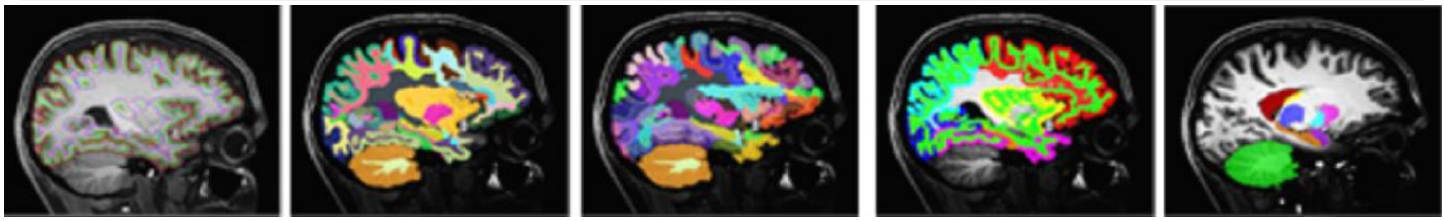
Research & Innovation for Brain Health



REHABILITATION AT THE VA PALO ALTO POLYTRAUMA SYSTEM OF CARE *Spring 2019*

Research Spotlight: VA Palo Alto Collaborates in Nation's Largest Longitudinal Study of TBI

The VA Palo Alto Polytrauma Rehabilitation Center (PRC) and the Polytrauma Transitional Rehabilitation Program (PTRP) are part of a large longitudinal multi-site research program that examines the recovery, course, and outcomes of Veterans and active duty military with traumatic brain injury (TBI). This research program, named the VA Traumatic Brain Injury Model System (TBIMS), is conducted in collaboration with the Defense and Veterans Brain Injury Center (DVBIC) Clinical Tracking Form study. The goal of this long-term research is to contribute to evidence-based rehabilitation interventions and practice guidelines that improve the lives of individuals with TBI.

"The goal...is to contribute to evidence-based rehabilitation interventions and practice guidelines that improve the lives of individuals with TBI."

The five VA flagship PRCs across the nation (Minneapolis, Minnesota; Palo Alto, California; Richmond, Virginia; San Antonio, Texas; and Tampa, Florida) participate in TBIMS. The TBIMS program began in 1987, as a civilian effort, championed by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). Santa Clara Valley Medical Center joined as one of the original founding members 30 years ago. The PRCs partnered with NIDILRR in 2008 to create a VA TBIMS that is modeled after the civilian program.

The VA PRC TBIMS research program was designed to capture longitudinal data and track outcomes of individuals with TBI treated at the PRCs to promote research and system of care innovations, and for comparative research across the civilian and Veteran populations. This research has led to the publication of several important scientific articles highlighting the impact of TBI in Veterans, in such areas as relationship stability, employment outcomes, and mental health.

Participating in TBI Model Systems Research

Patients staying at the PRC or PTRP for inpatient rehabilitation following a mild, moderate, or severe TBI are eligible to participate. The study is primarily an in-person interview during their stay and follow-up questionnaires over 1, 2, and every 5 years after injury. The information collected relates to the medical, psychological, and social impact of TBI. As of January 2019, there have been over 1,000 individuals enrolled in the VA TBIMS across the nation. At the VA Palo Alto, we have enrolled over 180 participants. Odette Harris, MD, MPH, is the PI and Joyce Chung, PhD, MPH, is the Site Director. Please contact Karen Cullen, MS, (Karen.Cullen@va.gov), for more information.

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TBI Research Forum 2019: TBI Treatment and Brain Stimulation

The 9th Annual TBI Research Forum was held at the Veterans Affairs Palo Alto Health Care System (VAPAHCS) on March 1, 2019. Established by Odette Harris, PhD, MPH, Deputy Chief of Staff, Rehabilitation, the forum is a yearly research conference hosted by the Defense and Veterans Brain Injury Center (DVBIC) and the Polytrauma System of Care (PSC).

The goal of the forum is to increase awareness of recent innovations in TBI research during Brain Injury Awareness Month. It achieves this goal by disseminating knowledge gained through TBI research to both researchers and clinicians alike, as well as by providing opportunities for networking. This year the topic of the forum was *TBI Treatment & Brain Stimulation.*

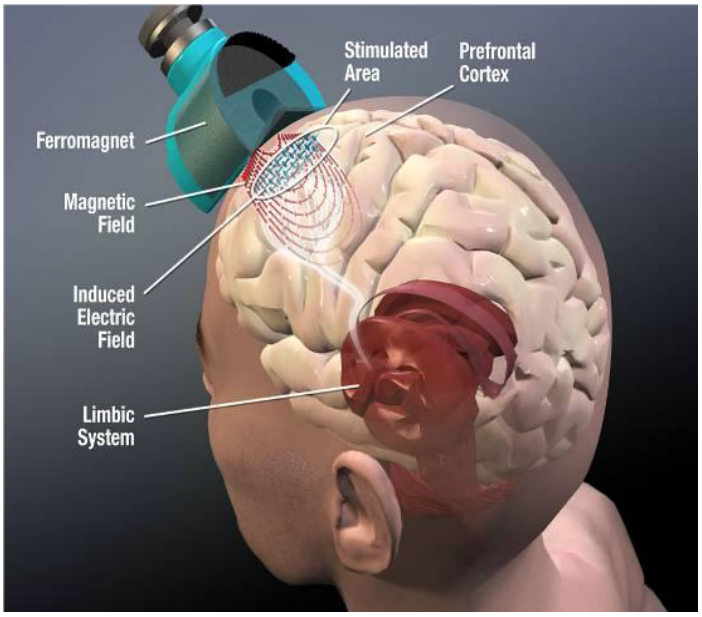
Presenters at the 2019 TBI Research Forum (left to right): John Coetzee, Casey Mimms, Maheen Adamson, Martin Monti, and Albert Leung.

Nolan Williams, MD, from the Stanford Brain Stimulation Lab presented recent advances in accelerated neuromodulation protocols for depression. Albert Leung, MD, Professor of Anesthesiology and Pain Medicine at UCSD School of Medicine, discussed reducing post-traumatic headache and restoring pain neuromodulatory function. Martin Monti, PhD, Associate Professor at UCLA Department of Psychology, outlined the use of low intensity focused ultrasound for recovering after severe brain injury. Maheen Adamson, PhD, Senior Scientific Research Director at DVBIC, explained current advances at DVBIC/VA Palo Alto in providing neuromodulation treatment to Veterans in both research and clinical settings. Casey Mims, BS, described her journey as a TBI survivor and a neuromodulation patient. Finally, John Coetzee, PhD, Associate Health Fellow, joined a Q & A panel at the close of the forum to discuss techniques of neuromodulation for the treatment of depression.

For more information about current and past forums, visit: www.paloalto.va.gov/services/polytrauma/tbiresearch.asp

Kudos for our Team

- VA Palo Alto Polytrauma Network Sites has been designated as a leading site for the Headache Center of Excellence (Team: Esmeralda Madrigal, LCSW, Molly Timmerman, DO, and Maheen Adamson, PhD.)
- Tiffanie Sim Wong, PhD, ABPP (RP) received the Division 18 VA section for Outstanding Clinician on August 9, 2018. This award is given to the "unsung heroes" that have been providing the highest standards of direct clinical service.
- VA Palo Alto Rehabilitation Nursing improved efforts for Patient Education within the Polytrauma Rehabilitation Center. Kristen Collins, BSN, RN, CBIS, CRRN, and Kellena Miller, RN, have made strides to improve patient documentation and education.



Repetitive Transcranial Magnetic Stimulation (rTMS): mechanism of action on the brain.

Defining: Neuromodulation

an evolving therapy involving electromagnetic stimuli such as a magnetic field (rTMS), an electric current, or a drug instilled directly in the subdural space.

Repetitive Transcranial Magnetic Stimulation (rTMS) delivers therapeutic, non-invasive brain stimulation and is FDA-approved for treatment for major depression, and Obsessive-Compulsive Disorder. During the treatment, participants are awake and alert as a hand-held electromagnetic coil is placed over the head. Participants typically notice only a loud clicking noise and tingling sensation on the scalp. This scalp sensation results from the sound wave emitted as electricity passes through the coil, and from the rhythmic tensing of superficial nerves and scalp muscles. This treatment is well suited for patients with brain injury as it can treat psychiatric and cognitive problems frequently experienced by Veterans. Substantial advances have been made in determining the efficacy of rTMS for various health problems, such as Post Traumatic Stress Disorder, depression, anxiety, pain and memory problems. For instance, Maheen Adamson, PhD, is currently involved in several clinical trials: as a PI or site-PI for improvement of cognitive function in mild and moderate TBI, and in the treatment of pain or depression. For further information on any of these clinical trials please contact Harlene.Grewal@va.gov.

From Research to Practice: TBI in Women

A substantial research focus on mild TBI (mTBI) in active military and veteran populations has detailed the psychological and functional outcomes of mTBI, a cohort that is almost entirely male (~95%). This may misrepresent female symptoms and outcomes. DVBIC and VA Palo Alto Polytrauma staff address this gender gap in a recent study by using 49 matched female/male pairs to determine the differences in symptom presentation and functional outcomes.

Our results revealed that gender has a marginal effect on demographic factors and common health issues and a moderate effect on mTBI post-concussive symptom presentation. Symptom reporting in Neurobehavioral Symptom Inventory (NSI) and education have minimal likelihood of predicting living alone or employment status. Other factors related to being female not identified here, however, may greatly increase the likelihood of poor living situation outcomes. A manuscript has been submitted for publication.

Volunteer for Research

Repetitive Transcranial Magnetic Stimulation
We are recruiting adults, age 50 to 75, for a promising non-invasive therapeutic treatment to improve memory in older adults with TBI. Participants will be paid up to $375. For more information on rTMS research, contact Harlene.Grewal@va.gov.

PI: Maheen Adamson, PhD, [Efficacy of Repetitive Transcranial Magnetic Stimulation for Improvement of Memory in Older Adults with TBI.]

Sleepless Warrior. This study evaluates two non-drug treatments for insomnia in Veterans with mild TBI, using short-term, structured therapies. Participants will meet with a therapist for an hour to discuss their experience with insomnia. The techniques taught will be tailored to the individual's personal experience with insomnia. Up to $475 may be paid for participation. For more information contact: Lien-Lien.Wu@va.gov or Rayma.Williams@va.gov, (650) 852-3426.

PI: Ansgar Furst, PhD, [Non-Pharmacological Treatments for Insomnia in Chronic Traumatic Brain Injury].

Practical Tips: Managing Headaches

Trouble sleeping: *Remove TV, radio, smartphone, computers, etc., from the bedroom. Try to relax before bed; only use the bedroom for sleep or sex. Go to bed only when tired or sleepy. If you don't fall asleep in 20 minutes, get up and do something relaxing until you feel sleepy. Keep your bedroom quiet, dark and cool. Get up the same time every day and avoid naps. Try to spend time outside in the sun every morning.*

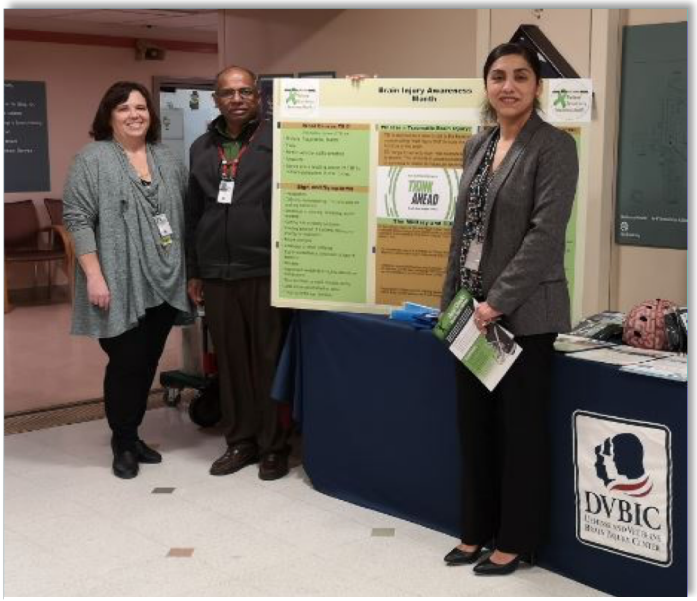
Dehydration Nutrition: *Avoid caffeine/stimulants 6 hours before bed. Exercise daily, but not close to bedtime. Avoid alcohol, tobacco, heavy meals and drinking too much of anything before bed. Avoid dehydration by drinking plenty of water. Avoid skipping meals and eat a balanced diet.*

Tension Tight Muscles Anxiety: *Progressive muscle relaxation - focusing on relaxing one muscle group at a time. Biofeedback - learning to control body functions. This helps you focus on making subtle changes, such as relaxing certain muscles, to relax or to reduce pain (biofeedback usually requires a referral, so you should discuss this with your health care provider).*

Brain Injury Awareness Month

During the month of March, DVBIC conducted activities throughout northern California, Oregon, Washington, and Nevada, to raise TBI awareness, including:

- hosting a nurse appreciation even with Polytrauma,
- training VA staff on clinical recommendations and resources available to patients,
- educating staff at college disabled student centers and veteran resource centers on TBI basics and assisting returning Service Members and Veterans,
- participating in a War Fighter Brain Health Symposium at Joint Base Luis McCord in Washington and hosting a resource table at the Travis Air Show.



(Left to right) Sheila Vivian, Binil Mathews, and Esmeralda Madrigal collaborate with DVBIC to promote brain injury awareness at the Polytrauma outpatient clinic in Livermore.

Acknowledgments and Further Information

Thank you to the patients, providers, and researchers for taking the time to read our newsletter. Our goal is to provide a sense of "what goes on behind the scenes" at the VA Palo Alto Polytrauma System of Care. We want to provide the best care, treatment, and opportunities involving research, education, and innovation. The Polytrauma researchers and DVBIC appreciate your dedication to improving healing and healthcare for all Veterans, Service Members, and caregivers of those with TBI.

We welcome your contributions to the newsletter! Please contact us if you would like to reserve a spot to highlight a special project, activity, person, or service: Joyce.Chung@va.gov or Karen.Cullen@va.gov.

Contributions to this edition: Joyce Chung PhD, MPH; Maheen Adamson, PhD; Karen Cullen, MS; Jessica Huckaby, MS; XiaoJian Kang, PhD.