DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Traumatic Brain Injury Educational Forum: Best Practices and Current Research

March 2, 2015, 1-3:00 p.m. (ET) Live Broadcast

4-6:00 p.m. (ET) Rebroadcast with Live Question and Answer Session

DVBIC
DHCC

DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Presenters:

Capt. Richard F. Stoltz
Director
Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury
Silver Spring, Maryland

Joel Scholten, M.D.
Acting National Director of Physical Medicine & Rehabilitation Program Office,
Department of Veterans Affairs, Washington
Clinical Coordinator, Polytrauma/Blast Related Injury Quality Enhancement
Research Initiative; Associate Chief of Staff for Rehabilitation Services
Washington D.C. Veterans Affairs Medical Center, Washington

Col. Sidney R. Hinds II, M.D.
National Director
Defense and Veterans Brain Injury Center
Silver Spring, Maryland

Katherine M. Helmick, M.S., CRNP, ANP-BC, CNRN
Deputy Director
Defense and Veterans Brain Injury Center
Silver Spring, Maryland

Saafan Z. Malik, M.D.
Director, Research Division
Defense and Veterans Brain Injury Center
Silver Spring, Maryland

Lt. Cmdr. Cathleen A. Davies, M.S., CCC-SLP/CBIS
Chief, Office of Clinical Education and Training, Education Division
Defense and Veterans Brain Injury Center
Silver Spring, Maryland

Command Master Chief (Retired) Dan Marshall
Virginia Beach, Virginia

Moderator:

Maj. Pamela A. DiPatrizio, AN, MSN, CEN, CPEN
Chief, Office of Education Outreach, Education Division
Defense and Veterans Brain Injury Center
Silver Spring, Maryland

DVBIC Defense and Veterans Brain Injury Center
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Webinar Details

- Live closed captioning is available through Federal Relay Conference Captioning (see the “Closed Captioning” box)
- Throughout the webinar, you are welcome to submit technical or content-related questions via the Q&A pod located on the screen. **Please do not submit technical or content-related questions via the chat pod**.
- Participants may chat with one another during the webinar using the chat pod. The chat function will remain open 10 minutes after the conclusion of the webinar.

Webinar Overview

According to the Defense and Veterans Brain Injury Center (DVBIC), 18,564 service members sustained a traumatic brain injury (TBI) in the first three quarters of 2014. The classification of mild TBI accounts for more than 80 percent of reported TBI to DVBIC. The vast majority of TBIs sustained are in a non-deployed setting in training exercises, motor vehicle accidents, and sports and leisure activities. These injuries directly affect the health and safety of individual service members and subsequently the level of unit readiness and troop retention.

This educational forum will include a review of best practices in the assessment and treatment of TBI, the Military Health System (MHS) TBI Pathway of Care, key research studies and findings that will contribute to the body of TBI knowledge, and TBI prevention. We invite multidisciplinary health care providers in military treatment facilities and clinics, complex polytrauma facilities and community-based VA facilities to participate in this discussion of evidence-based practice and current research.

At the conclusion of this event, participants will be able to:

- Discuss how the MHS TBI Pathway of Care will support the services in delivering optimal TBI care through integration of evidence-based clinical practices with consistent monitoring of patient outcomes across the MHS.
- Identify the role of DVBIC research in the continuum of TBI care and its alignment with Department of Defense strategic priorities.
- Describe clinical tools for the assessment and management of TBI.
- Relate the importance of TBI prevention and prevention educational initiatives and resources.

Continuing Education Details

- DCoE's awarding of continuing education (CE) credit is limited in scope to health care providers who actively provide psychological health and traumatic brain injury care to active-duty U.S. service members, reservists, National Guardsmen, military veterans and/or their families.

- The authority for training of contractors is at the discretion of the chief contracting official.
  - Currently, only those contractors with scope of work or with commensurate contract language are permitted in this training.

- All who registered **prior** to the deadline on **Monday, March 2, 2015, at 4 p.m.** (**ET**) and meet eligibility requirements stated above are eligible to receive CE credit or a certificate of attendance.

Continuing Education Details

- If you pre-registered for this webinar and want to obtain a CE certificate or a certificate of attendance, you must complete the online CE evaluation and post-test.

- After the webinar, visit http://continuingeducation.dcri.duke.edu to complete the online CE evaluation and post-test, and download your CE certificate/certificate of attendance.

- The Duke Medicine website online CE evaluation and post-test will be open through **Thursday, March 9, 2015,** until 11:59 p.m. (**ET**).

Continuing Education Details

- Credit Designation – The Duke University School of Medicine designates this live webinar for:
  - 1.5 AMA PRA Category 1 Credit(s)
- Additional Credit Designation includes:
  - 1.5 ANCC nursing contact hours
  - 0.15 IACET continuing education credit
  - 1.5 NBCC contact hours credit commensurate to the length of the program
  - 1.5 contact hours from the American Psychological Association (APA)
  - 1.5 NASW contact hours commensurate to the length of the program for those who attend 100% of the program

Continuing Education Details

- ACCME Accredited Provider Statement – The Duke University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

- ANCC Accredited Provider Statement – Duke University Health System Department of Clinical Education & Professional Development is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's (ANCC's) Commission on Accreditation. 1.50 ANCC nursing contact hours are provided for participation in this educational activity. In order to receive full contact-hour credit for this activity, you must attend the entire activity, participate in individual or group activities such as exercises or pre/post-tests, and complete the evaluation and verification of attendance forms at the conclusion of the activity.

- IACET Authorized Provider Statement – Duke University Health System Clinical Education & Professional Development is authorized by the International Association for Continuing Education and Training (IACET) to offer 0.15 continuing education credit to participants who meet all criteria for successful completion of authorized educational activities. Successful completion is defined as (but may not be limited to) 100% attendance, full participation and satisfactory completion of all related activities, and completion and return of evaluation at conclusion of the educational activity. Partial credit is not awarded.

  Duke University Health System Clinical Education & Professional Development has been approved as an Authorized Provider by the International Association for Continuing Education & Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In obtaining this approval, Duke University Health System Clinical Education & Professional Development has demonstrated that it complies with the ANSI/IACET 1-2007 Standard, which is widely recognized as the standard of best practice in continuing education internationally. As a result of Authorized Provider status, Duke University Health System Clinical Education & Professional Development is authorized to offer IACET CEU's for its programs that qualify under the ANSI/IACET 1-2007 Standard.

Continuing Education Details

- NBCC: Southern Regional Area Health Education Center (AHEC) is a National Board for Certified Counselors and Affiliates, Inc.(NBCC)-Approved Continuing Education Provider (ACEP™) and a cosponsor of this event/program. Southern Regional AHEC may award NBCC-approved clock hours for events or programs that meet NBCC requirements. The ACEP maintains responsibility for the content of this event. Contact hours credit commensurate to the length of the program will be awarded to participants who attend 100% of the program.
- Psychology: This activity complies with all of the Continuing Education Criteria identified through the American Psychological Association (APA) Continuing Education Requirements.
- NASW: National Association of Social Workers (NASW), North Carolina Chapter: Southern Regional AHEC will award contact hours commensurate to the length of the program to participants who attend 100% of the program.

DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Traumatic Brain Injury (TBI) in the Department of Defense

Capt. Richard F. Stoltz

Director, Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury

DVBIC
DHCC

Capt. Richard F. Stoltz

Capt. Richard F. Stoltz

- Director, Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury
- Previously served as commanding officer of Naval Hospital Guantanamo Bay and commander of the Joint Medical Group, Joint Task Force, Guantanamo Bay
- Served as director of behavioral health services and women's, children's, emergency room, behavioral health and primary care services at the National Naval Medical Center
- Personal decorations include the Legion of Merit, Meritorious Service Medal, Navy and Marine Corps Commendation Medal, and Marine Corps Achievement Medal
- Education:
  - Ph.D., Clinical Psychology, University of North Carolina

Disclosures

- The views and opinions expressed in this presentation are those of the presenter and do not represent official policy of the Department of Defense (DoD), the United States Army or DVBIC.

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- The presenter does not intend to discuss the off-label/investigative (unapproved) use of commercial products or devices.

TBI in the Military

> 80% Of **TBIs** are diagnosed in the non-deployed setting (e.g., car crashes, training, falls, sports)

313,816 Service members have sustained a **TBI** from 2000-2014 (Q3)

82% Of **TBIs** are mild in severity

Role of DCoE

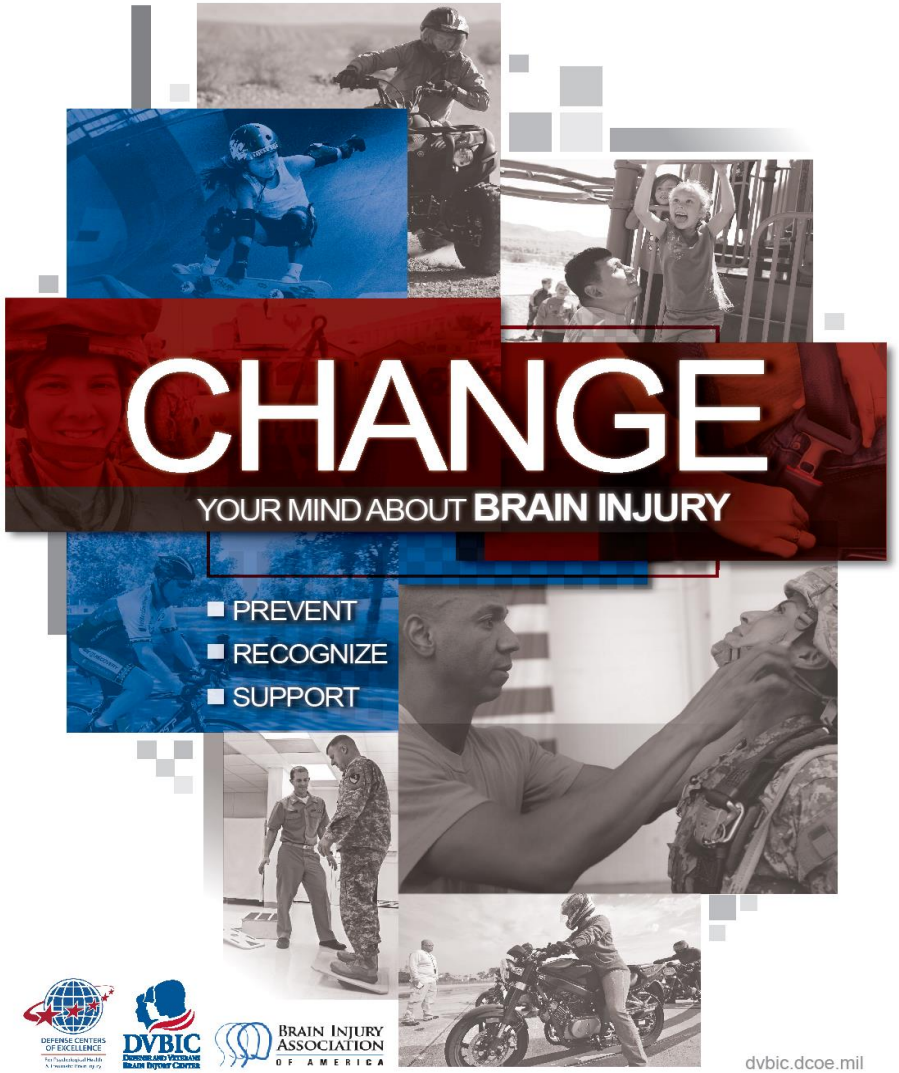
Mission: To improve the lives of our nation's service members, veterans and their families by advancing excellence in psychological health and traumatic brain injury prevention and care.

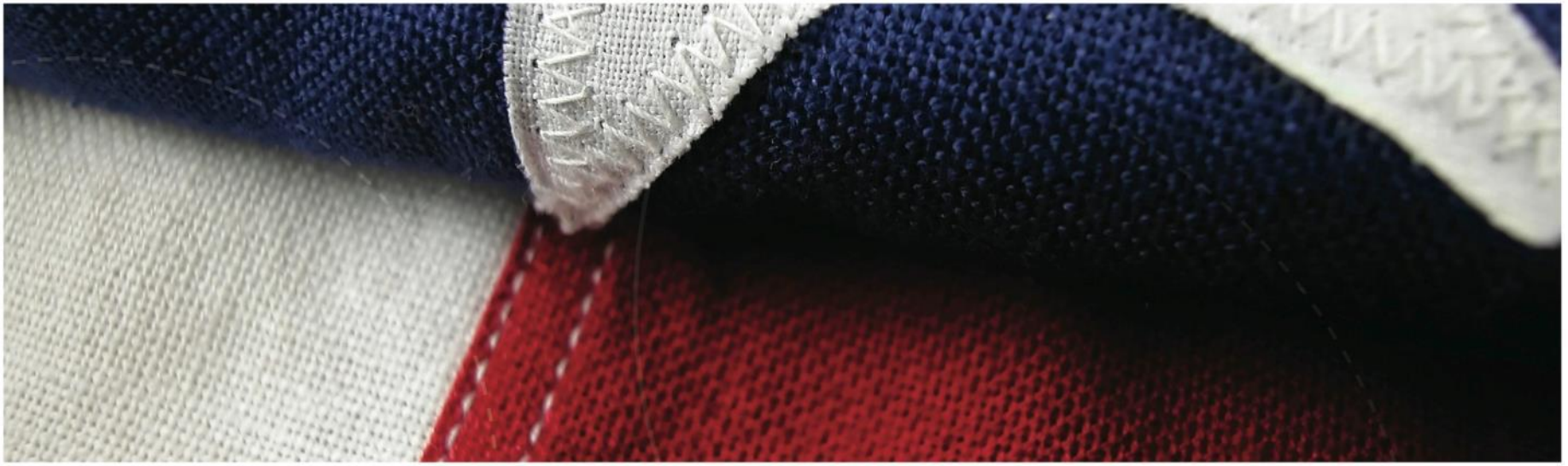
The Defense and Veterans Brain Injury Center (DVBIC) is the primary operational component of DCoE for TBI and provides state-of-the-science clinical care, research and education.

Brain Injury Awareness Month

- Raise awareness
- Promote prevention
- Provide education and support

“Change Your Mind about Brain Injury”





Department of Veteran Affairs TBI/Polytrauma System of Care

DVBIC Brain Injury Awareness Month Kickoff
March 2, 2015

Joel Scholten, M.D.
Acting National Program Director
VA Physical Medicine & Rehabilitation Services

VA HEALTH CARE | Defining EXCELLENCE in the 21st Century

Joel Scholten, M.D.

Joel Scholten, M.D.

- Acting national director, Physical Medicine & Rehabilitation Program Office, VA Central Office
- Associate chief of staff, Rehabilitation Services, Washington VA Medical Center
- Clinical coordinator, Polytrauma/Blast Related Injury Quality Enhancement Research Initiative
- Serves on several national VA committees including the Post Deployment Interdisciplinary Clinical Initiative – Technical Advisory Team, National Pain Committee, TBI Screening and Evaluation Committee, and Health Care Leadership Development Program Advisory Board
- Associate clinical professor of Rehabilitation Medicine, Georgetown University School of Medicine
- Education:
  - M.D., University of South Dakota School of Medicine

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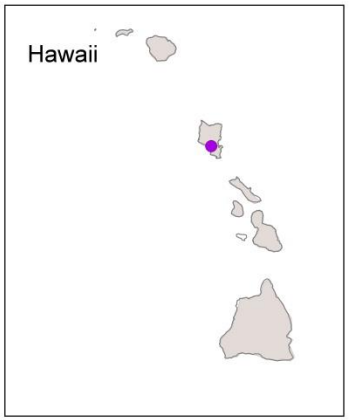
VA Polytrauma System of Care: Clinical

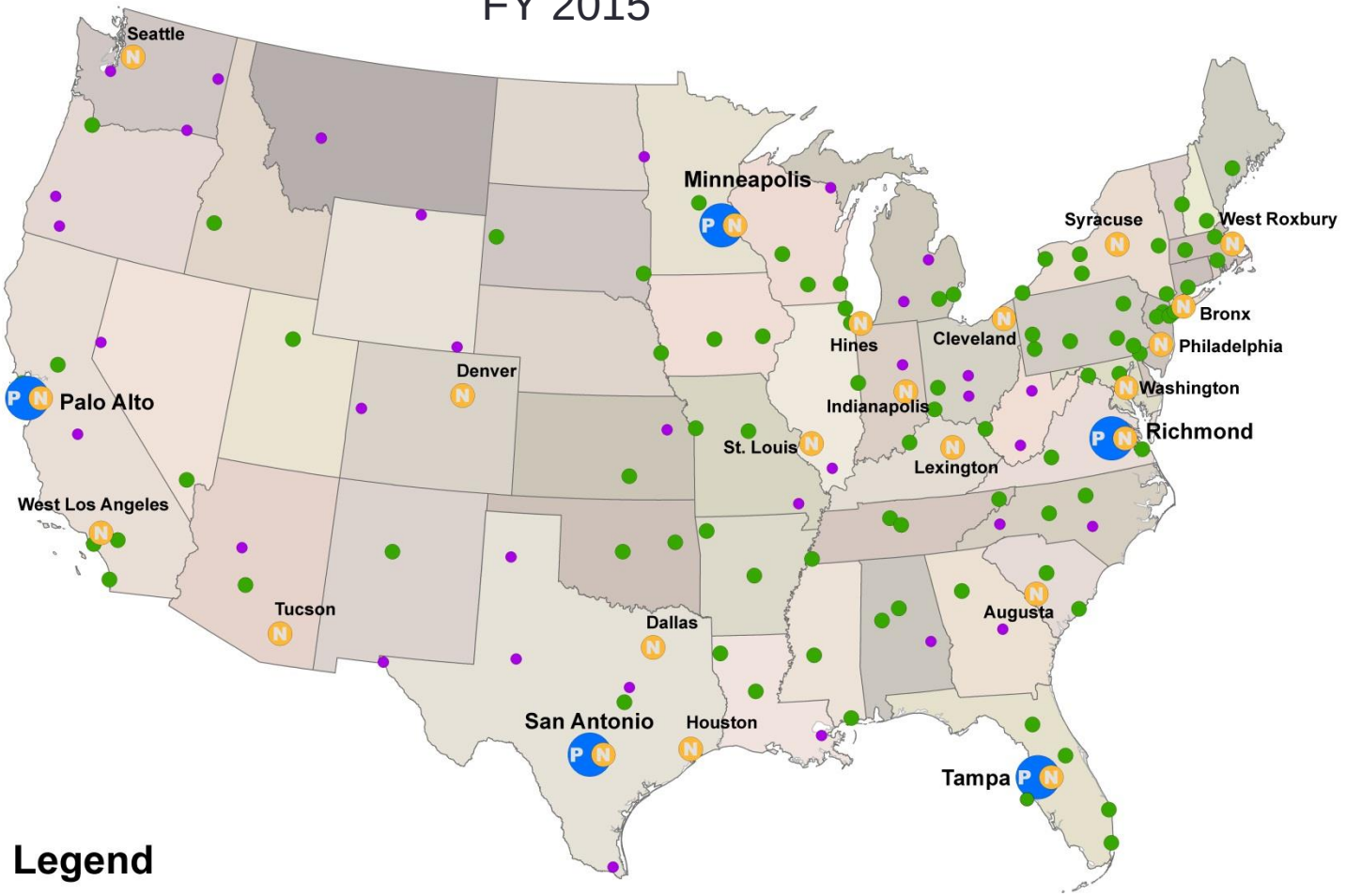
- 110 specialized rehabilitation sites across VA:
  - 5 Polytrauma Rehabilitation Centers
    - All inpatient, residential, outpatient and telehealth care
  - 23 Polytrauma Network Sites
    - Outpatient TBI and telehealth care, inpatient rehabilitation
  - 87 Polytrauma Support Clinic Teams
    - Outpatient TBI care
- 39 Polytrauma Points of Contact (2-3 per region)
  - Primary Care services
  - Polytrauma social worker to facilitate referrals
- Range of specialty programs across system

www.polytrauma.va.gov

VHA Polytrauma/TBI System of Care

FY 2015

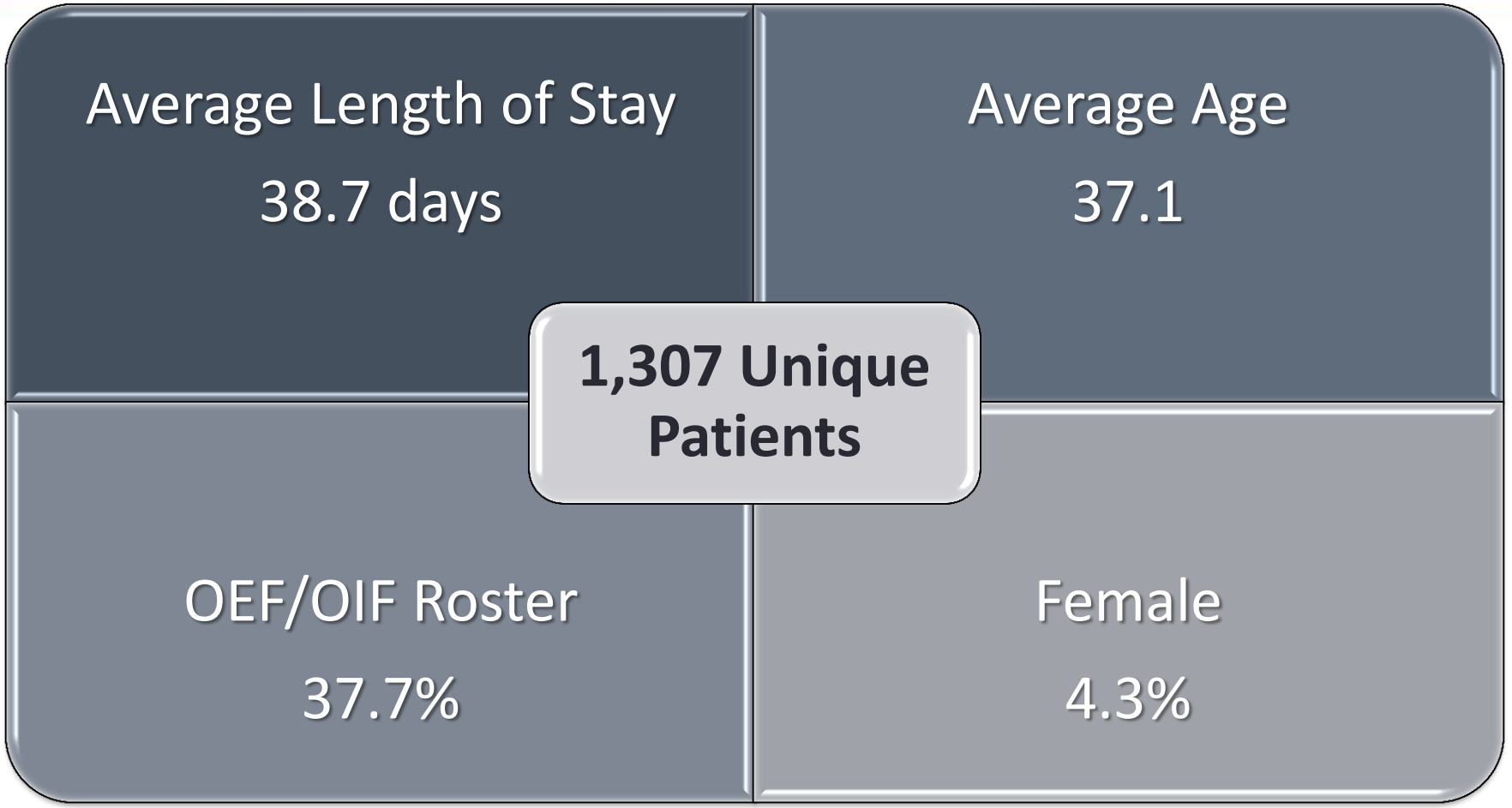




Legend

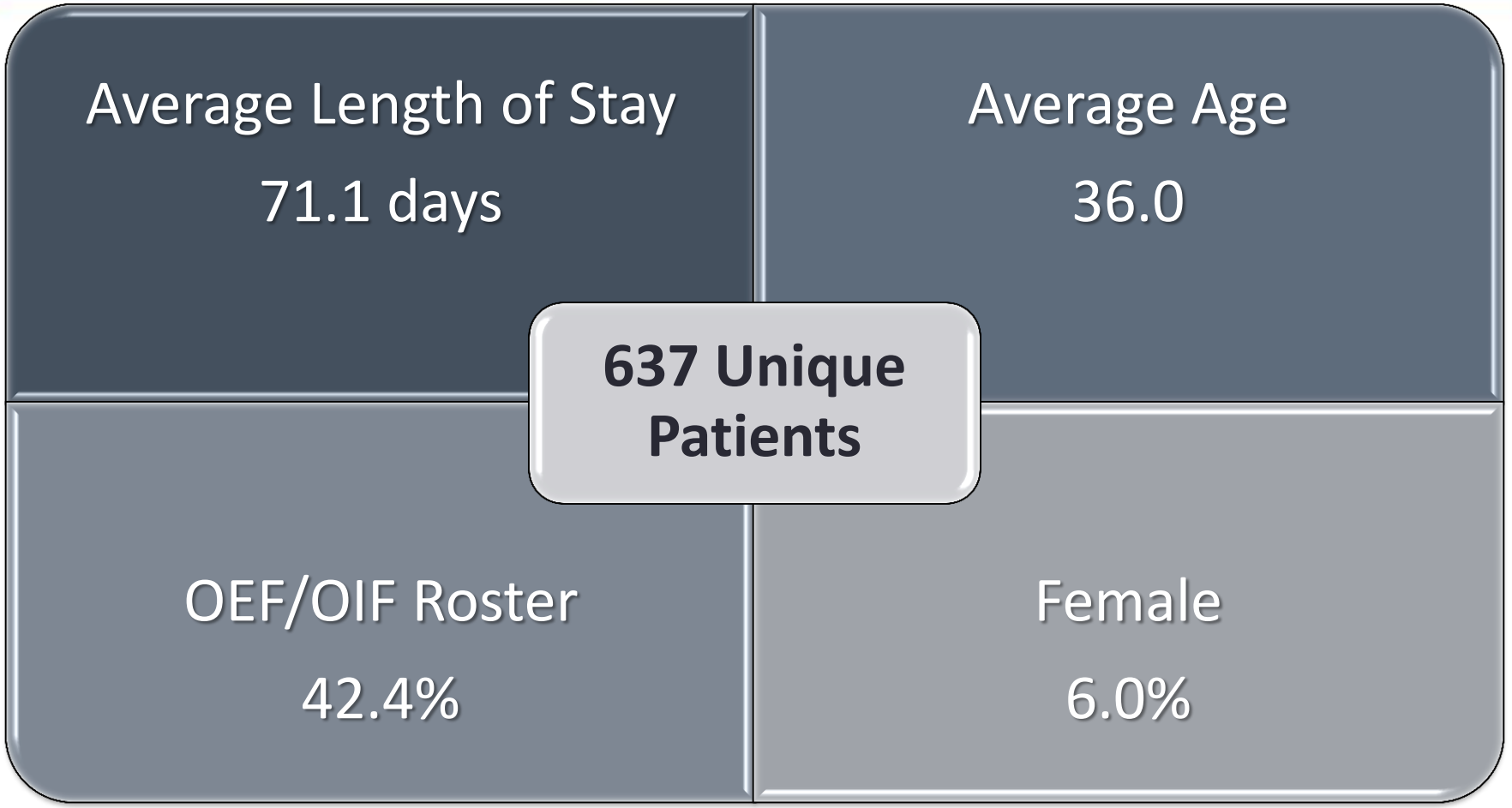
- Polytrauma Rehabilitation Center
- Polytrauma Network Site
- Polytrauma Support Clinic Team
- Polytrauma Point Of Contact

Polytrauma Rehabilitation Center (PRC) Experience FY10-14



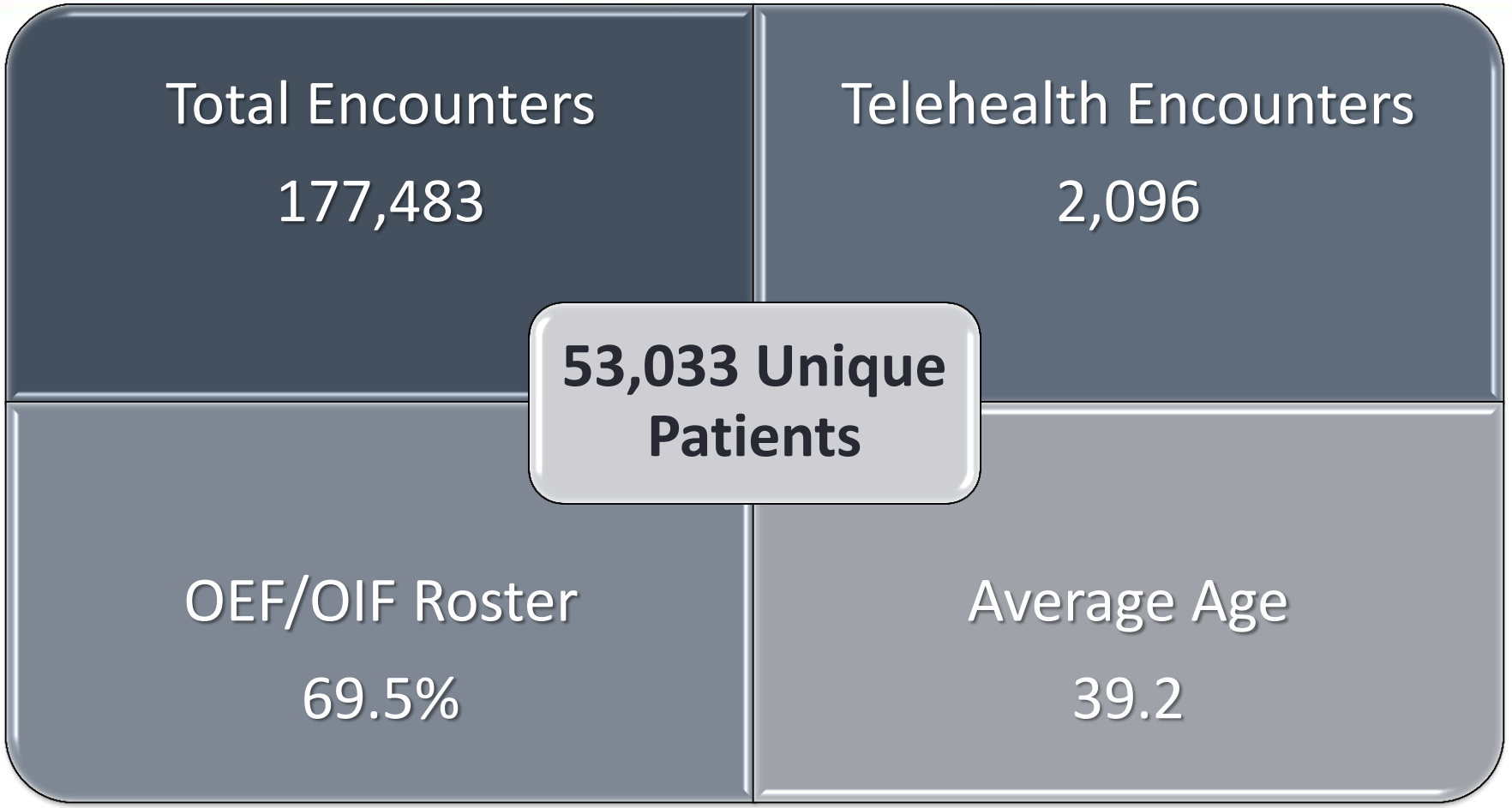
Sources: Treating Specialty Cube
OEF/OIF/OND Inpatient Utilization Cube
Data pulled 10/14/14

Polytrauma Transitional Rehabilitation Program Experience FY10-FY14



Source: Treatment Specialty Code Cube
Treatment Specialty Code 82 @ PRC Facilities
Data pulled 10/14/14

Polytrauma Individual Clinic (197)
FY14 Overview



Sources: NPCD Outpatient Encounter Cube
OEF/OIF/OND Outpatient Utilization Cube
Telehealth Workload Cube - Data pulled 10/14/14

VA Screening for Mild Traumatic Brain Injury for OEF/OIF/OND Veterans

From April 2007 to September 30, 2014:

- 883,883 have been screened for possible mild TBI
- 166,049 screened positive and consented to follow-up comprehensive evaluation
  - 124,751 completed comprehensive evaluation
  - 73,469 received confirmed diagnosis of mild TBI

Ensuring Quality

- Mayo-Portland Participation Index (M2PI) and Rehab Care Plan (IRCR)
  - Monitor outcomes for outpatients in Polytrauma clinics
- National contract with Uniform Data System for Medical Rehabilitation (UDSmr)
  - Functional Independence Measure (FIM) based outcome reporting for inpatient rehabilitation
- Collaborative project with Traumatic Brain Injury Model Systems (TBIMS)
  - Longitudinal outcomes database for PRC patients
- Satisfaction
  - uSPEQ through collaboration with the Commission on Accreditation of Rehabilitation Facilities (CARF)

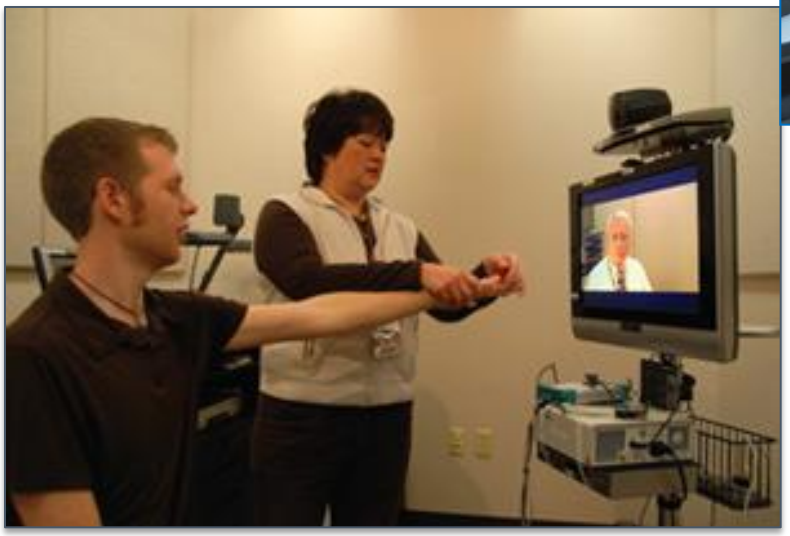
Polytrauma Case Management

- All patients receiving rehabilitation services within the Polytrauma System of Care are assigned a Polytrauma Case Manager (PCM)
- 234 PCMs with caseloads distributed as follows:
  - 1 PCM for every 6 PRC inpatients - provide 24/7 coverage (per Directive)
  - 1 PCM for every 10 inpatients at the PTRPs
  - PCM for patients at PNSs and PSCTs, based on case mix and geographic region (rural vs urban)
- Specialty case management includes:
  - Coordination of services
  - Ongoing evaluation of rehabilitation, psychosocial needs
  - Family education and support services
  - IDT lead in development of IRCR care plan
  - Partnership with other VA and DoD case managers to assure continuity in care management through the interagency care coordination community of practice, lead coordinator initiative, and computer lab resource

Virtual Care: Tele-Rehabilitation

Using video-telehealth between polytrauma programs and community based clinics to:

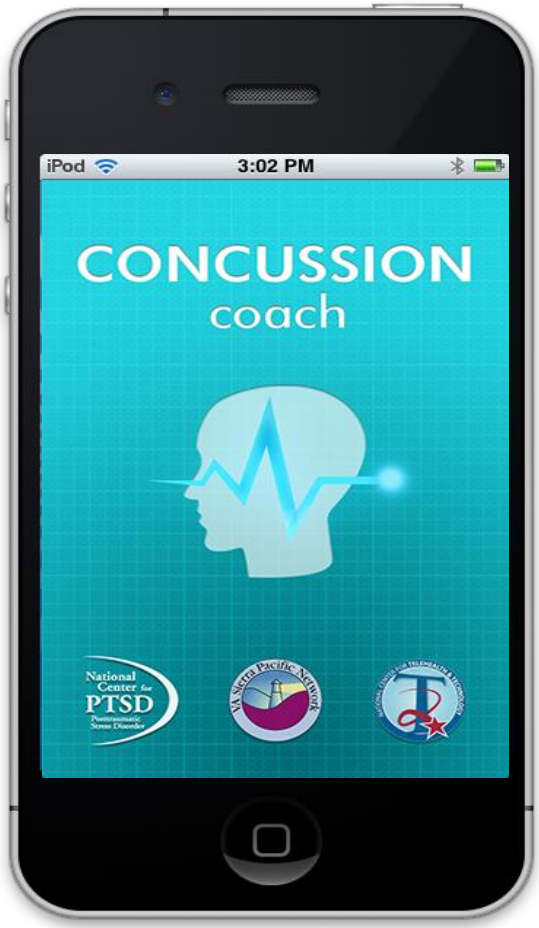
- 41% increase in Tele-TBI Evaluation encounters in FY14
- 60% increase in Tele-Rehab encounters in FY14
- 47 sites using telehealth to connect into Veteran's home



Virtual Care: New Options to Expand Access to Specialized Rehabilitation Care

- **Standardized TBI evaluation protocol for Telehealth**
  - TBI Subject Matter Expert panel developed consensus TBI evaluation protocol
  - 40 pilot sites trained and virtual training modules now available online
  - 417 unique Veterans were seen for an initial TBI Teleconsultation
  - TBI Telehealth Team funded at Washington DC VA to provide TBI care for rural Veterans in Maryland and Georgia in FY15
- **Secure Messaging**
  - All VAMCs have rehabilitation messaging triage teams
- **E-consults**
  - Specialist consultation may reduce need for additional patient visit

Virtual Care: Mobile Technology



Concussion Coach is a mobile phone application for Veterans and Service members who experience symptoms that may be related to brain injury

It can be used as a ***stand-alone*** education and symptom management tool, ***or to augment*** face-to-face care with a healthcare professional

Available for mobile Apple devices:

https://itunes.apple.com/us/app/concussion-coach/id713590872?ls=1&mt=8Has

Downloaded > 4000 times in 62 countries

Assistive Technology (AT) Lab Expansion

- Contract with University of Pittsburgh (U Pitt) to support expansion of the AT Labs
- 22 sites currently work with U Pitt and implement AT service
- 46 AT device reviews completed and posted to the AT portal
- 805 unique cases and 1787 outcome assessments entered in the AT outcomes portal
- Monthly audio AT Grand Rounds broadcast throughout VA with continuing education credits
- Virtual care being piloted at several locations to explore feasibility of this type of intervention


DEPARTMENT OF VETERANS AFFAIRS

Assistive Technology AT

PM&R Assistive Technology Programs

Volume 3, Issue 1 Spring 2014

Creating New Solutions through 3D Printing

Ben Salatin, AT Rehab Engineer

Congratulations!

The Tampa Assistive Technology Program successfully completed its second CARF survey in March along with 11 other rehabilitation programs at the James A Haley VA Hospital.

Inside this issue:

3D Printing, a fast growing high tech prototyping and manufacturing method has found a home in the clinical rehab environment at the Richmond VAMC. The Assistive Technology Program acquired a 3D printer and has put it to use as part of its clinical services. Using SolidWorks commercial 3D modeling software and their Stratasys 3D printer, rehabilitation engineers Ben Salatin and Brian Burkhardt are creating custom solutions for veterans (Fig 1).

Figure 2—iPAD KeyGuard for a Communication App

In a second case, a Veteran with a spinal cord injury could not change the orientation of the smart phone

Key Research Activities

Polytrauma and Blast-Related Injuries Quality Enhancement Research Initiative (QUERI):

- Portfolio includes 35 funded studies on implementing evidence based treatments
- 30 publications in FY2014 associated with grants listed as QUERI related
- FY 2013-2015 cycle focus is on implementation of evidence-based integrated, patient centered care for TBI and associated comorbidities, improving patients' ability to manage their TBI/polytrauma-related symptoms and impairments, and optimizing Veterans' support system, including family, peers, VA and community resources

Recent VA/DoD Research collaborations include:

- 22 current studies on TBI, PTSD, and polytrauma with VA investigators
  - 18 research investigations (including 2 multisite studies) currently between VA PRCs and Defense and Veterans Brain Injury Center (DVBIC)
  - 4 additional studies in collaboration with PNS sites

Key Research Activities

Polytrauma Rehabilitation Centers and TBI Model Systems

- Establishes parallel VA database to TBIMS (with additional VA variables)
- Benchmarks VA outcomes with those of national TBIMS Centers
- Fosters collaborative research with national TBIMS Centers
  - 21 collaborative publications - peer reviewed manuscripts
  - 14 manuscripts underway

TBI Veterans Health Registry of OEF/OIF Veterans

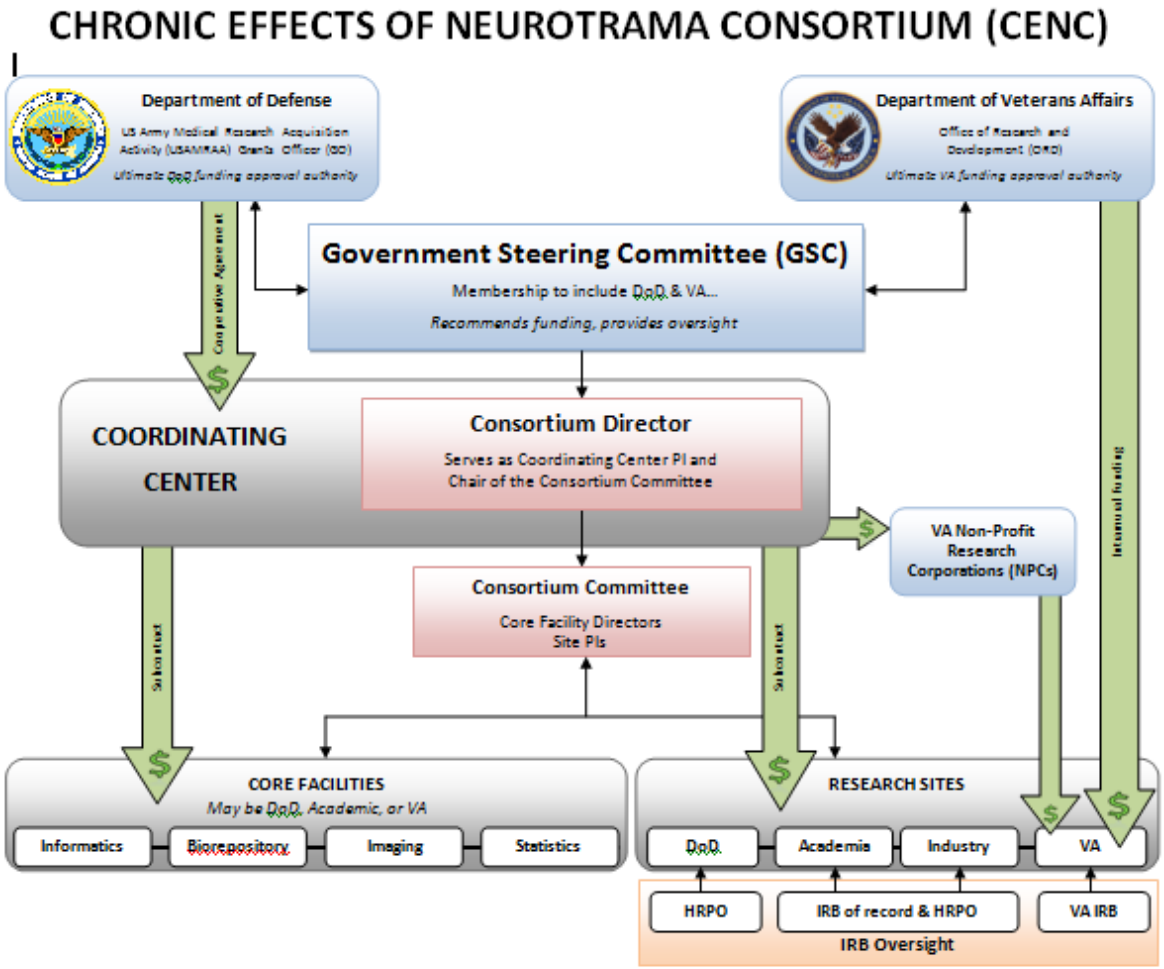
- OEF/OIF Based Registry of Veterans experiencing TBI related symptoms
- Comparisons of screening, diagnostic methods, and treatment options
- Summary report being finalized for posting on public health internet site

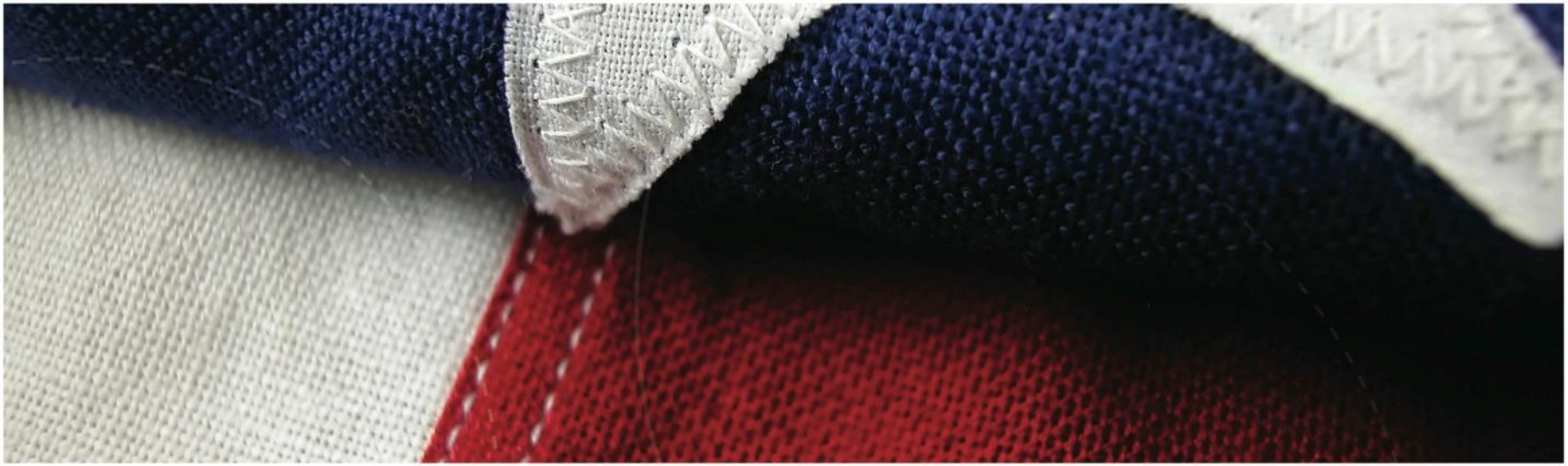
Key Research Activities

Improved Understanding of Medical and Psychological Needs (I-MAP)

- DVBIC funded
- Mixed-methods study of Veterans and Service Members with TBI
- Will examine the long-term healthcare needs (physical, mental, rehabilitation) and impact on trajectory of disability in the first five-years post-injury
- Designed to inform clinical programming in the chronic stages of recovery
- Stakeholder input into chronic needs from within DOD, VA, and the private sector will be included

Key Research Activities:
Chronic Effects of Neurotrauma Consortium





Thank You

Joel.Scholten@va.gov

www.polytrauma.va.gov

VA HEALTH CARE Defining EXCELLENCE in the 21st Century

DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Department of Defense Traumatic Brain Injury (TBI) Pathway of Care

Col. Sidney R. Hinds II, M.D.
National Director, DVBIC

DVBIC
DHCC

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- Director, Defense and Veterans Brain Injury Center
- Board certified in neurology and nuclear medicine
- Previously served as deputy director of the Armed Forces Radiobiology Research Institute for Military Medical Operations
- Served as in-theater neurologist in Afghanistan
- Formerly chief of Nuclear Medicine Services at Walter Reed National Military Medical Center
- Education:
  - U.S. Military Academy
  - M.D., University of Connecticut Health Center

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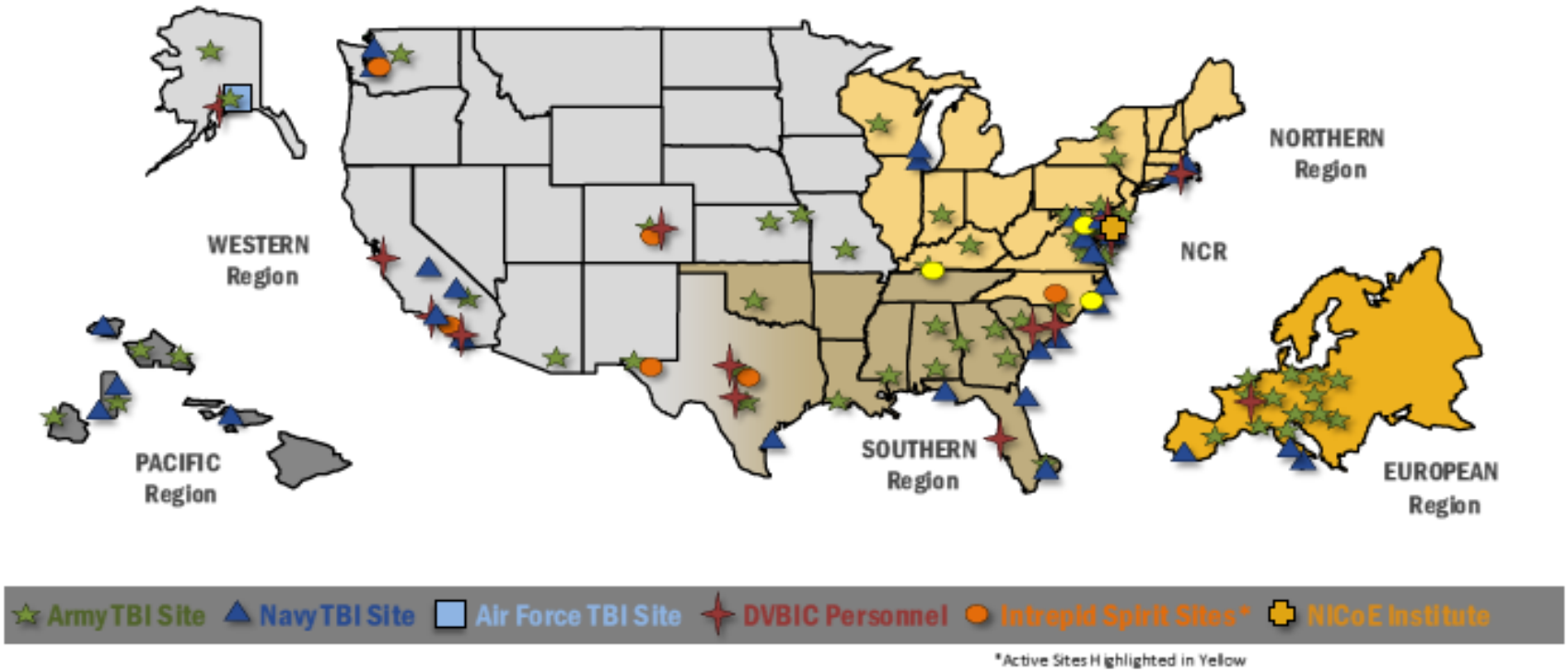
An injured U.S. Air Force airman is rushed through "Hero's Highway" to the emergency room on Balad Air Base, Iraq, Jan. 15, 2008. "Hero's Highway" is a canopy with an American flag that serves as a transition area between the helipad and the ER.
U.S. Air Force photo by Master Sgt. John R. Nimmo, Sr.

TBI Capabilities Military Health System (MHS)



Observations:

- Army, Navy and Air Force are already working together to deliver a system of care for patients with TBI and associated psychological health issues.
- There is an opportunity to clarify roles and responsibilities in the existing network of care that includes the NICoE and the nascent Spirit sites.

TBI Pathway of Care Roles

	Prevention	Screening / Identification	Diagnosis	Treatment	Rehabilitation	Reintegration
Clinical Care	Line (e.g. resilience /body armor), supported by Service Med Depts, DVBIC	Line, organic medical, MTFs, DVBIC, Spirits, VA	Organic medical, MTFs, Spirits, DVBIC, NICoE, VA	Garrison Care (organic medical), MTFs, Spirits, DVBIC, NICoE, VA	MTFs, Spirits, DVBIC, VA	Line, MTFs, Spirits, DVBIC, Recovery Care Coordinators, VA
Research	MRMC, ONR, NHRC, (e.g. blast gauges study), DVBIC, USU	MRMC, Services / DVBIC (e.g. ANAM), Navy (e.g. Breacher Studies), NHRC, NMRC, USU (Suicide)	MRMC, Service Med Depts, DVBIC, USU (CNRM, CDP, CSTS), NICoE, Spirits, Partners	MRMC, DVBIC, USU (CNRM, CSTS), NICoE, Spirits, Partners	DVBIC, USU (CNRM, CRSR, CSTS), MRMC, Spirits, Partners	MRMC, USU (CRSR), DVBIC
Education & Training	Primary: Line (delivery), development (Service Medical Depts), Spirits, DVBIC	Primary: Service Medical Depts (delivering and developing training), DVBIC, Spirits	Primary: Service Medical Depts (delivery), development (Quad-Service Working Group - Service Med Depts, USU, DCoE (DVBIC, DHCC, T2) NICoE, Spirits), DVBIC)	Primary: Service Medical Depts/DHA (delivery), development (Quad-Service Working Group - Service Med Depts, USU, DCoE (DVBIC, DHCC, T2) NICoE, Spirits), DVBIC)	Primary: Service Medical Depts/DHA (delivery); development (Quad-Service Working Group - Service Med Depts, USU, DCoE (DVBIC, DHCC, T2) NICoE, Spirits), DVBIC)	Primary: Line with support from medical or vice versa (wounded warrior programs, deployment transition center), Spirits, DVBIC

DVBIC defines the TBI proven practices, disseminates, and conducts implementation oversight and monitoring of outcomes

MRMC is responsible for gap analysis and portfolio management of TBI/PH research, oversees Chronic Effects of Neurotrauma Consortium, and is lead DoD coordinator for the National Research Action Plan

DVBIC 15-year Longitudinal Study (in its 3rd year)

TBI Pathway of Care

- The MHS TBI Pathway of Care is a data-driven system to ensure unified state-of-the-science TBI care across the military Services.
- The Pathway supports the Services in delivering the best TBI care to patients by integrating evidence-based clinical practices with consistent monitoring of patient outcomes across the MHS.

Image courtesy of DCoE

Timeline of Development

14 Jan 2014

NICOE Realignment Working Group Work Group → TBI PWOC

04 Mar 2014

Policy Advisory Council (PAC) briefing

10 Mar 2014

Medical Operations Group (MOG) briefing

19 Mar 2014

First Medical Deputies Action Group (MDAG) briefing

22 Apr 2014

Second MDAG briefing

Timeline

07 May 2014

Senior Military Medical Action Council (SMMAC) briefing and approval of course of action

20 May 2014

Work on concurrence memo begins

17 Sep 2014

Concurrence memo signed by Dr. Woodson

TBI Advisory Committee

- DVBIC is the TBI Pathway of Care Manager for clinical, research, education and training activities.
- Work with chartered TBI Advisory Committee of Service Medical Commands, DHA, MRMC, NICoE to:
  - Disseminate proven practices
  - Monitor outcomes
  - Maintain visibility on TBI research
- Transmit state-of-the-art and state-of-the-science to providers.

TBI Pathway of Care – IS NOT

- Response to Congressional mandate
- Set of clinical practice guidelines
- Requirement and capabilities analysis
- Merger of research and development areas
- Centralization of provider education activities

TBI Pathway of Care - IS

- Single resource for decision makers to understand TBI across the MHS
- Partnership with MHS components to standardize clinical practices and consistent outcome metrics
- Enterprise-wide approach to coordinating clinical, research, education and training activities related to TBI care

TBI Pathway Functions

1. Conduct strategic and business planning
2. Standardize evidence-based clinical care across the pathway
3. Provide oversight for pathway implementation
4. Standardize outcome measures and reporting

Photo courtesy of TSgt Prentice Colter

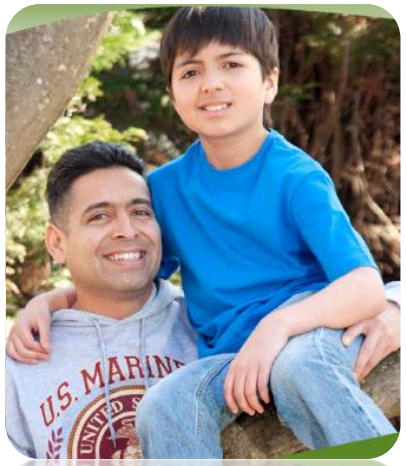


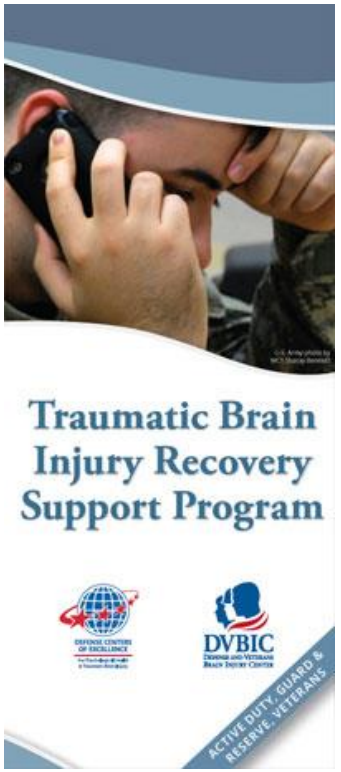
Photo courtesy of DVBIC

TBI Pathway Functions

5. Monitor standard clinical practice adherence

6. Maintain visibility of all clinical and translational research in TBI

7. Assess research outcomes and help identify new research requirements



Photos courtesy of DVBIC

Way Forward

DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Clinical Tools for Your Practice (Clinical Recommendations, State of Science)

Katherine M. Helmick, M.S., CRNP, ANP-BC, CNRN
Deputy Director, DVBIC

DVBIC Defense and Veterans Brain Injury Center
DHCC
National Center for Telehealth & Technology

Katherine M. Helmick, M.S., CRNP, ANP-BC, CNRN

Katherine M. Helmick, M.S., CRNP, ANP-BC, CNRN

- Deputy director, DVBIC
- Served in a variety of leadership, advisory and operational roles, including
  - Deputy director, DCoE
  - Deputy director, Clinical and Educational Affairs Office, DVBIC
  - Manager, Office of Clinical Standards, DVBIC
- Previously neurological surgery nurse practitioner at Hodes Neurosurgery, Louisville, Ky.; nurse practitioner and clinical care coordinator at the University of Louisville Hospital
- Education:
  - B.S., Family and Child Development, Virginia Tech University
  - B.S., M.S., Nursing, Virginia Commonwealth University

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What are Clinical Recommendations (CR)?

Systematically developed clinical guidance that provides evidence based, including consensus recommendations, to guide the practitioner in the identification and treatment of specified clinical diagnosis, process or procedure.*

thttp://www.defense.gov/PhotoEssays/PhotoEssaySS.aspx?ID=4893

*As defined by the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) standard operating procedure, 2012. Defense and Veterans Brain Injury Center (DVBIC) Standard Operating Procedure, 2015

DVBIC CR Development Process

Gaps or needs are identified through various means:

- Military field (stakeholders)
- Quad Services Working Group
- Government reports such as the Institute of Medicine or RAND
- Research

Internal project team established

Development of systematic Reviews

Assess and synthesize the evidence

Literature Review Summary Report with course of action

DoD, VA & Civilian Experts convene for workgroup meeting

Develop CR products (suite)
CR
CST
Patient Education
Provider Training
Slides

Incorporate expert opinion and additional forms of evidence

TBI Quad Services Working Group Review and final draft cross walked with DoD policy

Establish and begin external working group

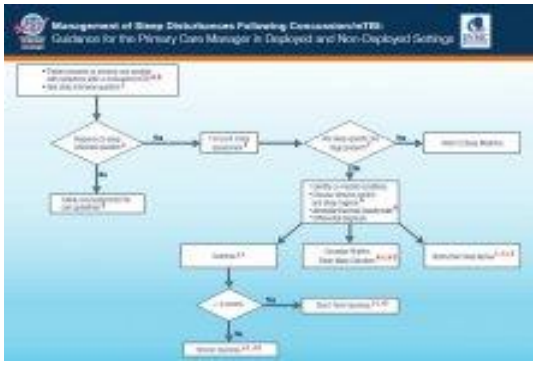
Implement CR and evaluate evidence-based interventions on patient outcomes and caregiver behavior

Outcomes inform revisions of CR or research needed

CR Suite

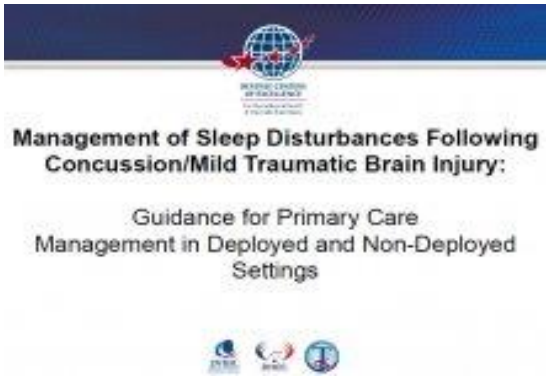
CR narrative

Clinical support tool



Patient education information

Provider education training slides



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Symptom Management

DCoE/DVBIC
Clinical Recommendations

1) Military Acute Concussion Evaluation (MACE) and Clinical Management Algorithms	JUN 06 DEC 06
2) Cognitive Rehabilitation	APR 2009
3) Driving Following TBI	JUL 2009
4) Indications and Conditions for In-Theater Post-Injury Neurocognitive Assessment Tool (NCAT) Testing	MAY 2011
5) Indications and Conditions for Neuroendocrine Dysfunction Screening Post Mild TBI	MAR 2012
6) Assessment and Management of Dizziness Associated with Mild TBI	SEP 2012
7) Assessment and Management of Visual Dysfunction Associated with Mild TBI (in collaboration with the Vision Center of Excellence)	JAN 2013
8) Neuroimaging Following Mild TBI in the Non-Deployed Setting	JUL 2013
9) Progressive Return to Activity Following Acute Concussion/Mild TBI: Guidance for the Primary Care Manager in Deployed and Non-deployed Settings	JAN 2014
10) Progressive Return to Activity Following Acute Concussion/Mild TBI: Guidance for the Rehabilitation Provider in Deployed and Non-deployed Settings	JAN 2014
11) Management of Sleep Disturbances Following Concussion/Mild TBI	JUN 2014

Assessment and Management of Dizziness Associated with mTBI

- Provides an approach to evaluate dizziness following mild TBI and offers guidance regarding referral for further vestibular evaluation and care, dizziness differentiations, effect of dizziness symptoms in patients who have been exposed to mild TBI and an algorithm outlining steps for providers.

Assessment and Management of Dizziness Associated with mTBI

Differential to include:	
Vertigo	**Patient describes a false sense of motion (spinning, rocking, swaying, movement of environment).**
Disequilibrium	**Patient is off-balance or unsteady while standing or attempting to walk (in absence of vertigo or lightheadedness).**
Lightheadedness	**Patient describes feeling faint or other vague sensations such as disconnect with environment.**

Pre-syncope or syncope is discussed under lightheadedness

Assessment and Management of Visual Dysfunction Associated with Mild TBI

- Provides an approach to evaluate visual dysfunction following mild TBI and offers guidance regarding referral for further eye or visual evaluation and care

Sidebar 1C

Basic Eye/Vision Assessment

Basic Eye/Vision Assessment*	
Visual acuity	▪ Distance (right, left, together) ▪ Near card (right, left, together)
Monocular confrontation fields	▪ Four quadrant finger counting (each eye)
Pupils	▪ Size/equality ▪ Direct response to light ▪ Swinging flashlight test
Eye movements	▪ Eye tracking (horizontal and vertical)
Nystagmus	▪ Primary position ▪ Gaze evoked
External exam	▪ Inspection ▪ Consider lid eversion for foreign body sensation ▪ Direct illumination of anterior segment
Slit lamp exam	If available

Neuroimaging Following Mild TBI in the Non-Deployed Setting

- Offers guidance for a standard approach for imaging from the acute through chronic stages following mild TBI in the non-deployed setting

Table 2.0 Relationship Between Neuroimaging Techniques and Common mTBI Pathophysiology	
mTBI Pathophysiology	MRI imaging Technique
Axonal Injury/White matter injury	Fluid Attenuated Inversion Recovery (FLAIR) Diffusion Weighted Imaging (DWI) 2D/3D T2
Traumatic Sub-Arachnoid Hemorrhage (tSAH)	FLAIR 3D T1 weighted imaging Susceptibility Weighted Imaging (SWI)/Gradient Echo (GRE)
Cortical contusions / microhemorrhages	FLAIR 3D T1-weighted imaging SWI/GRE
Vascular injury	SWI/GRE
Volume loss	3D T1-weighted imaging

Neuroimaging Following Mild TBI in the Non-Deployed Setting

Stages of TBI	
Acute	**Injury to seven days post-injury**
Subacute	**Eight to 89 days post-injury**
Chronic	**90 days post-injury and beyond**

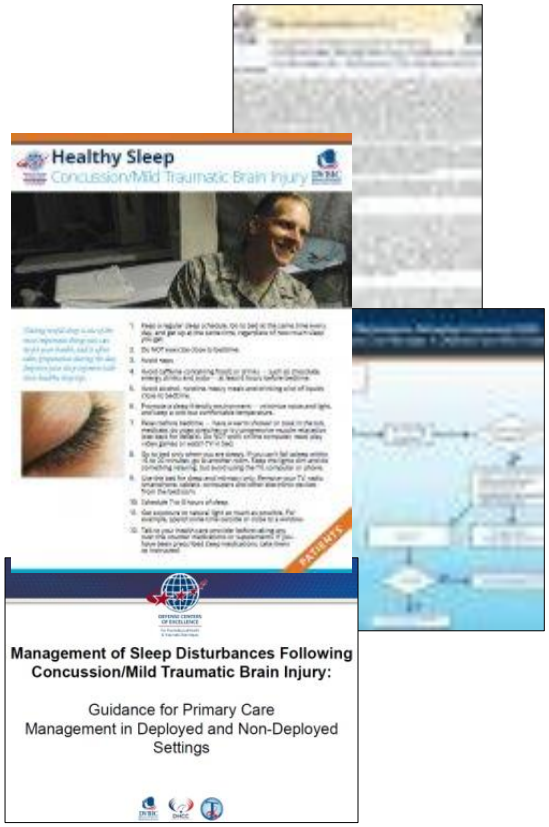
Progressive Return to Activity (PRA) Clinical Recommendation

- **Progressive Return to Activity following Acute Concussion/mTBI: Guidance for Primary Care Managers**
  - Provides an initial framework for gradually increasing service member activity after concussion

- **Progressive Return to Activity following Acute Concussion/mTBI: Guidance for Rehabilitation Providers Clinical Support Tools**
  - Provides details for rehabilitation providers in the management of service members who have sustained a TBI. Includes six rehabilitation stages and includes a neurobehavioral symptom inventory (NSI).

Sleep Disturbances
Clinical Recommendation

- **Management of Sleep Disturbances Following Concussion/Mild Traumatic Brain Injury**
  - Guides primary care managers in the assessment and management of common sleep disorders:
    - Insomnia (short term and chronic)
    - Circadian rhythm sleep-wake disorder
    - Obstructive sleep apnea
  - The product suite consists of:
    - Clinical Recommendation
    - Clinical Support Tool
    - Training Guide (providers)
    - Healthy Sleep Fact Sheet (patient tool)



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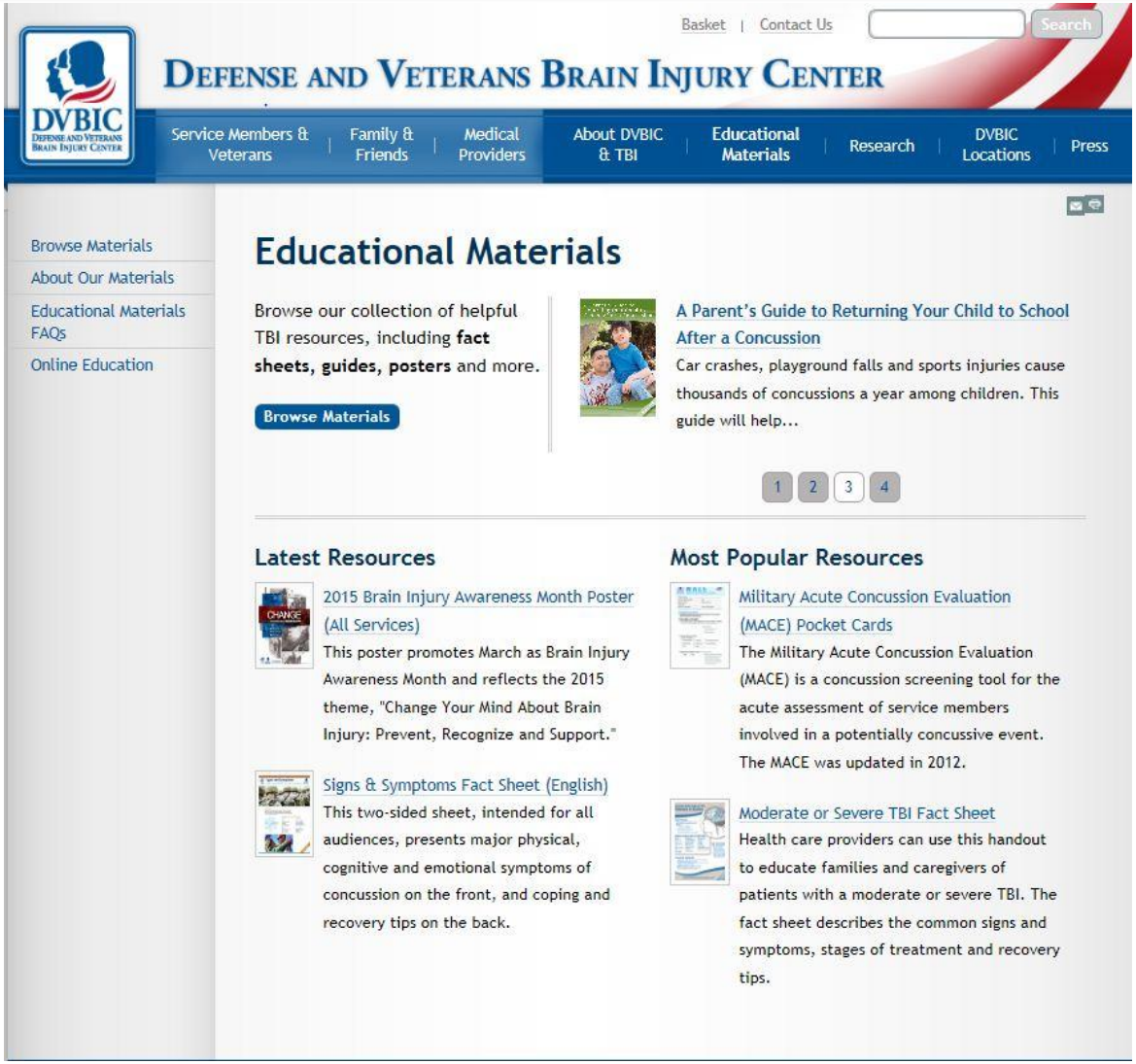
Where to Get Tools?



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DVBIC
Research Highlights

Saafan Z. Malik, M.D.
Director, Research Division, DVBIC

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DHCC

Saafan Z. Malik, M.D.

Saafan Z. Malik, M.D.

- Director, Research Division, DVBIC
- Research interests include neuroprotection in TBI, neuroplasticity, clinical research and development of novel TBI therapies
- Established a neurotrauma research program at Texas Tech University Health Science Center
- Completed postdoctoral work at the Carolinas Healthcare System on stem cell transplant and biomarkers for amyotrophic lateral sclerosis and on preclinical testing of oligonucleotide gene therapy for Duchenne muscular dystrophy
- Completed clinical neurosurgery training at the Cleveland Clinic Foundation
- Recipient of National Neurotrauma Society Murray Goldstein Award for TBI research
- Education:
  - M.D., King Edward Medical University

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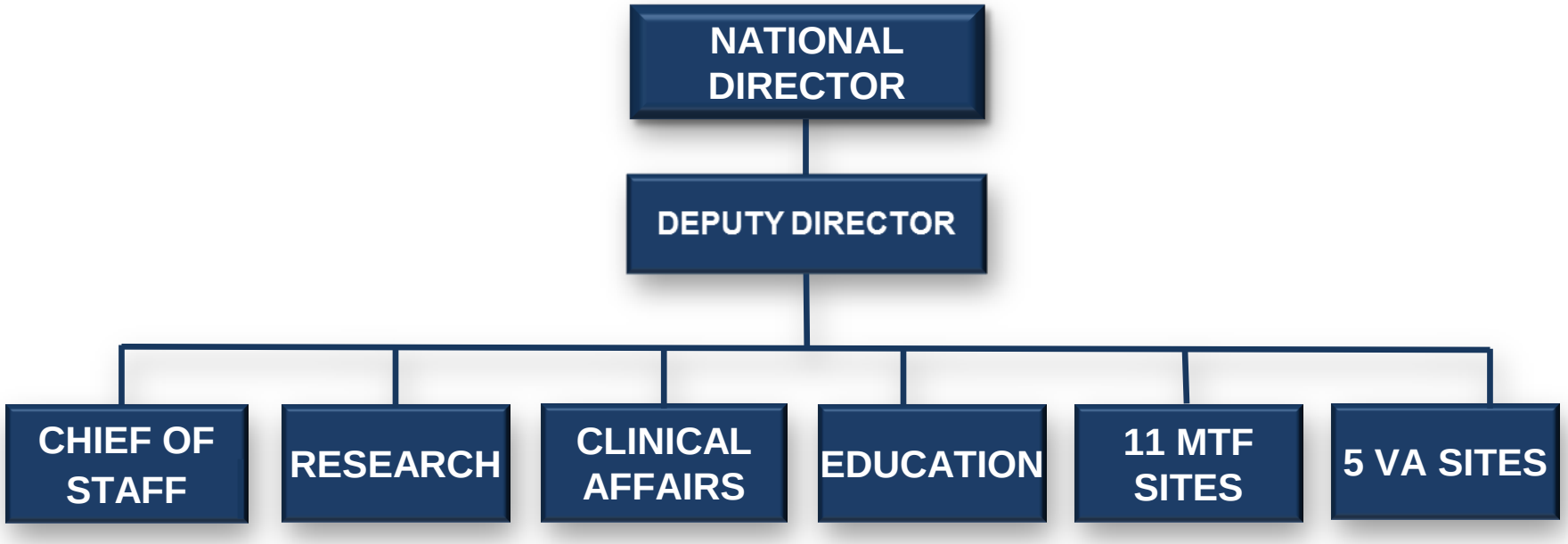
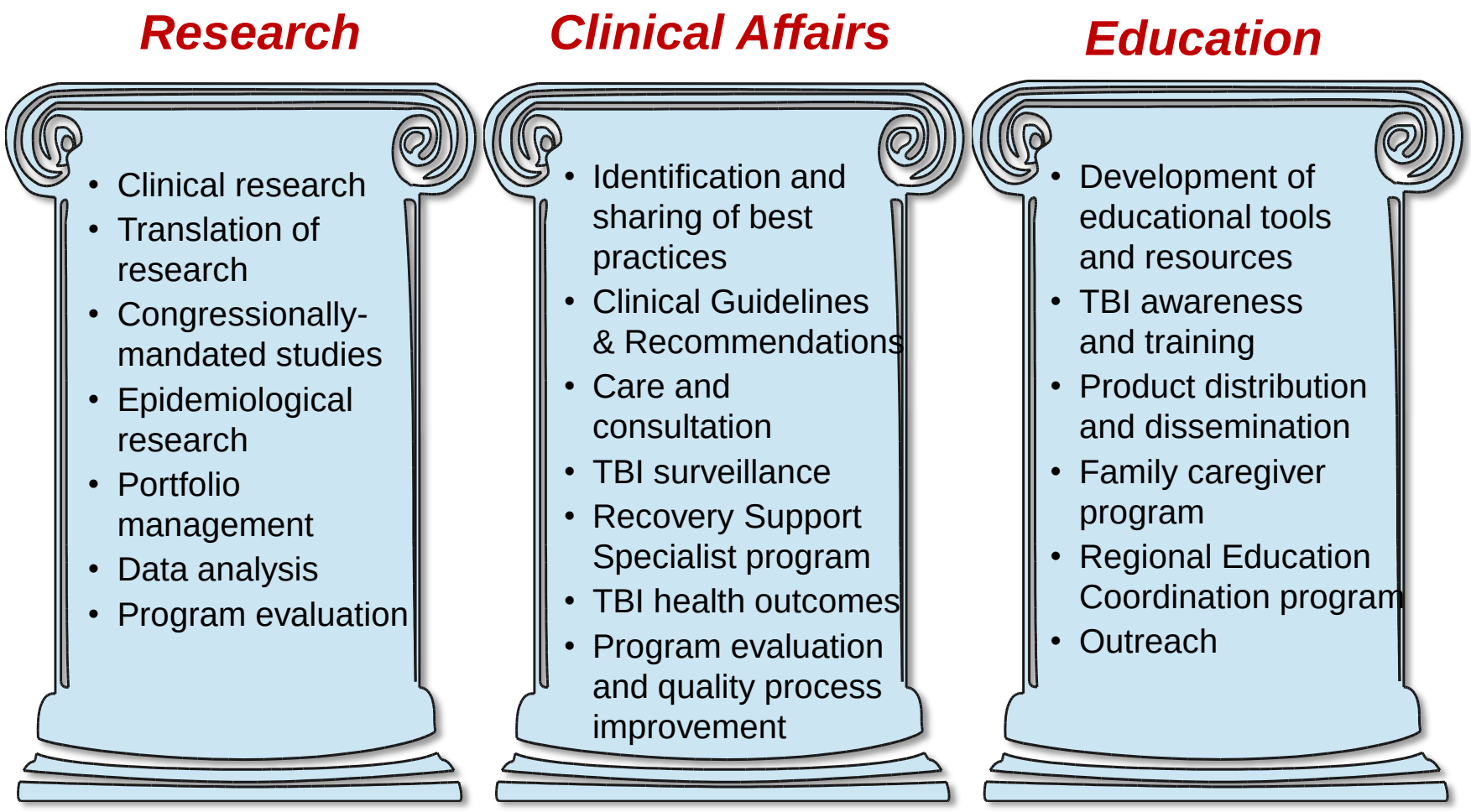
DVBIC Mission

To serve active duty service members, their beneficiaries, and veterans with traumatic brain injuries through state-of-the-science clinical care, innovative clinical research and educational programs, and support for force health protection services as the DoD TBI Center of Excellence



DVBIC Mission Essential Components



DVBIC Division of Research

- Mission
  - Provide evidence-based knowledge through conducting and supporting clinically-focused research to improve treatment and outcomes for service members and veterans who have sustained TBI

- Key Programs
  - Research: The research portfolio of 60 studies addresses areas of focus across the continuum of TBI care
    - Screening and assessment
    - Treatment and clinical management
    - Rehabilitation and reintegration
    - Foundational science/epidemiology/etiology for TBI

DVBIC Division of Research

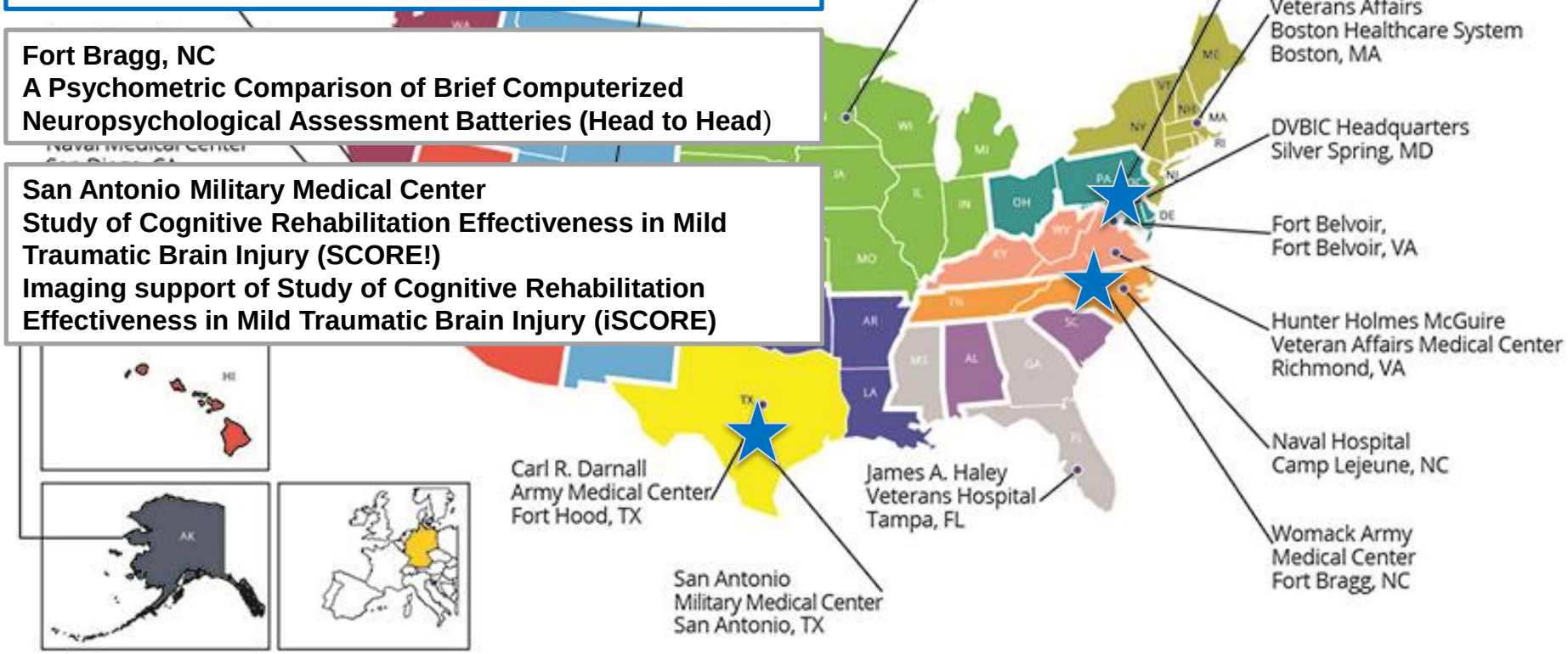
- Key Programs
  - Clinical Translation
    - Catalyzes the translation of promising clinical research through dissemination of findings to stakeholders in support of the development of evidence-based and educational tools, and informing research gaps
  - Program Evaluation/Continuous Process Improvement
    - Provides a mechanism to measure the effectiveness of programs by evaluating processes as they apply to specific projects/initiatives
    - Assists DVBIC divisions and network sites in implementing performance improvement processes that enhance DVBIC programs, products and services, and ultimately the health, wellness and quality of life of service members, veterans and their families

DVBIC Research Network

Walter Reed National Military Medical Center, Naval Medical Center San Diego (NMC San Diego), Camp Pendleton, Fort Belvoir
Exploring the Natural History of Traumatic Brain Injury within a Military Cohort-A Longitudinal Database and Blood Banking Study (15-year)

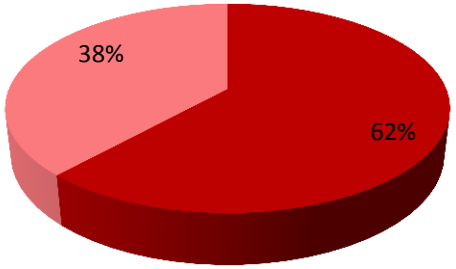
Fort Bragg, NC
A Psychometric Comparison of Brief Computerized Neuropsychological Assessment Batteries (Head to Head)

San Antonio Military Medical Center
Study of Cognitive Rehabilitation Effectiveness in Mild Traumatic Brain Injury (SCORE!)
Imaging support of Study of Cognitive Rehabilitation Effectiveness in Mild Traumatic Brain Injury (iSCORE)

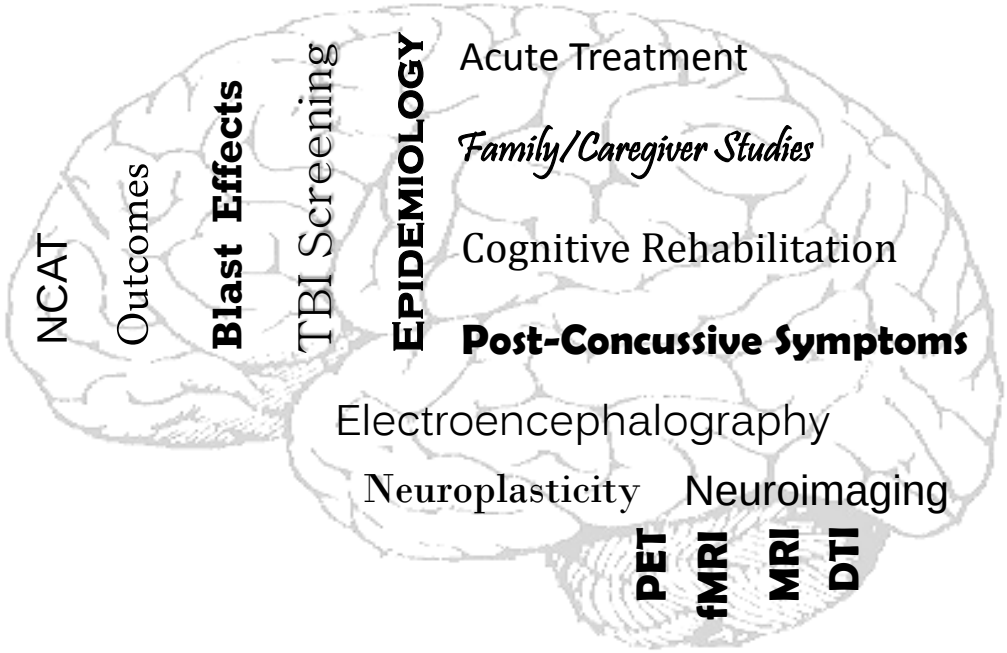


DVBIC Research Portfolio

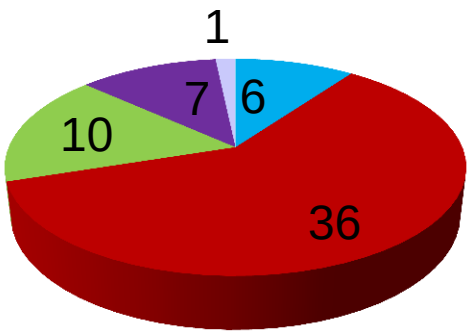
60 research protocols at 10 network sites + headquarters



- Fully supported by DVBIC
- Additionally funded by external sources



DVBIC TBI Research



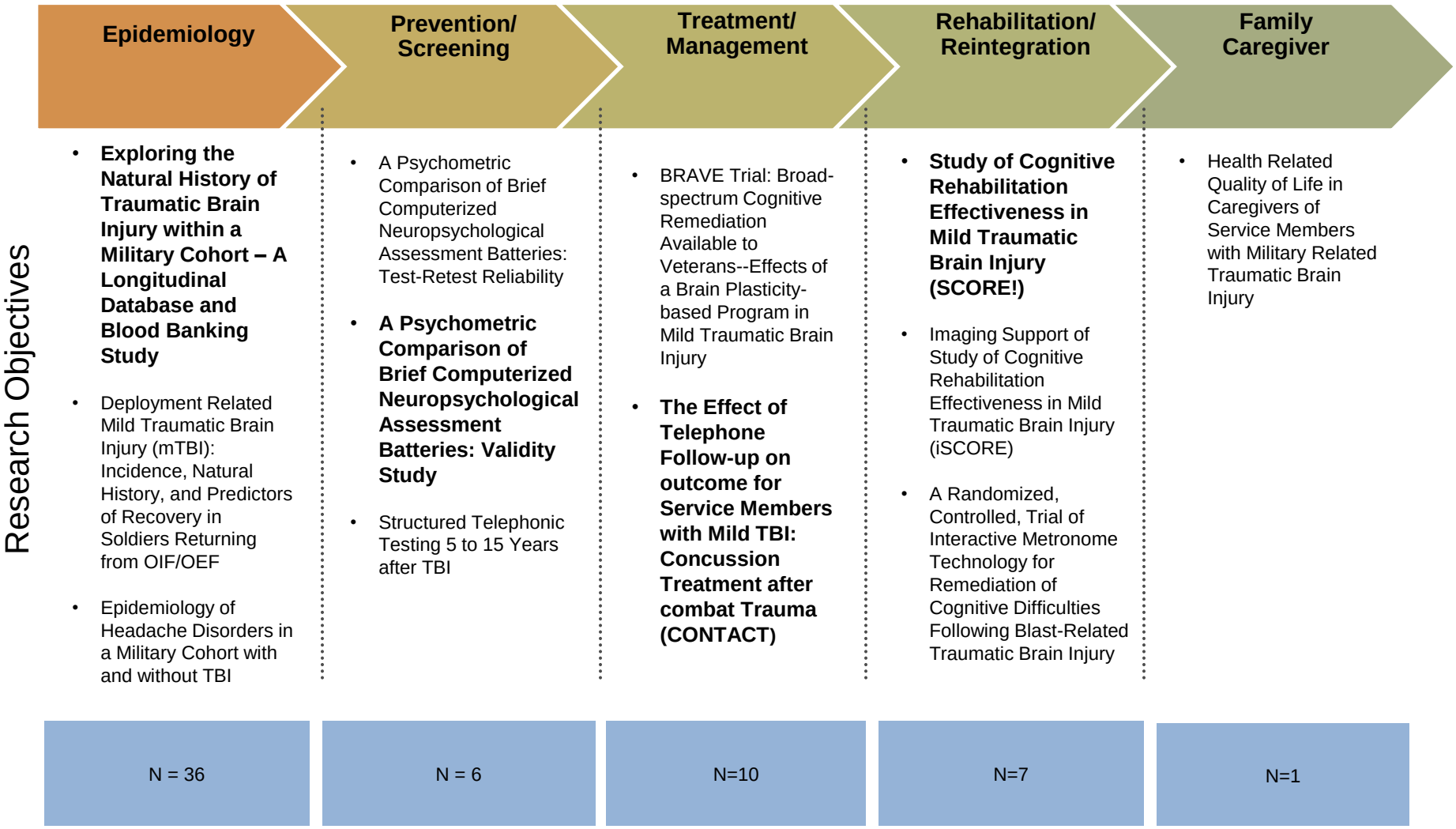
- Screening/Assessment
- Epidemiological/Observational
- Treatment/Management
- Rehabilitation/Reintegration
- Family/Caregiver

DVBIC Network Sites
Clinical Investigations

Military Treatment Facilities	Clinical Protocols*
Walter Reed National Military Medical Center	8
San Antonio Military Medical Center	11
Navy Medical Center San Diego	6
Camp Pendleton	4
Fort Bragg	9
Fort Carson	4
VA Medical Centers	
Minneapolis VA	6
Palo Alto VA	5
Richmond VA	10
Tampa VA	5
DVBIC Headquarters	
Research Division	2

* As of Q1 FY15 (Some protocols are being conducted at multiple sites)

DVBIC Research Across the Continuum



National Research Action Plan (NRAP) TBI Research Priorities

NRAP is the interagency (DoD, U.S. Department of Veterans Affairs, U.S. Department of Health and Human Services, U.S. Department of Education) response to Presidential Executive Order from August 2012, *Improving Access to Mental Health Services for Veterans, Service Members, and Military Families*

The NRAP defines key areas of priority in TBI research:

Classification	More precise classification based on patient characteristics, injury characteristics, and signs/symptoms/deficits
Biomarkers	Imaging, proteomic, neurophysiologic, etc. tools for diagnosis, monitoring recovery, and predicting outcomes
Mechanisms	Increased understanding of neuropathology and recovery
Treatment	Identify and validate pharmacologic, non-pharmacologic, and rehabilitation treatment options
Long-term effects	Chronic effects of TBI; association between long-term effects and co-morbidities

How is DVBIC Addressing the TBI Research Priorities?

15 Year Longitudinal Study on TBI in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Service Members and Veterans and their families

- *In progress: 2011-2026*
- Walter Reed National Military Medical Center, Naval Medical Center San Diego, Camp Pendleton, Fort Belvoir
- Will identify long-term physical, mental health, medical, and supportive care needs of OEF/OIF service members and veterans with TBI, and the effects of TBI on family members and caregivers
- Will provide information on the association of patient and injury characteristics and health/clinical services with outcomes and recovery; investigate blood biomarkers longitudinally after TBI; study co-morbidities as they relate to long term effects of TBI
- Bridges interagency investments via partnerships with the DoD/VA-funded Chronic Effects of Neurotrauma Consortium and the National Institute on Disability and Rehabilitation Research-funded TBI Model Systems program

Classification

Biomarkers

Mechanisms

Treatment

Long-term Effects

How is DVBIC Addressing the TBI Research Priorities?

Study of Cognitive Rehabilitation Effectiveness in Mild Traumatic Brain Injury (SCORE!)

- *Completed; publication in preparation*
- San Antonio Military Medical Center
- Will evaluate the effectiveness of six weeks (60 hours) of cognitive rehabilitation in OEF/OIF service members with a history of mild TBI and persistent cognitive complaints
- Will provide information on the association of patient and injury characteristics and with outcomes six months after cognitive rehabilitation
- In coordination with an imaging study (iSCORE) will correlate outcomes with anatomical and imaging data to better understand the neuroplastic changes in the brain associated with improvements in cognitive functioning

Classification

Biomarkers

Mechanisms

Treatment

Long-term Effects

DVBIC Research Planned Initiatives

- Develop new studies with impact and disseminate findings of current studies
  - Disseminate SCORE results
  - Head to Head; results in report to Congress on neurocognitive assessment tools
  - Disseminate data from the Natural History of Deployment Related mTBI study
  - Evaluation of the Progressive Return to Activity clinical and educational tools
- Serve as knowledge translation liaisons
  - Identify research gaps and prioritize
  - Ensure development of clinical recommendation documents
- Implement a Continuous Process Improvement Program

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Traumatic Brain Injury Prevention

Lt. Cmdr. Cathleen A. Davies, M.S., CCC-SLP/CBIS
Chief, Office of Clinical Education and Training, Education Division, DVBIC

DVBIC
DHCC

Lt. Cmdr. Cathleen A. Davies, M.S., CCC-SLP/CBIS, USPHS

Lt. Cmdr. Cathleen A. Davies, M.S., CCC-SLP/CBIS, USPHS

- Chief, Office of Clinical Training and Education, Education Division, DVBIC
- Certified brain injury specialist
- Clinical specialist for adult dysphagia and neurological diseases
- Previous experience includes clinical, management and administrative positions in hospitals, home health and skilled nursing facilities
- Education:
  - B.S., Communication Disorders, Pennsylvania State University
  - M.S., Speech-Language-Pathology, Pennsylvania State University

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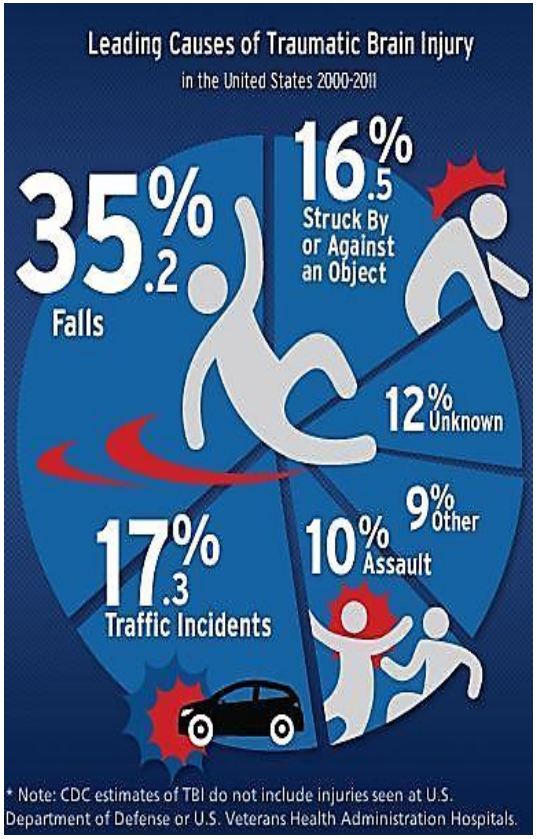
TBI Facts

- According to the Centers for Disease Control and Prevention, unintentional injuries are the leading cause of death in the United States.
- They account for 51 percent of deaths of people ages one to 44 years.
- More deaths occur from these injuries than non-communicable and infectious diseases combined.

(CDC, 2013)

TBI Facts

- Despite the improvements in protective equipment, there has been an increase in the rates of TBI over the past decade.
- Everyone is at risk for sustaining a concussion, but males are at a greater risk of sustaining a TBI.
- There are many causes of TBIs, e.g., falls, vehicle accidents, objects, sports, objects penetrating the skull and violence.



Public Awareness Initiatives

- Head-borne system
  - Improve protection from ballistic threats
  - Reduce injury from blast events
- Public awareness campaigns aimed at educational and prevention strategies
  - CDC Heads Up: Concussion in Youth Sports
    - Tool Kit which includes fact sheets, posters and quizzes for athletes, coaches and parents
    - http://www.cdc.gov/concussion/HeadsUp/youth.html
  - NFL Partnerships

Change Your Mind About Brain Injury

- The goal of the TBI Awareness Campaign is to reduce the stigma for individuals to report and seek prompt care to enhance their recovery after a concussion.
- Early recognize, early reporting, early diagnosis = early treatment intervention!

Coming March 2015

- DVBIC is re-launching “A Head for the Future,” an initiative that raises awareness of the signs and treatment of TBI, and educates military and veteran communities about recognizing the symptoms of concussion, getting prompt treatment, and preventing future TBIs from occurring on the homefront.

NEW look!

NEW website!

- Visit www.dvbic.dcoe.mil/aheadforthefuture and share with your colleagues and on social media. Follow DVBIC’s Facebook page for updates!

Prevention Efforts

- There are many ways to reduce the chances of TBI, including:
  - Use child safety seats appropriately
    - Wear a seat belt every time you drive or ride in any motor vehicle.
  - Never drive while under the influence of alcohol or drugs.
  - Fall prevention for seniors and children
  - Playgrounds and equipment

Learn to Prevent, Recognize and Respond to Concussion

- Prevention and preparation
  - Check with your league or school about concussion policies
  - Insist that safety comes first
    - “No hits to head" or other type of dangerous play
    - Practice safe playing technique in all sports
    - Encourage athletes to follow rules of play
    - Make sure players wear approved and properly fitted protective equipment
  - Learn about concussions, dangers of concussions, potential long-term consequences, signs and symptoms

Helmets

- Wear a helmet and ensure that your children wear helmets when riding a bike, four-wheeler, motorcycle, snowmobile, scooter or all-terrain vehicle.
- National Highway Traffic Safety Administration Handout
  - http://www.nhtsa.gov/Bicycles

Photo courtesy of Staff Sgt. Jim Araos, 354th Fighter Wing

Photo courtesy of Staff Sgt. Jennifer Brofer, 1st Marine Logistics Group

Additional Helmet Use

- Playing contact sports, e.g., football, ice hockey or boxing
- Riding a skateboard or using in-line skates
- Batting and running bases in baseball or softball
- Riding a horse
- Skiing or snowboarding

Photo courtesy of Greg Mitchell

Child Safety Seats

Photo courtesy of Greg Davis, 436th Airlift Wing

- Buckle your child in the car using the appropriate child safety seat, e.g., booster seat, or seat belt based on the child's height, weight and age.

Fall Prevention for Children

- Install window guards to keep young children from falling out of open windows
- Use safety gates at the top and bottom of stairs when young children are around.

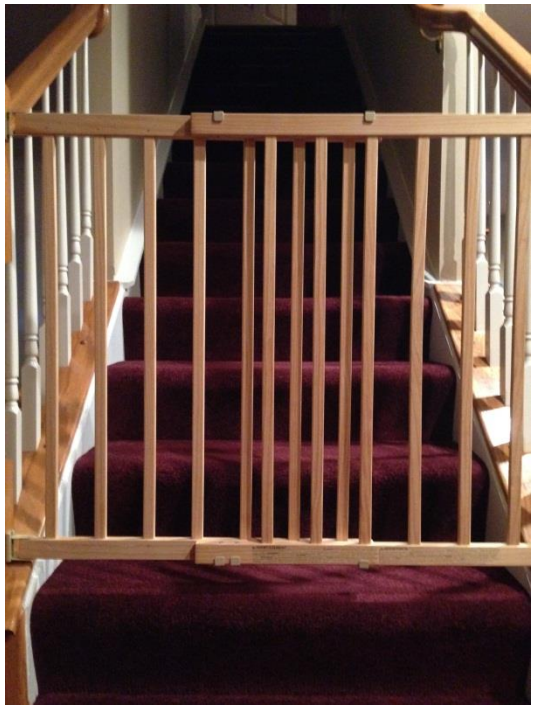


Photo courtesy of MAJ DiPatrizio

Fall Prevention for Seniors

- Remove tripping hazards, e.g., throw rugs and clutter in walkways.
- Use non-slip mats in the bathtub and on shower floors.
- Install grab bars next to the toilet and in the tub or shower.

Photo courtesy of MAJ DiPatrizio

Fall Prevention for Seniors

- Install handrails on both sides of stairways.
- Improve lighting throughout the home.
- Ensure lighting in the house is bright enough.

Photo courtesy of MAJ DiPatrizio

Additional Prevention Measures

- Ensure the surface on your child's playground is made of shock-absorbing material, e.g., hardwood mulch or sand.

Photo courtesy of Rachel Larue, Joint Base Myer-Henderson Hall

Importance of Education and Preventive Measures

- It is extremely important to engage children in sports and physical activities to support a healthy lifestyle.
- Sports and physical activity should include physical fitness activities to promote health and wellness.
- Thus, sports injury prevention is of particular importance in children and adolescents.

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Q&A

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TBI Champion

Command Master Chief (Retired) Dan Marshall

DVBIC
DHCC

Master Chief, USN (Retired) Dan Marshall

- Founder/President, MFive Consulting, LLC, a Service Disabled Veteran Owned Small Business
- 23 years of active military service, serving within United States Special Operations Command as a Navy SEAL and Explosive Ordnance Disposal operator
- Retired as a Command Master Chief after serving at multiple east coast SEAL Teams
- Held all levels of tactical and operational leadership positions
- Served in numerous conflicts around the globe to include nine operational tours in combat
- While on active duty served as a SEAL Operator conducting special operations missions from direct action, reconnaissance, foreign internal defense, combat diving and high altitude parachute operations.

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For Psychological Health & Traumatic Brain Injury

Closing Remarks

Col. Sidney R. Hinds II, M.D.
National Director, DVBIC

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Continuing Education Reminder

- If you pre-registered for this webinar and want to obtain a CE certificate or a certificate of attendance, you must complete the online CE evaluation and post-test.

- After the webinar, please visit http://continuingeducation.dcri.duke.edu to complete the online CE evaluation and post-test and download your CE certificate/certificate of attendance.

- The Duke Medicine website online CE evaluation and post-test will be open through **Monday, March 9, 2015,** until 11:59 p.m. (**ET**).

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  https://ice.disa.mil/index.cfm?fa=card&sp=134218&s=1019&dep=*DoD&sc=11
- Or send comments to usarmy.ncr.medcom-usamrmc-dcoe.mbx.dcoe-monthly@mail.mil

Save the Date

Next DCoE Telehealth and Technology Webinar:

The Well-Being of Military Children: Augmenting Clinical Care with Web- and Mobile-Based Tools

Mar. 19, 2015
1-2:30 p.m. (ET)

Next DCoE Psychological Health Webinar:

Security, Privacy Concerns with Using Mobile Tech Tools in Patient Care

Mar. 26, 2015
1-2:30 p.m. (ET)

Next DCoE Traumatic Brain Injury Webinar:

Youth Sports and Concussion

Apr. 9, 2015
1-2:30 p.m. (ET)