The VA Polytrauma Rehabilitation Center (PRC) Traumatic Brain Injury (TBI) Model Systems

A project funded by the U.S. Department of Veterans Affairs in collaboration with the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) and the Defense and Veterans Brain Injury Center (DVBIC)

Data represents database as of 12/31/2019
Congressional Mandate

• As part of Public Law 110-181 – Jan 28 2008, congress established means for the VA to specifically coordinate research focusing on Traumatic Brain Injury with both the National Institute on Disability, Independent Living, and Rehabilitation Research (formerly NIDIRR) and the Defense and Veterans Brain Injury Center of the Department of Defense.
Collaboration: NIDILRR and VA PRC TBI Model Systems

**NIDILRR TBI Model Systems**

Established 1987
Goal: Prospective, longitudinal, multi-center study. Examines TBI recovery and outcomes following coordinated acute medical care and inpatient rehabilitation.

- 16 Funded Centers
- 1 National Data and Statistical Center (Craig Hospital)
- 1 Knowledge Translation Center
- >18,000 participants enrolled
- Conducting follow-up at years 1, 2, 5, and every 5 years thereafter
- Special Interest Groups, Committees, & Modules

**VA PRC TBI Model Systems**

Established 2009. Parallel to the civilian centers.
Goal: To establish a longitudinal database of rehabilitation outcomes in service members and veterans who receive inpatient rehabilitation for TBI and are in the acute and/or chronic stages of recovery.

- 5 Funded Centers
- 1 National Data and Statistical Center (Craig Hospital)
- >1,300 participants enrolled
Comparison of the VA and NIDILRR TBI Model System Cohorts

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Conclusions: Substantial baseline differences between the NIDILRR and VA TBIMS participants warrant caution when comparing rehabilitation outcomes. A substantive number of NIDILRR enrollees had a history of military service (>13%) warranting further focused study. The TBIMS participant data collected across cohorts can be used to help evidence-informed policy for the civilian and military-related healthcare systems. **Keywords:** civilians, outcomes, traumatic brain injury, Veterans
VA PRC TBI Model Systems Sites

Minneapolis, MN

Richmond, VA

Palo Alto, CA

San Antonio, TX

Tampa, FL
VA PRC TBIMS Database Inclusion Criteria

- Veteran or Service Member sustained a TBI using the VA/DoD consensus definition; includes all severity levels (mild to severe TBI)
- Age 16 or older at time of index TBI, but age 18 or older at time of consent
- Admitted to a VA PRC or Polytrauma Transitional Rehabilitation Program (PTRP) units
A traumatically induced structural injury and/or physiological disruption of brain function as a result of an external force (e.g., object strikes head, head strikes object, acceleration/deceleration movement) that is indicated by new onset or worsening of at least one of the following clinical signs, immediately following the event:

- Any period of loss of or a decreased level of consciousness;
- Any loss of memory for events immediately before or after the injury;
- Any alteration in mental state at the time of the injury (confusion, disorientation, slowed thinking, etc.);
- Neurological deficits (weakness, loss of balance, change in vision, praxis, paresis/plegia, sensory loss, aphasia, etc.) that may or may not be transient;
- Intracranial lesion

[https://www.healthquality.va.gov/guidelines/rehab/mtbi/]
VA PRC TBIMS Data Collection Process

Enroll (Form 1)
- 608 Variables
- Enrollment data gathered from medical records, patients, and family members

Follow-up (Form 2)
- 570 Variables
- Follow-up at year 1, 2, 5 and every 5 years thereafter. Data from in-person or phone interviews or mail-out questionnaires

Data Source
Form 1 and Form 2s always use best source for data (i.e., patient first, proxy second, chart last)
VA PRC TBIMS Data Categories

**Demographic characteristics**
- Examples include age, gender, race/ethnicity, height, weight, primary language, country of birth, military history

**Injury-related information**
- Examples include date of injury, cause of injury, spinal cord injury, amputation from injury, neuroimaging

**Characteristics of treatment/rehabilitation services**
- Examples include pathways of care, length of stay, neurosurgery, rehospitalization
VA PRC TBIMS Data Categories

Impairment and Disability
• Examples include mortality, lifetime history of TBI, clinician-rated functioning, level of supervision needed

Mental and Behavioral Health Measurements
• Examples include PTSD, depression, anxiety, substance use, legal problems, learning problems, satisfaction with life, post-concussive symptoms

Social Participation and Community Reintegration
• Examples include clinician-rated social engagement, residential status, marital status, employment, education, transportation
In 2015, Dr. Risa Nakase-Richardson (Tampa PRC) was awarded a grant from DVBIC.

Goal: Identify comorbid chronic health conditions; describe health care needs; identify factors impacting ongoing needs post-TBI

Added to Form 1: Comorbidity Data

Added to Form 2s: Comorbidity Data, Veteran Needs, Family Needs

I-MAP: Improved Understanding of Medical and Psychological Needs in Veterans and Service Members with TBI
Current VA PRC TBIMS National Database

**Form 1**
- 1,362 individuals enrolled as of December 31, 2019
- 83 individuals enrolled into PTRP only

**Form 2**
- 3,956 follow-ups (72% followed)
  - Year 1: 1,403 (72% followed)
  - Year 2: 1,281 (73% followed)
  - Year 5: 922 (73% followed)
Current VA PRC TBIMS National Database

- **Age Range**: 17-91 Years
- **Gender**: 95% Male
- **Race**: 81% Caucasian
- **Cause of TBI**:
  - Vehicular (44%)
  - Violence/Blasts (18%)
  - Falls (17%)
  - Penetrating (4%)
- **Education**: At least some college (59%)
- **Emerging Consciousness Program**: 8%
Current VA PRC TBIMS National Database

At Injury...
- 97% Private Residence
- 49% Married
- 18% Living Alone
- 82% Employed
- 64% Active Duty

At Year 1...
- 74% Private Residence
- 38% Married
- 15% Living Alone
- 22% Employed
- 68% Independent

At Year 2...
- 83% Private Residence
- 39% Married
- 17% Living Alone
- 23% Employed
- 71% Independent
Dissemination/Implementation of TBIMS Findings

Commentary

Department of Veterans Affairs Collaboration With the Traumatic Brain Injury Model Systems Program

Joel Scholten, MD

“Participation in TBIMS allows VA to continue to define the unique needs of veterans following TBI and translate these findings into policy, essentially creating a model of continuous quality improvement for TBI rehabilitation within VA.”
Dissemination/Implementation of TBIMS Findings

**Internal Implementation**

- The VA PRC TBIMS researchers collaborate with the clinical teams at each of the PRCs to share recent findings and to discuss translating those findings to best practices.

**External Dissemination**

- The VA PRC TBIMS researchers have produced 183 presentations at national and local research conferences and 58 publications in peer-reviewed journals.
VA PRC TBI Model Systems Website

https://www.polytrauma.va.gov/PolytraumaCenterDatabase/index.asp

Online VA PRC TBI Model Systems Database Syllabus

National and International Presentations Disseminating VA PRC TBIMS Findings
Veteran Knowledge Translation

Newsletters can be found on the VA Polytrauma website:

https://www.polytrauma.va.gov/PolytraumaCenterDatabase/