

# 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.

38 USC 1710C  
note.

## **SEC. 1704. RESEARCH, EDUCATION, AND CLINICAL CARE PROGRAM ON TRAUMATIC BRAIN INJURY.**

(a) IN GENERAL.—To improve the provision of health care by the Department of Veterans Affairs to veterans with traumatic brain injuries, the Secretary of Veterans Affairs shall—

(1) conduct research, including—

(A) research on the sequelae of mild to severe forms of traumatic brain injury;

(B) research on visually-related neurological conditions;

(C) research on seizure disorders;

(D) research on means of improving the diagnosis, rehabilitative treatment, and prevention of such sequelae;

(E) research to determine the most effective cognitive and physical therapies for such sequelae;

(F) research on dual diagnosis of post-traumatic stress disorder and traumatic brain injury;

(G) research on improving facilities of the Department concentrating on traumatic brain injury care; and

(H) research on improving the delivery of traumatic brain injury care by the Department;

(2) educate and train health care personnel of the Department in recognizing and treating traumatic brain injury; and

(3) develop improved models and systems for the furnishing of traumatic brain injury care by the Department.

(b) COLLABORATION.—In carrying out research under subsection (a), the Secretary of Veterans Affairs shall collaborate with—

(1) facilities that conduct research on rehabilitation for individuals with traumatic brain injury;

(2) facilities that receive grants for such research from the National Institute on Disability and Rehabilitation Research of the Department of Education; and

(3) the Defense and Veterans Brain Injury Center of the Department of Defense and other relevant programs of the Federal Government (including Centers of Excellence).

# 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

# Collaboration: NIDILRR and VA PRC TBI Model Systems

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## Comparison of the VA and NIDILRR TBI Model System Cohorts

*Risa Nakase-Richardson, PhD, FACRM; Lillian Flores Stevens, PhD; Xinyu Tang, PhD;  
Greg J. Lamberty, PhD; Mark Sherer, PhD; William C. Walker, MD; Mary Jo Pugh, PhD;  
Blessen C. Eapen, MD; Jacob A. Finn, PhD; Mimi Saylors, MS;  
Christina Dillahun-Aspillaga, PhD; Rachel Sayko Adams, PhD; Jeffrey S. Garofano, MS*

**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. **Key words:** *civilians, outcomes, traumatic brain injury, Veterans*



# VA PRC TBI Model Systems Sites



# 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

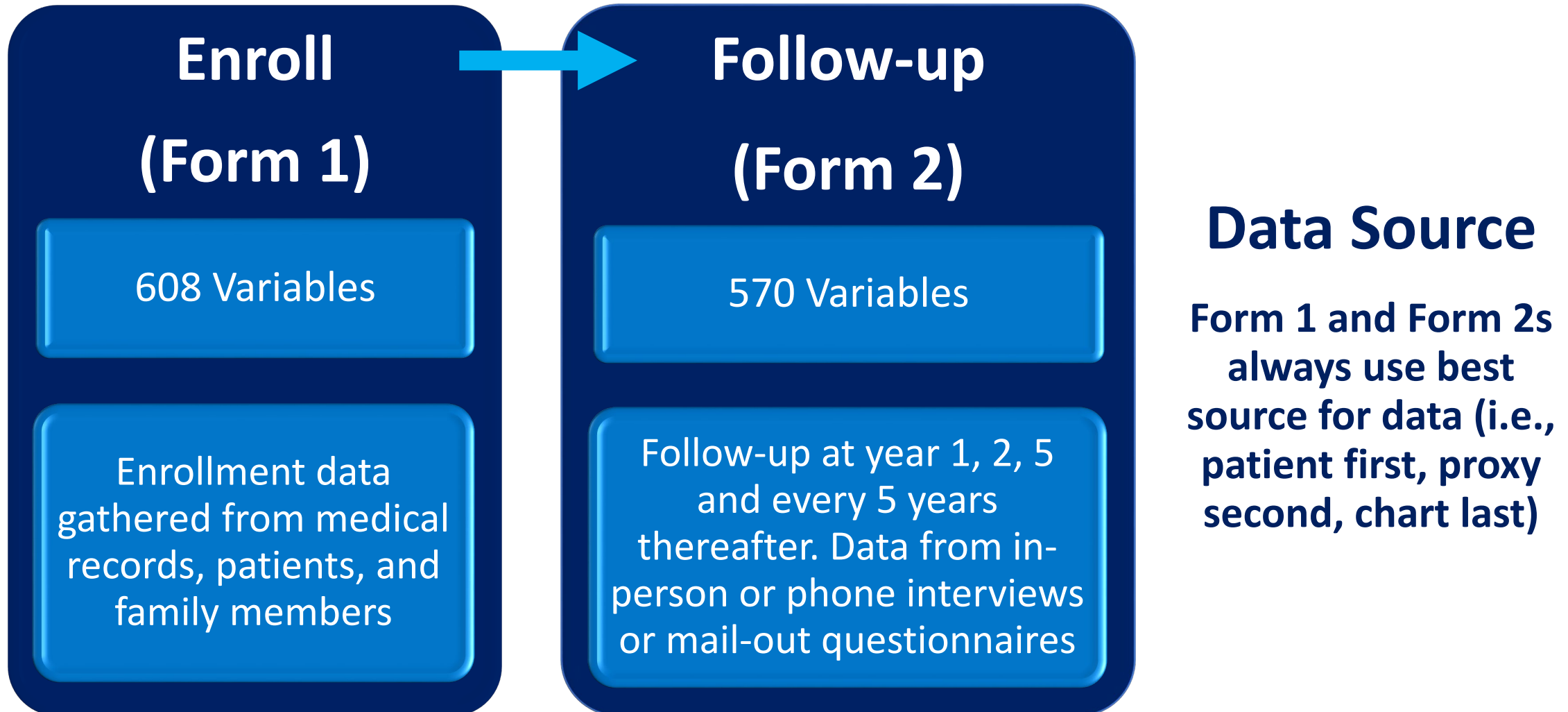
# Departments of Defense and VA Consensus Definition of Traumatic Brain Injury (TBI)

**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





# 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

# Collaboration: DVBIC and VA PRC TBI Model Systems

**I-MAP:** Improved Understanding of Medical and Psychological Needs in Veterans and Service Members with TBI

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

# 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

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## **Commentary**

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### 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

## VA TBI Model Systems/IMAP Newsletter

Issue 7 : Spring 2019

### SLEEP APNEA

#### Inside this issue

Sleep Apnea Diagnostics.....	Page 2
Sleep Apnea Treatment Adherence.....	Page 3
OSA Risk in Mild TBI.....	Page 3
Caregivers and sleep.....	Page 4
Sleep Resources .....	Page 4

#### 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

Newsletters can be found on  
the VA Polytrauma website:

<https://www.Polytrauma.va.gov/PolytraumaCenterDatabase/>