

## Traumatic Brain Injury and the Role of the Polytrauma Clinic

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www.bridgesnky.org

## Objective

- Understand the mechanisms of TBI in combat veteran population
- Identify symptoms of mild TBI most common in veteran population
- Recognize the effect of TBI diagnosis on the veteran, family and community
- Learn available resources to enhance treatment outcomes in the VA and the community

## Mild TBI: Signature Injury of the Iraq and Afghanistan Wars

- Significantly cause of morbidity and mortality
- 10-20% of returning vets have suffered a TBI
- May affect long-term health
- May affect resilience and in-theatre performance

## Mechanisms

- Initial injury from the blast over pressure wave
  - These waves in animal studies show the waves can cause changes that are neuropathologically similar to diffuse axonal injury

Elder, G., Christian, A. (2009). Blast-related mild traumatic brain injury: mechanisms of injury and impact on clinical care. *MT Sinai Journal of Medicine*, 76(2): 111-8.

- Armed forces are sustaining affects from explosives or blast by rocket propelled grenades, improvised explosive devices and land mines almost daily



## Mechanisms

- Blast out pressurization wave travels at high velocity and is affected by surrounding environment
  - Increased effects in a closed environment like a vehicle

## Secondary Blast Injury

Result of energized fragments flying through the air cause penetrating brain injury



## Tertiary Brain Injury

Individual thrown from blast into solid object  
 -Similar to acceleration/ deceleration forces and blunt trauma to the brain  
 -Comparable to MVA



## Quaternary Blast Injury

Brain injury related to significant blood loss of inhaled toxic gases



- TBI from blast exposure can be more complex
  - Challenging to differentiate blast related TBI from other conditions such as PTSD
  - Difficult to estimate course of recovery

## Mild TBI Remains Little Understood, Hard to Diagnose

- Most recent issue of U.S. Medicine found
  - It took 6 years of fighting in Iraq and Afghanistan for the military leaders to realize the impact of TBI and the cumulating affects multiple mild TBIs was having
  - Still little research available - most did not start until 1990's and that is on severe injuries
  - Most recent numbers indicate
    - 220,430 diagnosed TBI since 2000
    - Majority 60-80% - Mild TBI

Mild TBI remains Little Understood, Hard to diagnose (2012). *US Medicine: The Voice of Federal Medicine*, 48(1), 22-23.

- In 2007 evidence began to come to light
  - Polytrauma Clinic Started
  - 2009 – Commanders approached with evidence of how cumulative effect would impact functional abilities

- Evidence shows mTBI can result in:
  - Poor marksmanship
  - Slows reaction time
  - Decreased concentration

## June 2011 DOD Issues a Directive

- All service members involved in a blast related incident or within 50 meters of a blast to automatically be evaluated for TBI
  - Changed from symptoms based reporting to mandatory event-based examination

Why are blast injuries an important issue right now? (2012). *Defense and Veterans Brain Injury Center*. Retrieved from <http://www.dvbic.org/TBI---The-Military/Blast-Injuries.aspx>

- Prior to the directive, several weeks might go by before the exam
  - Making it difficult to diagnose for TBI
- Goal
  - Get diagnosed
  - Treated
  - Then back to unit ASAP

## Waiting too long...

- If the patient shows up at the VA years after service complaining of mTBI and PTSD symptoms
  - mTBI can be ruled out
- Immediate treatment is necessary
  - Helps curtail long term affects
  - Helps future diagnosis of patient

## Currently, that is not the case...

- The majority of patients we see were deployed prior to 2012
- Poor communication between DOD and VA
- Data from a field TBI clinic may be hard for VA provider to locate

## What the Louisville VA Polytrauma Clinic is doing

- Diagnose mTBI
  - History taking - history of a blast or other head trauma - told to by the patient
  - Presence of loss of consciousness or alteration of consciousness
  - Symptoms of – headaches, cognitive slowing, dizziness immediately or soon after the incident

## Current Symptoms Most Seen

- Headaches
- Insomnia
- Cognitive slowing
- Irritability
- Chronic Pain
- Tinnitus
- Anxiety
- Avoidance of crowds/social situations
- Depression

## Diagnosis

- Currently no objective marker for diagnosing mTBI
- We are making a diagnostic judgment based on history from the patient that may be several years old

## Research Looking for Diagnostic Marker

- Papillary response and visual tracking
- Biomarkers in serum, saliva, and skin
- Diffusion tensor weighted imaging
- Electrophysiological parameters

- Currently the diagnosis of mTBI, PTSD, chronic pain, depression, substance use disorder all overlap

## Requirements

- All service members are now required to have a neuropsychological assessment done prior to deployment
  - Testing speed and accuracy of attention, memory and thinking ability
  - Scores can be compared pre and post injury

## Role of Polytrauma Clinic

- A clinic provided for veterans as a "seamless transition" from the Department of Defense (DOD) to the VA for conditions incurred in Iraq or Afghanistan.
- Serves as an outpatient clinic designed to evaluate and manage care of veterans with Traumatic Brain Injuries (TBI)

## Purpose

- The VHA implementation plan for Public Laws 108-447 and 108-422 concerning provision of care for complex and severe combat injuries submitted to Congress included established of an integrated Polytrauma System of Care (PSC).

## Four Components

- Five regional Polytrauma Rehabilitation Centers (PRC)
- 21 Polytrauma network sites (PNS)
- Local Polytrauma Support Clinic Team (PSCT)
  - ex. (Louisville VA Polytrauma Clinic)
- Polytrauma Points of Contact (POC)
  - Vickie Zaborowski, LCSW (Louisville VA Polytrauma Clinic Coordinator)

## TBI 2<sup>nd</sup> Final Evaluation

- Services Available
  - PT, OT, Speech, Neuropsychology as needed
  - Mental Health services, Pain Clinic, Substance Abuse services
- Medication management for:
  - Headaches, mood disorders, pain, sleep cognitive disorders

## Complexity of Polytrauma Cases

- TBI Silent Epidemic
- New generation of younger veterans
- Multiple medical issues
- Mental Health Labeling
  - Overlap with PTSD
- Socialization Difficulties

## Symptoms lead to bigger societal problems

- Community Reintegration
- Unemployment:
  - October 2011, 12.1% overall unemployment rate
  - Age 18-24; 30.4% jobless rate
  - 4.8% for Black veterans between 18-24
  - 35+ have lower rate than non-vets
- Even without medical issues:
  - Younger vets are mostly only high school education
  - Many return to rural areas that are struggling
  - No private sector skills/experience

## Suicide

- Suicidal threats are diminished in patients who receive the full course of treatment at the VA
- RAND Corp – researchers
  - Multiple issues but > 2/3 of those on maintenance treatment for depression and bipolar illness did not take their meds
- VA is trying to set up a system to better track medication compliance
- Better marketing of programs offered

## Patients Frequently Non-complaint

- Financial reasons
- Transportation
- Memory issues
- Difficulty in getting refills
- Family issues
- <http://maketheconnection.net/events/family-relationships>

## Barriers to Treatment

- Stigma
- Interference with work, school, or family
- Financial difficulties
- Multiple appointments throughout treatment

## Polytrauma Services:

- Continue to coordinate with VBA staff to assist Polytrauma Veterans with filing their service connection claims, at the Polytrauma Clinic.
- Continue Tele-health services:  
Since December 2009, Louisville, Kentucky, Polytrauma Clinic has served 205 Rural Veterans in the Tele-health setting.

## About My HealtheVet

• My HealtheVet is VA's award-winning e-health website, which offers Veterans, active duty soldiers, their dependents and caregivers anywhere, anytime Internet access to VA health care information and services.

• Online Personal Health Record that empowers Veterans to become informed partners in their health care.

• Veterans can access trusted, secure, and current health and benefits information as well as record and store important health and military history information at their convenience.

## My HealtheVet Features Today



- Personal information (contacts, providers, etc.)
- Personal, family, and military health history
- Personal health summary
- HealthLogs (track blood pressure, weight etc.)
- Medications (over the counter drugs, herbals, etc.)
- Allergies and immunizations
- Medical events
- Food and activity journals
- Online VA prescription refills, VA prescription history
- My Complete Medications (printable summary)
- Wallet health information card
- Health calendar
- Trusted health education information
- Self-assessment tools, VA Wellness Reminders
- Mental health resources (including online courses)
- Secure Messaging
- The VA Blue Button: Download My Data

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## My HealtheVet Overview



[www.myhealth.va.gov](http://www.myhealth.va.gov)

### 3-Tier Access Model:

- Visitors
- Registrants
- In-Person Authenticated (IPA) Users

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