

THE SPECTRUM OF TRAUMATIC BRAIN INJURY: MAJOR ISSUES THAT ARE FACING OUR RETURNING VETS

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Epidemiology

- ⦿ Estimated that 16% - 25% of the TBI population may not seek medical attention after injury
- ⦿ In civilian population, leading cause of TBI are falls (35.2%), motor vehicle and traffic accidents (17.3%), getting struck by an object (16.5%), and assaults (10.1%)
- ⦿ In active duty military, blasts from explosive devices leading cause of TBI

Epidemiology

- 40% of service personnel returning from Operation Iraqi Freedom (OIF) & Operation Enduring Freedom (OEF) show signs & symptoms of TBI due to a blast injury
- The large majority (80%) of combat head injuries sustained in Operation Iraqi Freedom and Operation Enduring Freedom are mild concussions as opposed to severe, debilitating TBI.

National Institute of Neurological Disorders and Stroke.

(<http://www.americasheroesatwork.gov>)

Traumatic Brain Injury

A term that describes sudden and physical damage and trauma to the brain

- A bolt or jolt to the head or a penetrating head injury that disrupts the function of the brain
 - Not all blows or jolts to the head result in a TBI.
 - The severity of such an injury may range from “mild” (a brief change in mental status or consciousness) to “severe” (an extended period of unconsciousness or amnesia) after the injury
 - mTBI= Concussion

Post Concussive Symptoms

Physical

- Headache
- Dizziness
- Balance problems
- Nausea/Vomiting
- Fatigue
- Visual disturbances
- Sensitivity to light/noise
- *Ringing in the ears (aka: He got his bell rung)*

Emotional

- Anxiety
- Depression
- Irritability
- Mood lability

Cognitive

- Slowed processing
- Decreased attention
- Poor Concentration
- Memory Problems
- Verbal dysfluency
- Word-finding
- Abstract reasoning

Recovery from TBI

- ⦿ Recovery varies from person to person
- ⦿ Can be spontaneous
- ⦿ 80 – 85% mild TBI recover within 6 months
- ⦿ 15 – 20% mild TBI will recover in 1 – 2 years
- ⦿ Most will make full recovery
- ⦿ Some partial recovery
- ⦿ Extreme cases may never recover

(<http://www.af.mil/news/story.asp?id=123124683>)

Possible Physical Effects

◎ Impairment of:

- Speech
- Vision
- Hearing

◎ Difficulty with:

- Balance
- Spasticity
- Paralysis
- Paresis (weakness)

Less obvious physical effects:

- **** **headaches**
- **** **fatigue**


Cognitive effects of TBI

- Impairment with:
 - Disordered consciousness
 - Disorientation
 - Memory deficits
 - Decreased abstraction
 - Decreased learning ability
 - Language/communication deficits
 - Poor judgment
 - Poor quality control
 - Inability to make decisions
 - Poor initiative
 - Poor depth perception
 - Dizziness
- Leads to:
 - General intellectual deficits
 - Deficits in processing/sequencing information
 - Illogical thoughts
 - *Inappropriately interrupting conversations*
 - *Inability to follow conversation*
 - *Using inappropriate tone of voice*
 - *Unable to process subtleties/nuances in language (e.g. difference between tongue-in-cheek and seriousness)*
 - Perseveration/Confabulation
 - Difficulty with generalization
 - Poor attention/Fatigue
 - Reduced motor speed/poor hand eye coordination
 - Visual neglect

Behavioral effects of TBI continued

- ⦿ Impairment with:
- ⦿ Impaired Judgment
- ⦿ Impatience
- ⦿ Depression
- ⦿ Hypersexuality
- ⦿ Hyposexuality
- ⦿ Dependency
- ⦿ Silliness
- ⦿ Leads to:
- ⦿ Aggressiveness
- ⦿ Apathy
- ⦿ Immaturity
- ⦿ Disinhibition
- ⦿ Loss of interest
- ⦿ Anxiety

MACE: Military Acute Concussion Evaluation

**Military Acute Concussion Evaluation (MACE)**
Defense and Veterans Brain Injury Center

Patient Name: _____
SS#: _____ Unit: _____
Date of Injury: ____/____/____ Time of Injury: _____
Examiner: _____
Date of Evaluation: ____/____/____ Time of Evaluation: _____

History: (I – VIII)

I. **Description of Incident**
Ask:
a) What happened?
b) Tell me what you remember.
c) Were you dazed, confused, "saw stars"? Yes No
d) Did you hit your head? Yes No

II. **Cause of Injury** (Circle all that apply):
1) Explosion/Blast 4) Fragment
2) Blunt object 5) Fall
3) Motor Vehicle Crash 6) Gunshot wound
7) Other _____

III. **Was a helmet worn?** Yes No Type _____

IV. **Amnesia Before:** Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)
 Yes No If yes, how long _____

V. **Amnesia After:** Are there any events just AFTER the injuries that are not remembered? (Assess time until continuous memory after the injury)
 Yes No If yes, how long _____

VI. Does the individual report **loss of consciousness** or "blacking out"? Yes No If yes, how long _____

VII. Did anyone observe a period of **loss of consciousness** or unresponsiveness? Yes No If yes, how long _____

VIII. **Symptoms** (circle all that apply)
1) Headache 2) Dizziness
3) Memory Problems 4) Balance problems
5) Nausea/Vomiting 6) Difficulty Concentrating
7) Irritability 8) Visual Disturbances
9) Ringing in the ears 10) Other _____

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This form may be copied for clinical use.
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Developed by DVBIC and released in Aug 2006, revised to include concussions

Performed by medical personnel

3-Part Screening Tool – "CNS"

- Cognition
- Neurological Exam
- Symptoms

Neuro-cognitive Assessment Tool (NCAT) Automated Neuropsychological Assessment Metrics (ANAM)

- Computerized neuro-cognitive assessment tool
- Purpose:
 - Establish an accurate assessment of *pre-injury cognitive performance* for comparison in post-injury return to duty (RTD) decisions
 - One piece of clinical picture
- Takes 20 minutes to complete
- Current policy (as of May' 08):
 - All pre-deployers receive baseline cognitive testing with ANAM within one year of deployment
- Better assessment if injured SM is compared to their baseline scores as opposed to a normative databank
- ***This assessment is also being used for competitive sports in highschool, college level

Treatment of TBI

- Research actively conducted in this area
- Treatment dependent on severity of the TBI
- In mild TBI cognitive behavioral therapy most common treatment form
- Support treatment:
 - (a) *nutrition and rest*
 - (b) *education*
 - (c) *counseling & family support*
 - (d) *medication for symptomatic relief*

Future Goals?

- Provide follow-up to identified veterans with Traumatic Brain Injury (mild, moderate, severe)
- Monitor the care continuum for traumatic brain injury
- Provide education and support-serving to all involved in the care
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- Identify barriers and/or gaps in service delivery for TBI Service Members as they transition between systems and settings
- Functional outcomes picture to look at quality of life issues related to home, work and social environments transitions