The Face of the Returning Soldier with mild TBI-the Madigan/Ft. Lewis Experience

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Objectives

- Understand the process used at Madigan for screening and evaluating Soldiers with a history of mTBI
- Become familiar with the composition and functions of the Madigan TBI Program
- Become familiar with the common symptoms of the Soldiers with mTBI
- Understand the effects of co-morbidities on recovery
- Discuss lessons learned and questions yet to be answered

Traumatic Brain Injury (TBI) Program - Mission

- Provide high quality clinical assessment and care for Service members who have sustained a TBI
- Provide TBI education to Service members and their families, providers, and front-line commanders
- Conduct clinical research which contributes to continuous quality improvement in the assessment and care of Service members with TBI
MAMC TBI Program Staff

**Phase I**
- Program Director/Behavioral-Neurologist
- TBI Program Administrative Officer
- Neurologists
- Neuropsychologists
- Primary Care Providers
- Clinical Psychologist
- TBI Case Managers (RNs)
- Education Specialist and RN Educators
- Occupational and Physical Therapists
- Speech Pathologist
- Ombudsman
- Admin Medical Assistants
- Research Data Analyst

**Phase II**
- Surge, Regional Rehabilitation, Tele-TBI Team
- Brief treatment program focused on PCS

TBI Program Business Process

Activities of the TBI Program

- Clinical
  - Secondary assessments
  - Neuropsychological evaluation
  - Neurological /Neurobehavioral evaluation
  - Psychological assessment and counseling
  - Memory Improvement class
  - Case conferences
  - Multidisciplinary group
Activities of the TBI Program

- **Education**
  - SMs, spouses, commanders, providers
  - CME conferences
  - Educational displays
  - Literature circulation
  - Ombudsman for troops

- **Case Management**
  - Coordinated care
    - MAMC, MTFs, VA, UW, DVBIC Rehab Centers
  - Family support

- **Research**
  - Epidemiology, headache, sleep, remote F/U, TBI/PTSD interface

- **Collaboration**
  - MAMC Depts, UW, VA,

- **Tele-TBI servicing the WRMC**

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Traumatic Brain Injury Program Vision

- Establish a state of the art comprehensive TBI Center
- Maximize Soldier care resulting in increased retention
- Provide a wider spectrum of TBI services
- Enhance networking with local, state, and national organizations to develop cooperative programs of care for Service members with TBI and their families
Traumatic Brain Injury Program - Vision

- Create an on site cognitive–behavioral rehabilitation program
- Develop protocols in search of biological markers for mTBI
- Develop protocols in search of optimal treatment regimens for Service members with mTBI
- Improve clinical outcomes resulting in enhanced quality of life for Service members and their families

TBI manifests as a spectrum of severity and impairment – it is NOT a single homogenous entity

TBI
Level of Severity
- Mild (mTBI)
- Moderate
- Severe
Blast Injury

- Primary
  - Direct result of blast wave and change in atmospheric pressure
  - Injury severity and deflected waves
  - Injury due to electromagnetic pulse
- Secondary
  - Objects projected by the blast
- Tertiary
  - Individual is put in motion and strikes head
- Quaternary
  - Toxic gas, embolus, hypoxia, ischemia, hemorrhage
**TBI**

**Mild Level of Severity**

- Grade 1
- Altered or LOC < 30 min
- Normal CT &/or MRI
- GCS = 13-15
- PTA < 24 hrs.

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**mTBI Severity**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Type I</th>
<th>Type II</th>
<th>Type III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of consciousness</td>
<td>Altered state or transient loss</td>
<td>Defined loss with time unknown or less than 5 min</td>
<td>Loss of 5-30 min</td>
</tr>
<tr>
<td>Posttraumatic amnesia</td>
<td>1-60 s</td>
<td>60 s-12 h</td>
<td>&gt;12 h-24 h</td>
</tr>
<tr>
<td>Neurological symptoms</td>
<td>One or more</td>
<td>One or more</td>
<td>One or more</td>
</tr>
</tbody>
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**Common Symptoms after mTBI**

*(Post-Concussion Syndrome)*

- Somatic
  - Headache
  - Sleep Disturbance
  - Fatigue
  - Dizziness
  - Nausea/vomiting
  - Tinnitus (ringing in the ears)
Common Symptoms after mTBI
(Post-Concussion Syndrome)

Somatic
- Visual disturbance
- Balance problems /dysequilibrium
- Light/noise/alcohol heightened sensitivity
- Altered sense of smell/taste
- Focal neurological symptoms

Common Symptoms after mTBI
(Post-Concussion Syndrome)

Cognitive
- Attention/ concentration problems
- Memory problems:
  - Forgetfulness
  - Forgetting to remember
  - Problems with working and temporal memory
- Affected by multiple physical and psychosocial factors

Common Symptoms after mTBI
(Post-Concussion Syndrome)

Cognitive
- Difficulty with multitasking
- Difficulty with planning and organizing
- Problem solving difficulty
- Slowed mental processing
- Slowed response to stimuli
Common Symptoms after mTBI
(Post-Concussion Syndrome)

- Neuropsychiatric
  - Depression
  - Anxiety
  - Irritability
  - Impulsivity
  - Aggressiveness
  - Apathy
  - Disinhibition

mTBI vs. PTSD

- Usually in PTSD
  - Flashbacks
  - Re-experiencing phenomena
  - Nightmares
  - Increased startle response
  - More often seen with blast than other types of mTBI
  - More often seen with mTBI than sTBI or prolonged LOC
  - Onset of sx may be delayed by months
  - 33% are asymptomatic at 1 yr.
  - 33% still symptomatic after 10 yrs.
mTBI vs. PTSD

- Usually in PTSD
  - High psychiatric co-morbidity (>50% have 3 or more psychiatric problems)
  - Risk factors:
    - Lower socioeconomic status
    - Previous psychiatric condition
    - Poor social support
    - Initial severity of reaction to traumatic event
    - Pre-existent stress +/- sleep disturbance

Overlapping Symptoms

- Anxiety
- Depression
- Concentration problems
- Sustained attention problems
- Sleep disturbance

Recovery from mTBI

- Symptoms usually start within hours or days of the injury
- Symptoms usually resolve within 3 months (85-90%)
Approaches to Treatment of mTBI

- Education, education, education
- Practical guidelines to promote healing
- Unit and family support
- Case Management
- Behavioral Health F/U in select cases

Approaches to Treatment of mTBI

- Cognitive –Behavioral rehabilitation
- Physical rehabilitation
- Pharmacotherapy in select cases
- Alternative Medical Tx
- Pro-health: expectation of recovery
- Co-morbid PTSD – Group Tx, virtual reality, exposure therapy, medication

Pharmacotherapy

- Individualize
- Older patients require lower doses
- Most uses are off-label – counsel the patient
- Most uses are symptom focused
- REMEMBER: some medications may exacerbate neuropsychiatric symptoms and retard overall recovery (e.g. BZDs; Haldol)
Pharmacotherapy

- No present therapy directed at neuropathology
- Target three categories
  - Somatic (e.g. headache, sleep, dizziness)
  - Cognitive (e.g. memory, concentration, attention)
  - Neuropsychiatric (e.g. depression, anxiety, PTSD)
- Problems in one category may worsen problems in another (e.g. sleep disturbance and pain will interfere with concentration, mood, etc.)
- Effective treatment of symptoms in one category may effectively treat those in another

mTBI – Persistence of Symptoms

- Multiple TBIs
- PTSD
- Pain
- Pre-morbid psychiatric problems
- Psychiatric co-morbidity
- Loss of psychosocial support
- ?? Blast injury

Recovery from mTBI

- Remember there are exceptions to every rule – recovery in moderate TBI may be significant, and persistence of symptoms may occur in mTBI
- Just because the neuro exam and scans are normal, does not mean a mTBI did not occur
Recovery from mTBI

- The cause of persistent symptoms may not necessarily be due to brain injury – the same symptoms may be seen in patients who have never had a TBI
- Some patients who appear to have returned to baseline will demonstrate deficits during times of psychological or physiological stress

Practical Guidelines

Things that Help

- Rest and adequate sleep
  - Increase activity slowly
  - Write things down in a notebook
  - Develop a regular daily routine for structured activities

Practical Guidelines

Things that Help

- Do one thing at a time - avoid multitasking
- Remove distractions from the environment
- Enrich environment with reward systems
- Consult with trustworthy family member or friend before making decisions
Practical Guidelines
Things to Avoid

- Risking another brain injury (skiing, contact sports, motorcycles, etc.)
- Alcohol and illicit drugs
- Caffeine or “energy enhancers”
- Cough, cold, allergy meds containing pseudoephedrine
- Over the counter sleeping aids
- ??? Returning too soon to a high risk zone in a combat theater

Items to Ponder

- All head injuries are not brain injuries!
- All brain injuries do not require injury to the head!
- Impairment does NOT equal disability!

- Irony: the more severe the TBI the less likely the patient is to complain of symptoms and the more likely to deny that they have been injured (anosagnosia)

- Irony: the more severe the TBI the less likely to have PTSD

Items to Ponder

- What role does chronic stress play in worsening the symptoms of mTBI?
- What role does a mTBI have in predisposing to PTSD?
- What are the effects of chronic sleep deprivation on the symptoms of mTBI?
- Are the pathophysiology and the prognosis different in mTBI due to blast injury compared to acceleration-deceleration injuries?
Items to Ponder

- Is too much emphasis placed on trying to distinguish mTBI from PTSD both clinically and administratively?

- What effects do repeated deployments to a war zone have on a Soldier’s long term health?

- What effects do repeated deployments have on families and marriages?