Traumatic Brain Injury and Suicide in Veterans and Returning Military Personnel

Lisa A. Brenner, PhD, ABPP
VISN 19 Mental Illness Research Education and Clinical Center
Departments of Psychiatry, Neurology, & Physical Medicine and Rehabilitation
University of Colorado, Denver,
School of Medicine

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Objectives

• TBI 101
• OEF/OIF Sustained TBI
• TBI and Psychiatric Symptoms
• TBI and PTSD
• TBI and Psychosocial Fx
• TBI and Suicidality
• Assessment
• Intervention
• Traumatic Brain Injury - 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.

• A TBI can result in short- or long- term problems with independent function.
The Scope of the Problem

- 1.4 million injuries per year (approximately 200 per 100,000 persons per year)
  - Vast majority ~80%, are graded as mild, with 100% survival
  - ~10% are moderate, with 93% survival
  - ~10% are severe, with only 42% survival
Bimodal Distribution and Highest Risk Age

Ages: 15 - 24

Ages: 65 - 75

Elderly adults – higher mortality rates
TBI and Gender

• Traumatic brain injury is more than twice as likely in males than in females
Alcohol/Drugs and TBI Acquisition

The greatest risk factors for traumatic brain injury:

Alcohol/drug use

An alcohol/drug disorder
Studies suggest that between 1/3 to slightly over 1/2 of persons with TBI are intoxicated at the time of injury and/or show a pre-injury history of alcohol abuse.
Risk Factors for Sustaining a TBI

• Familial discord
• Low SES
• Unemployment
• Low educational status
• Psychiatric symptoms
• Antisocial/Aggressive behavior
• Previous TBI
Leading Causes of TBI

- Falls (28%)
- Motor Vehicle – Traffic Crashes (20%)
- Assaults (11%) \[\text{Langolis et al. 2004}\]
- Blasts are the leading cause of TBI for active duty military personnel in war zones \[\text{DVBIC 2005}\]

http://www.cdc.gov/ncipc/tbi/TBI.htm
Mechanism of Injury (Traditional)
Blast Injury

• Primary – Barotrauma
• Secondary – Objects being put into motion
• Tertiary – Individuals being put into motion
TBI -Severity
Thanks John Kirk, PhD

TBI Severity

Trauma

Retrograde Amnesia
LOC
Posttraumatic Amnesia

Encoding events

TIME
## Injury Severity

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
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<tbody>
<tr>
<td>Altered or LOC&lt;30 minutes with normal CT and/or MRI</td>
<td>LOC&lt;6 hours with abnormal CT and/or MRI</td>
<td>LOC&gt;6 hours with abnormal CT and/or MRI</td>
</tr>
<tr>
<td>GCS 13-15</td>
<td>GCS 9-12</td>
<td>GCS&lt;9</td>
</tr>
<tr>
<td>PTA&lt;24 hours</td>
<td>PTA&lt;7 days</td>
<td>PTA&gt;7 days</td>
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</table>
Common TBI Symptoms – NOT to be confused with the injury itself

TBI is a historical event
Common Behavioral Complaints

• Impaired Judgment
• Impatience
• Depression
• Hypersexuality
• Hypososexuality
• Dependency
• Silliness

• Aggressiveness
• Apathy
• Immaturity
• Disinhibition
• Loss of Interest
• Anxiety
Common Behavioral Complaints

- Restlessness
- Agitation
- Combativeness
- Emotional Lability
- Confusion
- Hallucinations
- Disorientation

- Paranoid Ideation
- Hypomania
- Confabulation
- Irritability
- Impulsivity
- Egocentricity
Mild TBI Definition – American Congress of Rehabilitation Medicine

“Traumatically induced disruption of brain function that results in loss of consciousness of less than 30 minutes’ duration or in an alteration of consciousness manifested by an incomplete memory of the event or being dazed and confused.”
Mild TBI
Short- and Long-Term Effects
Common Mild TBI/Postconcussive Symptoms

- Headache
- Poor concentration
- Memory difficulty
- Irritability
- Fatigue
- Depression
- Anxiety
- Dizziness
- Light sensitivity
- Sound sensitivity

Immediately post-injury 80% to 100% describe one or more symptoms

Most individuals return to baseline functioning within a year

Ferguson et al. 1999, Carroll et al. 2004; Levin et al. 1987
7% to 33% have persistent symptoms
The International Classification of Functioning (ICF)

Model developed by the World Health Organization (WHO)

Means of understanding factors that can impact how people live with TBI

REGARDLESS OF INJURY SEVERITY
Key Terms

• Disability – impairment in bodily function (e.g., cognitive dysfunction)

• Activity limitation – “...difficulties an individual may have in executing” a task or action (e.g., not being able to drive)

• Participation restriction – “...problems an individual may experience in involvement with life situations” (e.g., not being able to work)
It is necessary to consider individual functioning and disability post-TBI in the context of personal and environmental factors.

- History of combat experience
- Limited public transportation
- Pre-TBI history of depression
- Limited social supports
OEF/OIF
Sustained
TBI
TBI and Psychiatric Symptoms
Depression

- Frequency of Depressive Disorder – 6% to 77%  
  Robinson and Jorge 2005
- 1 month s/p TBI (mostly moderate TBI sample)  
  - 26% of patients developed major depression  
  - 3% minor depression  
  Jorge et al. 1993
- After 1 year – 25% rate of depression with some patients recovering and others developing delayed onset  
  Jorge et al. 1993

20% - 40% of individuals affected at any point in time during the first year

About 50% of people experiencing depression at some stage  
Fleminger et al. 2003
Alcohol Use Post-TBI
At least ¼ of individuals with TBI are moderate to heavy drinkers between 1 and 3 years post-injury
# Drug Use Post-TBI

<table>
<thead>
<tr>
<th>Substance Use Disorders*</th>
<th>Before</th>
<th>After</th>
<th>Community Base Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40%</td>
<td>28%</td>
<td>17%</td>
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</table>

*Includes alcohol/drug dependence or abuse, or both

Hibbard et al. 1998
Patients with histories of substance abuse – worse outcomes after TBI

Corrigan 1995
TBI and PTSD
PTSD with Amnesia?
Why the controversy?

Trauma

Retrograde Amnesia

LOC

Posttraumatic Amnesia

Encoding events

TIME

Thanks John Kirk, Ph.D.
Mild TBI and PTSD: Overlapping Symptoms and Diagnostic Clarification

- **PTSD**
  - Insomnia
  - Impaired memory
  - Poor concentration
  - Depression
  - Anxiety
  - Irritability
  - Emotional Numbing
  - Hypervigilance
  - Flashbacks/Nightmares
  - Avoidance

- **Mild TBI**
  - Insomnia
  - Impaired memory
  - Poor concentration
  - Depression
  - Anxiety
  - Irritability
  - Fatigue
  - Headache
  - Dizziness
  - Noise/Light intolerance
Potential Clinical Presentation

PTSD
- Flashbacks
- Nightmares

TBI
- Headaches
- Dizziness

Attentional problems
- Depression

Irritability
- Anxiety
TBI and Psychosocial Functioning

(Community Samples/Severe Injuries)
Work

• Percentage of TBI patients returning to work
  – Reported rates varying from 12% to 96%
    Ben Yishay et al. 1987
    • 90% of persons with mild TBI
    • 80% of persons with moderate TBI

• Factors Determining a Poor Prognosis for Return to Work
  – Age
  – Low level of education
  – Lack of job qualification
  – Greater cognitive impairment
    Franulic et al. 2004

Burdensomeness & Failed Belongingness
Marital Relationships After TBI

- Study of 18 women in heterosexual relationships 1-7 years after their partner had sustained a TBI
  - Less Marital and Sexual Satisfaction
    - Perceived their partners as being more satisfied with the marriage than they were.
  - Role Change in the Marriage
    - From partner to parent
      - Incompatibility of roles – Caretaker & Sexual Partner
  - Satisfaction Derived
    - Sense of commitment and companionship

Burdensomeness & Failed Belongingness

Gosling & Oddy 1999
Finances

- Good adjustment between person with TBI and spouse associated with less financial strain
  
Peters et al. 1990

- 2/3 of families providing support, socialization, and assistance to member with brain injury experienced financial adversity
  
Jacobs 1988

Burdensomeness
Suicidal Behavior
Post-TBI: Increased Risk?
TBI and Suicidal Ideation: Post Acute

23% of sample endorsed clinically significant suicidal ideation

Community sample re: recent suicidal thoughts – 3.5%

Kienhorst et al., 1990

Simpson and Tate 2002
Suicidality and Psychiatric Admission – VA TBI Survivors

• 22 Subjects
• Total Number of Admissions: 114
  – Median Number of Admissions: 3
  – Range of Admissions: 1-20

Number of Admissions Secondary to a Suicide Attempt

11% of total admissions
Number of attempts 1-5
Median - 2

TBI and Suicide Attempts

• Silver et al. (2001) In a community sample, those with TBI reported higher frequency of suicide attempts than those without TBI (8.1% vs. 1.9%).
  – Even after adjusting for sociodemographic factors, quality of life variables, and presence of co-existing psychiatric disorder.
TBI and Suicide: Completions

• Teasdale and Engberg (2001) looked at hospital admissions
  – Individuals with concussions (n=126,114)
  – Individuals with cranial fracture (n=7,560)
  – Individuals with cerebral contusion or intracranial hemorrhage (n=11,766)

“Standardized mortality rates, stratified by sex and age, showed that the incidence of suicide among the three groups was increased relative to the general population (3.0, 2.7, 4.1 respectively).”
How long do you need to keep assessing for suicidal behavior?

Median time from injury to suicide 3 to 3.5 years for all three groups.

Cases were followed - up to 15 years and no particular period of “greater risk” was identified.  
Teasdale and Engberg 2001

Mean period of 5 years for post-injury suicide attempts.
Simpson and Tate 2002
Risk Factors for those with a History of TBI
Role of Pre-injury vs. Post-Injury Risk Factors

Post-injury psychosocial factors, in particular the presence of post injury emotional/psychiatric disturbance (E/PD) had far greater significance than pre-injury vulnerabilities or injury variables, in predicting elevated levels of suicidality post injury.

Higher levels of hopelessness were the strongest predictor of suicidal ideation, and high levels of SI, in association E/PD was the strongest predictor of post-injury attempts.
Respondents with a co-morbid history of psychiatric/emotional disturbance and substance abuse were 21 times more likely to have made a post-TBI suicide attempt.
Assessment: Evidence-Based Practices

1

Could existing assessment strategies be modified to meet the needs of those with TBI sequelae?

RESEARCH NEEDED!!!
Assessment of Suicidality in those with a History of TBI

• In light of [very limited] evidence-based methods
  – Using general approaches for suicide prevention
  – Adhering to current best practice for treating TBI-related psychiatric sequelae
  – Conceptualizing cases in light of the findings from research on suicidality after TBI
A Qualitative Study of Potential Suicide Risk Factors in Returning Combat Veterans

Interpersonal-Psychological Theory of Suicide Risk
Joiner 2005

Those who desire death

Perceived Burdensomeness + Failed Belongingness

Suicidal Ideation

Those capable of suicide

Acquired Ability (Habituation)

Serious Attempt or Death By Suicide
The International Classification of Functioning (ICF)

• Disability – impairment in bodily function (e.g., cognitive dysfunction)

• Activity limitation – “...difficulties an individual may have in executing” a task or action (e.g., not being able to drive)

• Participation restriction – “...problems an individual may experience in involvement with life situations” (e.g., not being able to work)
TBI and Suicide Risk Assessment Strategy

• Assess for
  – Acquired Ability
  – Burdensomeness
  – Failed Belongingness

• In the context of
  – Disability
  – Activity limitation
  – Participation restriction
Interpersonal-Psychological Theory of Suicide Risk

Joiner 2005

Those who desire death

Perceived Burdensomeness + Failed Belongingness

Cognitive Dysfunction, Inability to Drive, Inability to Work, Loss of Sense of Self

Those capable of suicide

Acquired Ability (Habituation)

Injury History, TBI Sequelae (e.g., chronic pain), Depression

Suicidal Ideation

Serious Attempt or Death By Suicide
Intervention: Evidence-Based Treatments (Talk)

What interventions could be adapted to meet the needs of those with TBI sequelae and suicidality?

RESEARCH NEEDED!!!
4 PROMISING STRATEGIES

• Structure
• Increase coping strategies
  – Identify and capitalize on strengths (function)
• Modify based upon the needs of the individual seeking treatment

What other strategies are out there that could be adapted....?
There is more work to be done!

Thank you

Lisa.Brenner@va.gov

http://www.mirecc.va.gov/visn19/