



# Traumatic Brain Injury and Suicide in Veterans and Returning Military Personnel

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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

# TBI 101



- 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



<http://consensus.nih.gov/1998/1998TraumaticBrainInjury109html.htm>



# 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

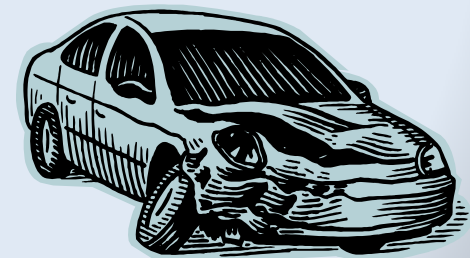


# Risk Factors for Sustaining a TBI

- 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%) Langolis et al. 2004
- Blasts are the leading cause of TBI for active duty military personnel in war zones DVBIC 2005



# Mechanism of Injury (Traditional)

Thanks John Kirk, Ph.D.



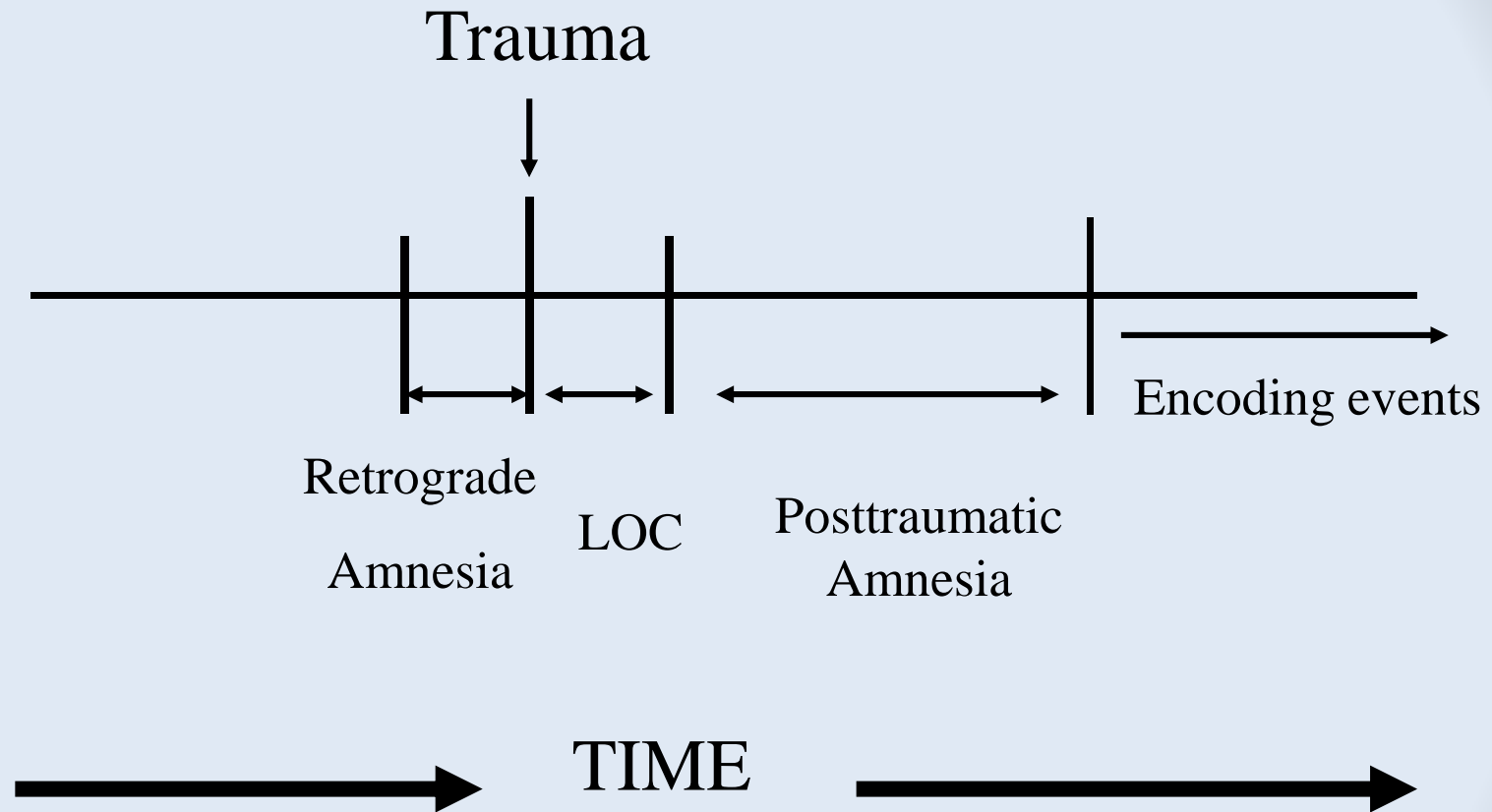
# Blast Injury

- Primary –  
Barotrauma
- Secondary – Objects  
being put into  
motion
- Tertiary – Individuals  
being put into  
motion

# TBI -Severity



# TBI Severity



# Injury Severity

<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>
Altered or LOC<30 minutes with normal CT and/or MRI	LOC<6 hours with abnormal CT and/or MRI	LOC>6 hours with abnormal CT and/or MRI
GCS 13-15	GCS 9-12	GCS<9
PTA<24 hours	PTA<7 days	PTA>7days



Common TBI Symptoms –  
NOT to be confused with the injury  
itself

TBI is a historical event



# Common Behavioral Complaints

- Impaired Judgment
- Impatience
- Depression
- Hypersexuality
- Hyposexuality
- 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

**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  $\frac{1}{4}$  of individuals with TBI  
are moderate to heavy drinkers  
between 1 and 3 years post-  
injury

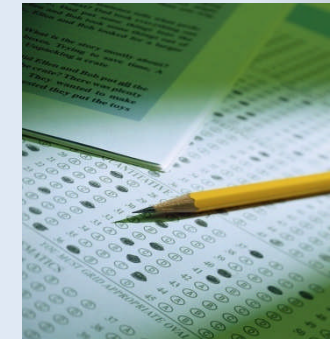
# Drug Use Post-TBI

	Before	After	Community Base Rate
Substance Use Disorders*	40%	28%	17%

\*Includes alcohol/drug dependence or abuse, or both



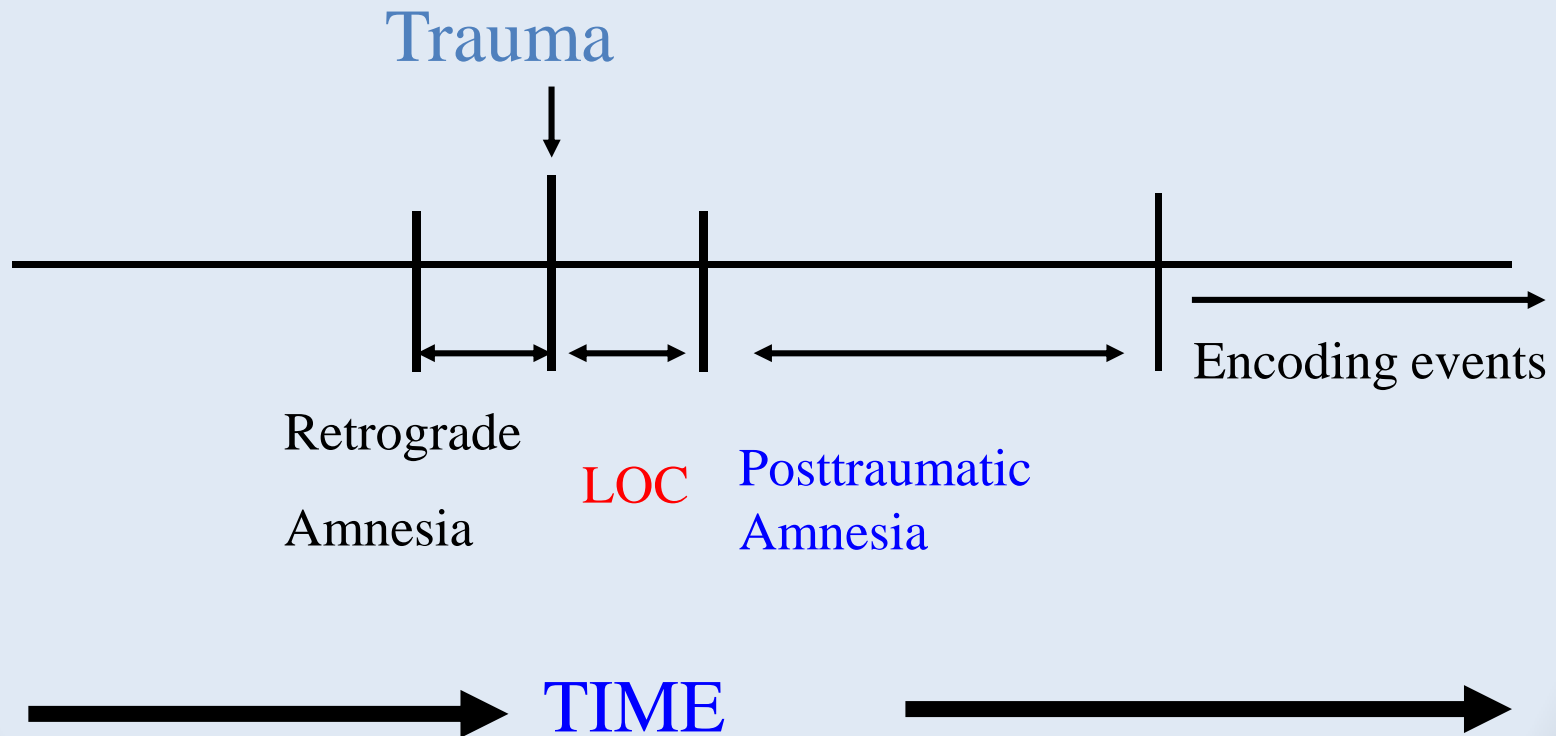
Patients with  
histories of  
substance abuse  
– worse  
outcomes after  
TBI



# TBI and PTSD

# PTSD with Amnesia?

## Why the controversy?



# 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**

**TBI**

Flashbacks

Nightmares

Attentional  
problems

Depression

Anxiety

Headaches

Dizziness

Irritability

# 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

- Review by Kibby and Long (1996) – 1 Year S/P Injury
  - **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**



# 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

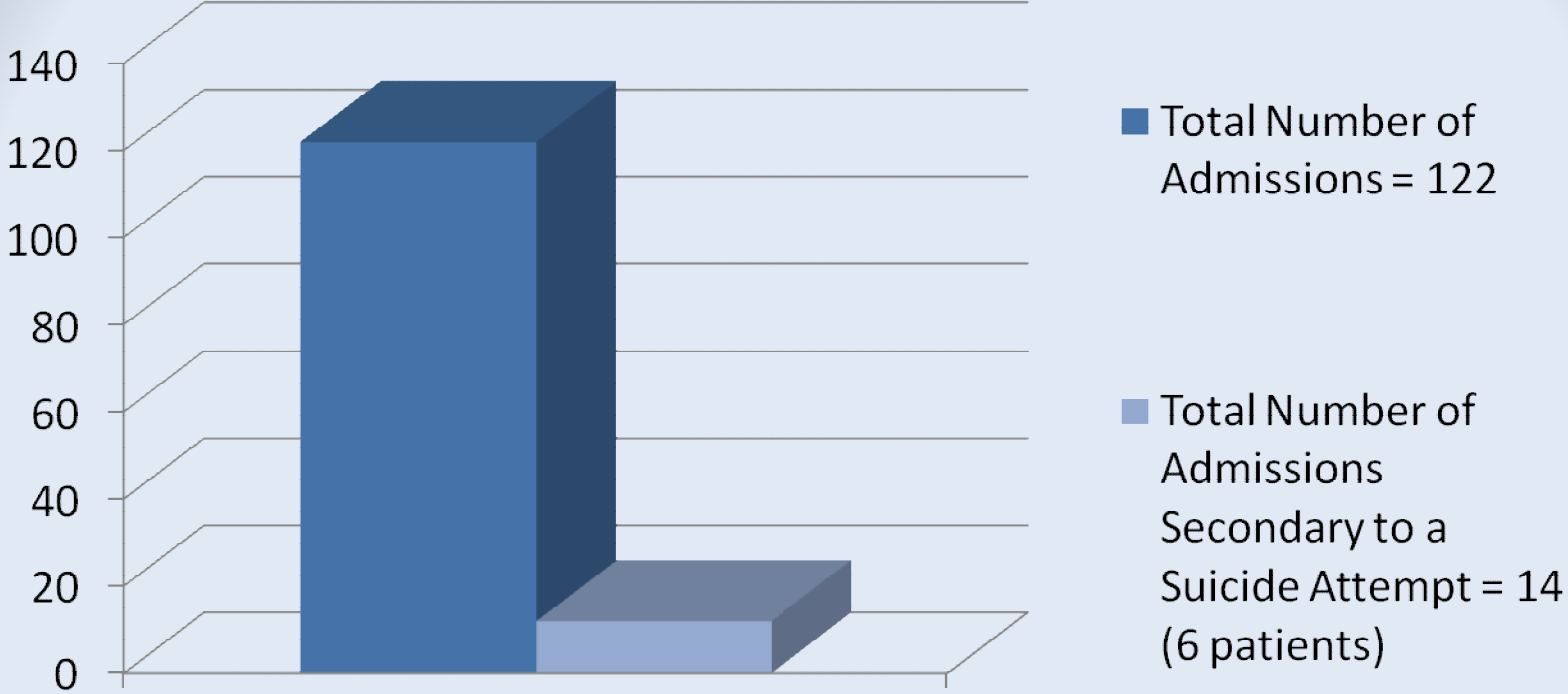
# Suicidality and Psychiatric Admission – VA TBI Survivors

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

Gutierrez PM, Brenner LA, Huggins JA. A preliminary investigation of suicidality in psychiatrically hospitalized veterans with traumatic brain injury. Archives of Suicide Research. 2008;12: 336-343.



# Number of Admissions Secondary to a Suicide Attempt

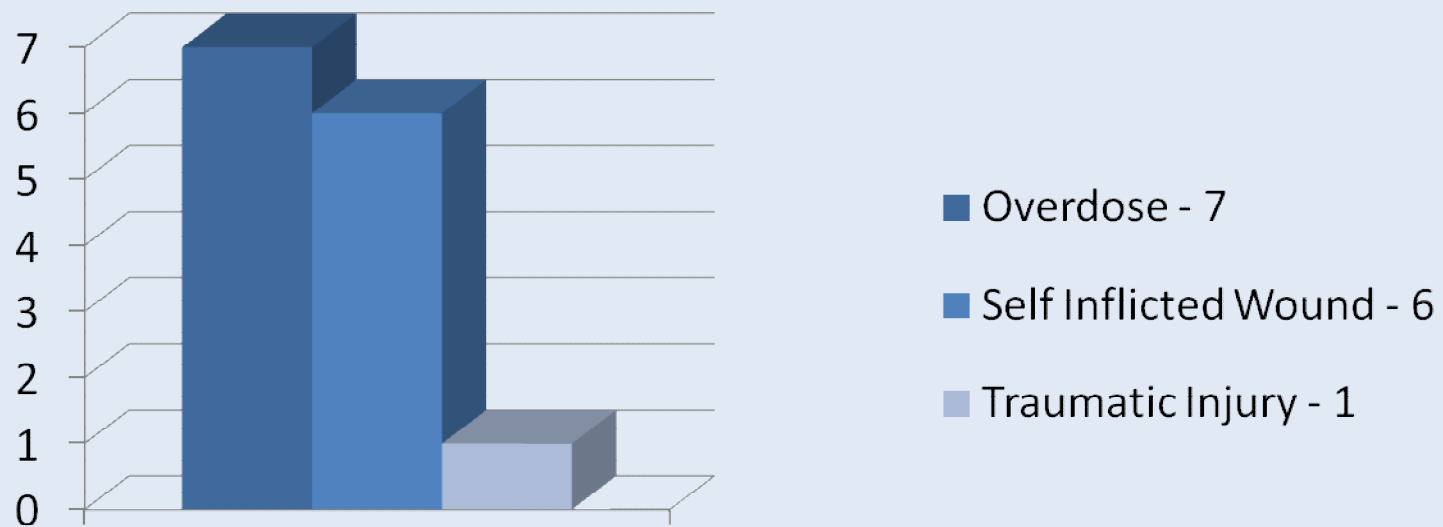


**11% of total admissions**  
**Number of attempts 1-5**  
**Median - 2**

Gutierrez PM, Brenner LA, Huggins JA. A preliminary investigation of suicidality in psychiatrically hospitalized veterans with traumatic brain injury. Archives of Suicide Research. 2008;12: 336-343.



# Attempt Method



Gutierrez PM, Brenner LA, Huggins JA. A preliminary investigation of suicidality in psychiatrically hospitalized veterans with traumatic brain injury. Archives of Suicide Research. 2008;12: 336-343.

# 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

**FOREVER**

# 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

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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

Brenner LA, Gutierrez PM, Cornette MM, Betthausen LM, Bahraini N, Staves P. A qualitative study of potential suicide risk factors in returning combat veterans. *Journal of Mental Health Counseling*. 2008;30(3): 211-225.. 2009; 24(1):14-23.

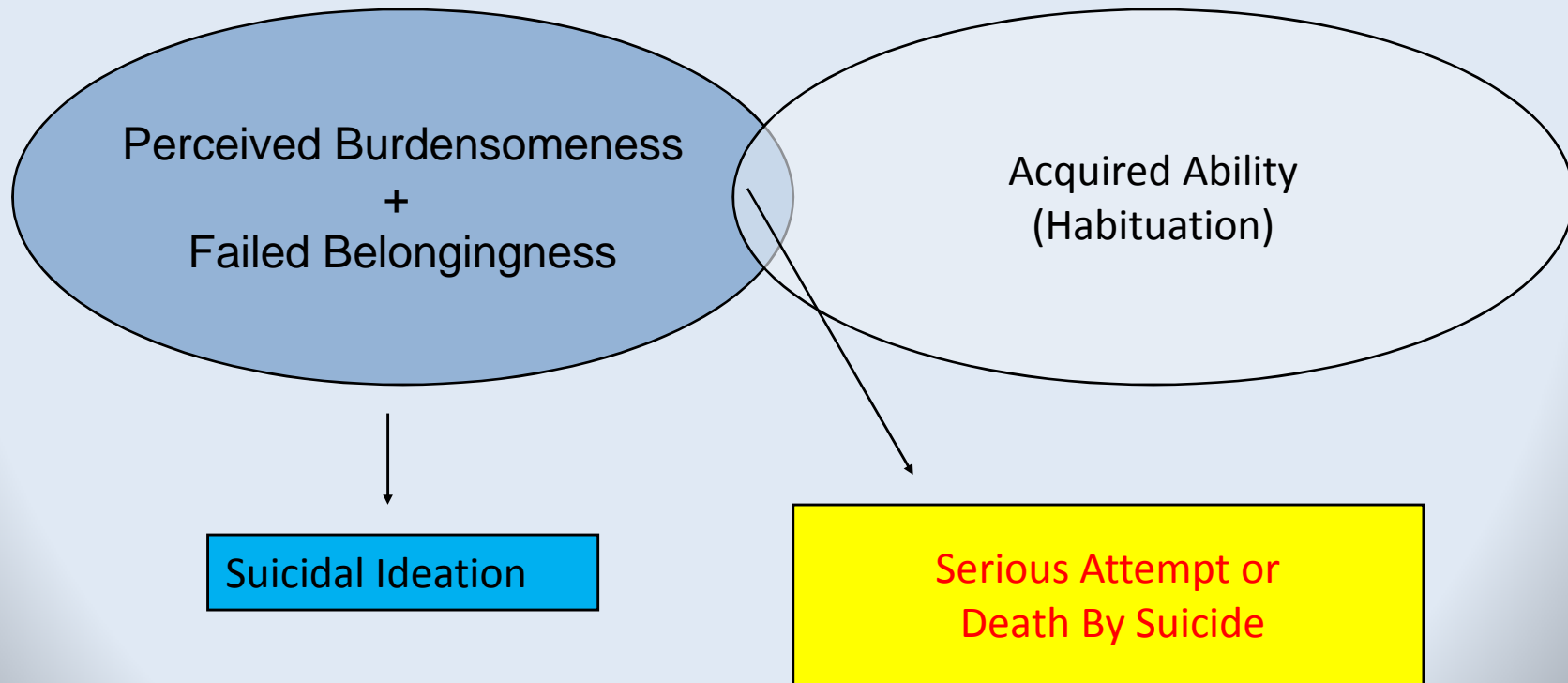


# Interpersonal-Psychological Theory of Suicide Risk

Joiner 2005

Those who desire  
death

Those capable of  
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)
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# TBI and Suicide Risk Assessment Strategy

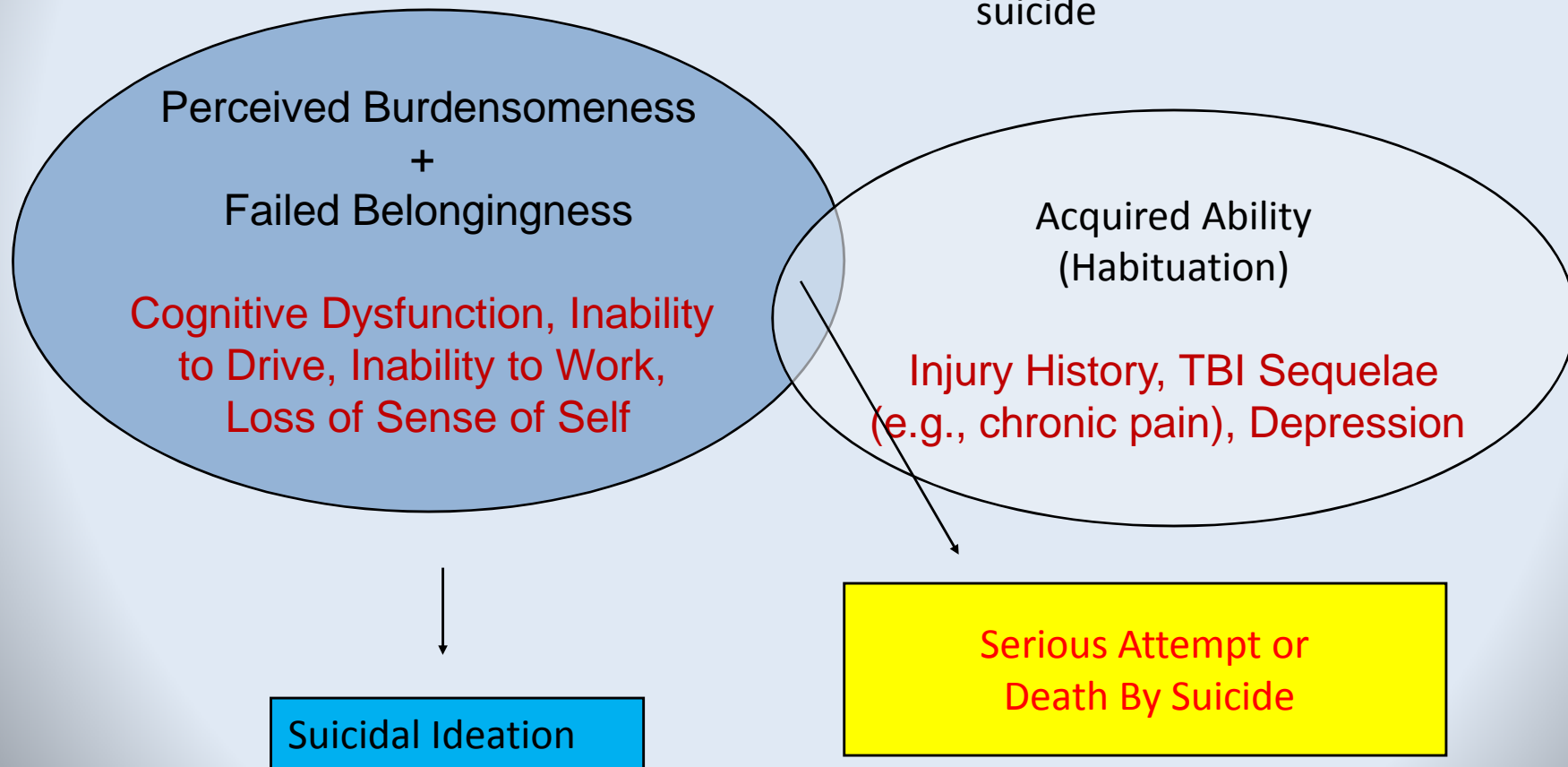
- Assess for
  - Acquired Ability
  - Burdensomeness
  - Failed Belongingness
- In the context of
  - Disability
  - Activity limitation
  - Participation restriction

# Interpersonal-Psychological Theory of Suicide Risk

Joiner 2005

Those who desire  
death

Those capable of  
suicide



# Intervention: Evidence-Based Treatments (Talk)

0

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

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