



TBI-BH ECHO

Traumatic Brain Injury – Behavioral Health ECHO
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TBI & Suicide: Risk Factors and Interventions

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Learning Objectives

1. Name the most contributory suicide risk factors following TBI.
2. Identify psychotherapy and other psychosocial interventions to reduce suicide risk.
3. Link symptoms to specific medication classes that can be helpful to reduce suicide risk.



Case

- > **32M combat veteran with history of moderate TBI**
 - Cognitive slowing, irritability, withdrawal
 - Increasing hopelessness; “I’m a burden”
 - Firearms at home, not locked up
 - Wife reports severe despair not responsive to her support



Reviewing TBI Terminology

Severity	LOC	PTA	GCS
Mild	<30 min	<24 h	13 – 15
Moderate	30 min – 24 hr	1 – 7 days	9 – 12
Severe	>24 h	> 7 days	8 or less

- > **Additional terms:** complicated mild TBI, diffuse axonal injury, penetrating TBI



Epidemiology

Why TBI Matters for Suicide Risk

- > **Suicide rates 2 – 4 times higher**
- > **SI within 1st year after TBI is 10-23%**
- > **Attempts in 3 – 7% of ALL TBI patients**
- > **Primary Care: somatic symptoms often mask SI**



Neurobiological Mechanisms

Brain-Behavior Pathways to Suicidality

- > **Frontal dysregulation → impulsivity, poor judgment**
- > **Limbic hyperactivation → emotional volatility**
- > **Serotonergic-/dopaminergic changes**
- > **Chronic pain → reward system dysregulation**



Risk Factors for Suicide in TBI

Domain	Risk Factor
Neuropsychiatric	Depression, anxiety, PTSD, sleep disorders
Cognitive and Behavioral	Disinhibition, impulsivity, poor executive function
Medical	Chronic pain, substance use, polypharmacy
Social	Isolation, unemployment, caregiver strain
Historical	Past attempts, repeated TBIs, prior psychiatric illness



Pitfalls in Diagnosis and Recognition of Suicide Risk Factors

- > **Apathy mistaken for depression**
- > **Flat affect masking distress**
- > **Underreporting due to lack of insight**
- > **Polypharmacy complicating assessment**



Differential Diagnosis

Feature	Post-TBI Depression	Primary MDD
Onset	Weeks-months post-injury	Variable
Mood symptoms	Often irritability > sadness	Sadness predominant
Cognitive features	Secondary to executive dysfunction	Secondary to mood
Apathy	Very common	Less common
Insight	Variable, often reduced	Typically intact (unless MDD w/ psychosis)
Risk profile	Impulsivity, disinhibition	Hopelessness, anhedonia



Screening Details

- > **Modified PHQ-9; count anhedonia and hopelessness more heavily; exclude anhedonia and insomnia if confounded**
- > **GAD-7**
- > **Post Concussion Symptom Scale (PCSS)**
- > **Repeat at 1, 3, 6, and 12 months post injury, then yearly if stable/normal**



Interventions

- > **Psychotherapy**
- > **Safety Planning**
- > **Pharmacotherapy**
- > **Systems**



Psychotherapy Interventions

Modalities

- > **CBT (adapted for cognitive changes)**
- > **Problem-Solving Therapy (PST)**
- > **Emotion regulation training**



Psychotherapy Interventions

Evidence Base

- > **PST reduces SI by up to 50% vs usual care**
- > **CBT improves mood and sleep (Cohen $d = 0.8$)**
- > **Family involvement increases treatment adherence by 30%**



Safety Planning Intervention

- > **Stepwise visual plan leads to 30% decrease in SI**
- > **Rehearsal increases retention of steps by 40%**
- > **Simplifying steps increases completion of safety planning by 25%**
- > **Caregiver involvement increases safety plan follow through by >40%**



Sample Modified Safety Plan

1. Three warning signs (with icons/pictures)
2. Two internal coping strategies.
3. People + places for distraction.
4. Support contacts (caregiver, provider, 988)
5. One step to reduce access to means

Tip: print card, laminate, rehearse weekly.



Pharmacologic Intervention

Modifying risk factors that drive suicidality

Medication Class	Primary Indication Post TBI
SSRI	Depression & anxiety
SNRI	Mood + pain syndromes
Stimulants	Apathy, fatigue, cognitive slowing
Mood Stabilizer	Irritability, aggression, affective lability
Atypical Antipsychotic	Severe agitation, insomnia
Benzodiazepine	Short term spasticity or acute anxiety
TCA	Insomnia / pain if SSRIs not an option



Pharmacologic Intervention

Evidence

Medication Class	Evidence for symptom improvement
SSRI	SE = 0.65 SD; indirect SI reduced 20-40%
SNRI	VAS reduced 1-2 pts, lower hopelessness index
Stimulants	Improved goal directed behavior and QoL, lower suicide risk?
Mood Stabilizer	Lower anger outbursts by 50%, lower violence
Atypical Antipsychotic	Improve sleep and nighttime hyperarousal
Benzodiazepine	<i>No antisuicidal benefit</i>
TCA	Reduced depression, worsened cognitive effects

Pharmacologic Intervention

Cautions

Medication Class	Primary Indication Post TBI
SSRI	Early activation, so monitor impulsivity
SNRI	Same, plus hypertension
Stimulants	Agitation, impulsivity
Mood Stabilizer	Sedation, cognitive dulling
Atypical Antipsychotic	Metabolic effects, EPS, inhibition of neuro recovery
Benzodiazepine	Agitation, cognitive dulling, depression, falls, etc.
TCA	Increased seizure risk, cardiac risk, cognitive dulling

Pharmacologic Intervention

Practice Pearls

- > **Start at ½ typical starting dose and go slow**
- > **Avoid abrupt switches, consider at least 4 week dosing trials**
- > **Combine meds with structured daytime activity to counter amotivation**
- > **Treat sleep issues early**
- > **Document medication rationale explicitly for multidisciplinary continuity**



Systems Interventions

Collaborative Care

- > **Rehab + psychiatry rounds**
- > **Case management**
- > **Evidence: improved mood + functioning vs usual care model**



Systems Interventions

Telehealth and Brief Contact

- > **Structured phone follow-ups: reduce reattempts at 1 year by 45%**
- > **Caring letters**
- > **Peer support and vocational reintegration: reduce readmission by 33%, reduce SI by >25%, increase purpose**



Acute Risk Management

Terminology and Documentation

- > **Self-Directed Violence Classification System (SDVCS): standardizes language for suicidal or self-injurious acts**
 - Intent
 - Capacity
 - Nonsuicidal self-injury
- > **Assess decisional capacity**
- > **Consider neurological impairment**
- > **Document reasoning carefully. Eg. “Patient lacks capacity for safe self-care secondary to impaired executive function.”**



Acute Risk Management

Means Safety

- > **Firearm counseling, lockboxes**
- > **Opioid management, lockboxes**
- > **Environmental hazard review**
- > **Caregiver involvement**



Acute Risk Management

Treatments to Choose From Based on Acuity

- > **Admit to inpatient**
- > **Start or refer to psychotherapy**
- > **Start a medication or start med discussion**
- > **Safety plan**
- > **Create/add to TBI database for phone calls**



Back to the Case

35M, vet, moderate TBI, “I’m a burden,” cognitive slowing

- > **Flat affect and irritability > sadness**
- > **Neuro exam: some disinhibition, but oriented**
- > **Modified PHQ-9 = 9 (positive for anhedonia)**
- > **Risk factors: firearms, hopelessness**
- > **Management: SPI, PST, sertraline 25->100mg, wife well-engaged,**
- > **Outcome at 6 months: no SI, working part time, insomnia improved**



Key Takeaways Based on Learning Objectives

1. Risk factor categories include neuropsychiatric, cognitive/behavioral, medical, social, and historical. Modified screening exists.
2. Non pharmacologic strategies: safety planning, modified psychotherapy, caring calls/letters and peer support.
3. Medication strategies: some evidence for various meds, but be cautious and systematic.
4. Risk assessment: careful documentation.



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