

## Review Article

# A Perspectives Approach to Suicide After Traumatic Brain Injury: Case and Review

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**Background:** Suicidal behavior after traumatic brain injury (TBI) is an increasingly recognized phenomenon. Both TBI and suicide are major public health problems and leading causes of death. The interaction between both of them is complex, and understanding it requires a multifaceted approach. Epidemiologic studies have shown a markedly higher incidence of suicide in individuals with TBI as compared with the general population, but imprecise definitions of suicide and suicidality as well as sample characteristics caution conclusive interpretation. Risk factors for suicide after TBI include male gender, presence of substance abuse or psychiatric disorders, and the severity of the injury. Evaluation of a suicidal patient with previous

TBI currently relies on careful clinical examination. Established assessment tools can be useful but have not all been validated in this population. Intervention strategies should stress a multidimensional approach incorporating neurologic, behavioral, psychologic, pharmacotherapeutic, and psychosocial factors.

**Objective:** This article serves to review the currently available literature on suicidal behavior after TBI.

**Methods:** It uses a case to illustrate how one might conceptualize this complex problem. **Conclusion:** It is hoped that this review stimulates further research in an area where there are still large gaps in our knowledge of this very important problem.

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## INTRODUCTION

Suicide after traumatic brain injury (TBI) is an area of growing concern for mental health providers and others. Although the connection between brain injury and suicide has been suggested for decades, the association has recently become more apparent because of the dramatic rise in rates of suicide among returning war veterans with TBI.<sup>1–3</sup> In the civilian population, rates of completed and attempted suicide in persons with TBI have been shown to be significantly greater when compared with the general population.<sup>4,5</sup> Because of the increasing notoriety of suicide after TBI, there is currently a growing literature on the phenomenology, treatment, and prevention of suicide.

This article first describes a case of suicidal behavior after traumatic brain injury and then

provides a brief overview on suicide after TBI, including nomenclature, risk factors, and clinical and neurobiologic features and correlates of TBI suicide, and finally describes the evaluation and management of this multidimensional problem. In

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addition, we also provide a treatment model and review other management approaches.

### THE CASE OF MR. H

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Mr. H, a 31-year-old married, white man, presented with no formal prior psychiatric history before sustaining a traumatic brain injury (TBI) at the age of 16 years. At that time, he was struck by a car on a busy road while attempting to cross it. Found unconscious, he was taken to a nearby hospital where he was determined to have sustained a severe closed TBI. Neuroimaging showed left hemispheric (frontal, parietal, and cerebellar) contusions and diffuse axonal injury. After emerging from a 14-day coma, he demonstrated significant right hemiparesis and cognitive impairments. He underwent intensive neurorehabilitation therapies in acute and subacute settings and demonstrated functional improvements. He continued to demonstrate further improvements in his physical and daily life functioning, but he began exhibiting behavioral problems including disinhibition and hypersexuality and mood fluctuations ranging from depression and social withdrawal to overactivation and agitation. For these symptoms, he was prescribed mood stabilizers as well antipsychotic medications. While under the care of a psychiatrist, he continued to experience mood fluctuations with significant depressive episodes during which he expressed suicidal thoughts. As a result, he was psychiatrically hospitalized twice over 10 years. He also began abusing various illicit substances including alcohol and marijuana regularly. After getting married, he described his relationship as chaotic and noted periods of time when he had violent thoughts and punched walls, but he never harmed his family. His medical care also became inconsistent as he “fired” or was “fired” by a number of clinicians. He had frequent thoughts of death with minimal motivation or hope for the future. He continued having difficulty, including in the work setting where he was fired for sexually harassing a coworker. In the context of this turmoil, he attempted to stab himself in the chest. He later described the act as impulsive and as an attempt to gain attention from his wife during an argument with her.

Mr. H was adopted. He grew up in a middle-class home as an only child and reported no history of abuse. He was “the class clown” and got into trouble often but reported feeling alienated from his peers. Though he performed poorly, he graduated high school and completed a few college courses. He held predominantly

retail and janitorial jobs. His medical history was significant for obesity and hypertension. He is currently being treated with mood stabilizing medications and antipsychotics to treat impulsivity and labile mood. He is also receiving individual psychotherapy to address intense feelings of alienation and to help modulate his emotional reactivity to stressful situations.

### LITERATURE REVIEW

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#### Suicide Definitions and Nomenclature

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One of the challenges of the literature has been a lack of agreement on the definition of suicide and associated terms. Recently, The Self-Directed Violence Classification System has provided a comprehensive approach to defining terms associated with suicide.<sup>6</sup> This new system addresses a need for improved clarity and communication at both the individual and population level when referring to suicidal behavior. A myriad of terms including suicidal ideation or attempt, “cry for help,” “parasuicide,” “nonfatal suicide attempt,” and others have contributed to a lack of conceptual clarity about suicidal behaviors. Moreover, the variability in the meanings of these terms was often pejorative and based on incorrect notions about seriousness and lethality of methods. These difficulties make interpreting the meaning of suicidal occurrences more difficult and hamper precise communication, often missing some suicidal occurrences or misclassifying others. The Self-Directed Violence Classification System first distinguishes between suicidal thoughts and suicidal behaviors. Suicidal ideation is defined as thoughts of engaging in suicidal behavior where the individual has thoughts of suicide (a) without intent, (b) with an undetermined degree of suicidal intent, or (c) with some suicidal intent. Suicide (referred to as suicidal self-directed violence) is defined as any death caused by self-inflicted injurious behavior performed with any intent to die as a result of that behavior. Awareness of this nomenclature and consistent use adds to clarity of communication in clinical practice, enhances applicability in research settings, and can be used to develop policies and procedures to prevent death by suicide.

#### Suicide Rates After TBI

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Much of the earliest work in the field had gone into describing the prevalence and frequency of TBI-related

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