

DVBIC-TBICoE 15-Year Studies: Risk Factors for Poor Outcomes After TBI

In 2007, the Secretary of Defense chose TBICoE—then called the Defense and Veterans Brain Injury Center—to lead a long-term study on the effects of traumatic brain injuries in those who served in Operation Iraqi Freedom or Operation Enduring Freedom. This study, required by Congress, also looked at how those injuries affect families. Among other significant findings, researchers discovered important risk factors that may hinder TBI treatment and recovery.

WHAT ARE RISK FACTORS AND HOW CAN IDENTIFYING THEM IMPROVE CLINICAL CARE?

Risk factors are conditions that increase the chances of developing a disease or experiencing poor health outcomes. If clinicians know which patients are at higher risk of later health problems, they can be proactive about treatment.

WHAT RISK FACTORS WERE PREDICTIVE OF POOR NEUROBEHAVIORAL OUTCOMES?

Researchers discovered that an unhealthy family environment, PTSD, low resilience, and poor sleep were predictors of poor neurobehavioral outcomes following TBI. These outcomes include fatigue, depression, anger, and cognitive complaints.

UNHEALTHY FAMILY ENVIRONMENT

- Family dynamics are important to consider during a warfighter's treatment and recovery from TBI.
- An unhealthy family environment refers to a family dynamic where there is consistent distress or lack of support.
- **Service members and veterans with mild TBI living in an unhealthy family environment were 10 to 28 times more likely to have poor neurobehavioral outcomes than those living in a functional family environment.**



These associations represent the **STRONGEST RELATIONSHIPS** found between risk factors and outcomes within the 15-Year Studies.

Service members and veterans with PTSD, poor sleep, or low resilience (alone or in combination) are more likely to experience worse outcomes, regardless of a TBI diagnosis. **In a sample of 591 service members and veterans who were recruited from the Natural History Study, 78% of the population had either PTSD, poor sleep, or low resilience. The percentages below reflect the number of service members and veterans that reported each specific symptom.**

PTSD: 47%



- PTSD symptoms, whether or not they qualify for a diagnosis, negatively affect quality of life after TBI.
- **Service members and veterans with PTSD were 9 to 22 times more likely to have poor neurobehavioral outcomes.**

POOR SLEEP: 59%



- Sleep problems are common after TBI and can interact with other issues, such as PTSD and chronic pain. This may lead to worse physical, cognitive, and psychological outcomes.
- **Service members and veterans who reported poor sleep were 7 to 26 times more likely to have poor neurobehavioral outcomes.**

LOW RESILIENCE: 58%



- Resilience is the ability to withstand or recover from difficult experiences.
- **Service members and veterans identified as having low resilience were 5 to 9 times more likely to have poor neurobehavioral outcomes.**

Service members experiencing **ALL THREE** of these conditions were **11 TO 19 TIMES MORE LIKELY** to have **POOR OUTCOMES.**