Polytrauma and Blast-Related Injuries QUERI

TBI Screening and Evaluation Research ***Fact Sheet***

WHAT ARE WE LEARNING ABOUT VHA'S POSTDEPLOYMENT TBI SCREENING MEASURE AND VETERANS UNDERGOING TBI SCREENING?

* The vast majority of Iraq and Afghanistan war Veterans presenting to VAMCs are being screened for TBI.[3-4] Approximately one out of five of these Veterans screen positive for TBI[4-5] and therefore by policy should be referred for Comprehensive TBI evaluation (CTBIE).
* Total median VA costs per patient during 12-months following TBI screening were nearly double for Veterans who screened positive compared to Veterans who screened negative for TBI.[5]
* Women were less likely than men to screen positive for TBI.[3]
* Internal consistency of the TBI screen is good, suggesting that it measures a unitary construct.[6]
* One study found moderate to high test-retest reliability over a two-week period when the screen was administered by researchers.[6] Another study found low interrater reliability between VA clinician-administered TBI screen and research-administered TBI screen.[7]
* Several studies have looked at the sensitivity and specificity of VHA's postdeployment TBI screening measure. Two studies reported high sensitivity (.85 to .94).[6,8] However, specificity was poor (.13-.18)[8] to moderate (.59).[6] One study reported good sensitivity (.85) when the TBI screen and evaluation were administered on the same day as part of research but low sensitivity (.48) when the screen was administered before a research evaluation as part of VA clinical care.[7] Specificity was adequate (.82) in both contexts.[7] Because these three studies were based on samples that had a much higher rate of positive screens than observed in actual practice in VA, these findings should be interpreted with caution. Such studies will overestimate sensitivity and underestimate specificity. When the sample had a positive screening rate of 20%, as seen in VA practice, sensitivity was as low as .60.[9]
* Findings from Donnelly et al.[6] and Fortier et al.[7] suggested that the presence of PTSD reduces the accuracy of the TBI screen.
* Using an expected prevalence of 15-20%, the negative predictive value of VHA's postdeployment TBI screening measure is high.[6-9] That is, individuals who are screening negative are not likely to have sustained a deployment-related TBI. On the other hand, the positive predictive value of the TBI screen is low,[6-9] thus underscoring the importance of the CTBIE to assess TBI.
* Veterans' knowledge and understanding of TBI at the time of screening is limited. An educational handout on TBI was found to improve knowledge and understanding of TBI but not recovery expectations.[10]
* Veterans screened for TBI attribute their symptoms to multiple causes, including TBI, PTSD, pain, lack of sleep, depression, deployment stress and other causes.[10]

How common is TBI in Iraq and Afghanistan War Veterans?

⇒ PT/BRI QUERI research based on VHA administrative data indicates that 67,765 (9.8%) Iraq and Afghanistan Veterans who used VHA services over the three year period spanning FY 2010 through FY 2012 received a TBI diagnosis.[1]

⇒ Most VA patients with a TBI diagnosis also carried a mental health diagnosis, with PTSD being the most common.[1]

⇒ In 2009, the median annual cost per patient was 4 times higher for TBI-diagnosed Iraq and Afghanistan War Veterans compared to those without diagnosed TBI.[2] Costs increased as clinical complexity (indicated by the presence of mental health and pain-related co-morbidities) increased.

WHAT ARE WE LEARNING ABOUT THE COMPREHENSIVE TBI EVALUATION (CTBIE) AFTER A POSITIVE SCREEN AND VETERANS UNDERGOING THIS EVALUATION?

* Patient and facility characteristics influence the rates of CTBIE completion after a positive screen.[4,11]
* About half of those who screen positive and completed the CTBIE were diagnosed with TBI during the evaluation.[3,5]
* Veterans who undergo a CTBIE after screening positive for TBI are highly symptomatic. Clinicians conducting evaluations believe that mental health problems contribute to the manifestation of these symptoms.[8,12]
* Female Veterans are reporting a particularly high level of symptoms on the CTBIE compared with male Veterans.[13]
* During the year following TBI screening, median total VA costs were 14% higher for patients diagnosed with TBI compared with those not diagnosed with TBI through the CTBIE.[5]
* A psychometric analysis of CTBIE data suggests that neurobehavioral symptoms can be grouped into 3 to 4 dimensions including cognitive, affective and somatosensory and possibly vestibular.[14] Research is underway to determine whether these dimensions are clinically meaningful.[15]
* Probable PTSD, depression and anxiety contribute to neurobehavioral symptom levels in individuals with TBI histories.[16]
* Between October 2007 and July, 2009, clinician judgment was in agreement with American Congress of Rehabilitation Medicine (ACRM) guidelines for identifying mTBI for the majority (76%) of cases. Injury etiology, neurobehavioral symptoms, and suspected psychiatric conditions were factors associated with disagreement between clinician diagnosis and ACRM-based criteria. Since that time, the CTBIE has been enhanced with additional automated features and with these enhancements more recent data indicates almost 100% agreement between clinician judgment and ACRM-based criteria. [17]
* Over 95% of Veterans evaluated for TBI use VHA services after the evaluation, regardless of whether or not they were diagnosed with TBI.[18] However, those diagnosed with TBI used significantly more outpatient care than those who were not diagnosed with TBI during the CTBIE and their total healthcare costs were nearly 14% higher.[5] Whether these service improved outcomes remains unstudied.

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