

Traumatic Brain Injury

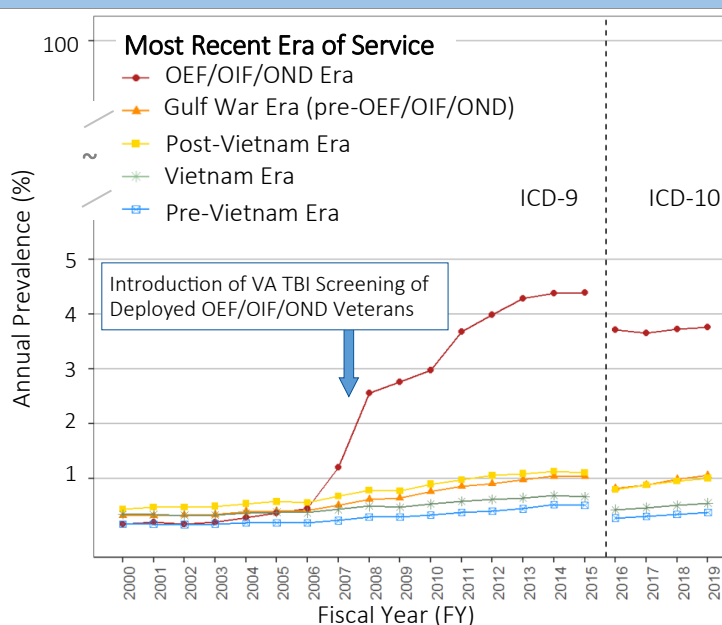
March 2020

Fact Sheet: Data on Veterans Using VA Health Care

CSPEAR provides timely epidemiologic information on VA health care users. This fact sheet presents summary data to inform a broad community of VA leaders, investigators, and clinicians as they consider how best to address the needs of Veterans.

Introduction: Traumatic brain injury (TBI) is an alteration in brain function caused by an external force, such as an impact to the head, exposure to blasts, or penetrating trauma. TBI is considered a signature injury of Operations Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND).¹ Veterans who experience TBIs are at higher risk of developing long-term physical and mental health problems such as post-traumatic stress disorder (PTSD), depression, pain, and cognitive dysfunction.² This fact sheet is the first in a two-part series on TBI. Part 1 presents data on all-cause TBI among all Veterans who use Veterans Health Administration (VHA) care. Part 2 summarizes VA TBI screening and evaluation data collected on a subset of this population.³

Trends in TBI Prevalence, FY 2000-2019



Fast Facts

- Of 6,363,592 Veteran VHA users in fiscal year (FY) 2019, 94,440 (1.5%) had a TBI diagnosis on record.
- 78,600 (83.2%) of TBI cases in FY 2019 were classified as mild TBI, 8,687 (9.2%) as moderate TBI, and 655 (0.7%) as severe or penetrating TBI.
- In FY 2019, 3.8% of OEF/OIF/OND era Veterans had a TBI diagnosis.
- The prevalence of TBI among OEF/OIF/OND era Veterans rose sharply after the 2007 introduction of enhanced TBI screening among recently-deployed Veterans.
- The decline in TBI diagnoses between FY 2015 and FY 2016 coincides with VHA's transition from ICD9-CM to ICD10-CM coding system.

Methods

Population: Veterans aged 18-110 years who used health care at a VHA facility during a given fiscal year

Data Source: VA Corporate Data Warehouse (CDW)

Analyses: Part 1 of the fact sheet presents the annual prevalence of all-cause TBI in Veteran VHA users. Given the high burden of TBI among OEF/OIF/OND Veterans, TBI prevalence is stratified by most recent era of service. Part 2 shows data on deployment-related TBI captured in the TBI screening of a subset of Veterans deployed to OEF/OIF/OND.³ TBI severity classifications are based on criteria devised by the Armed Forces Health Surveillance Branch, which assigns each ICD code to a severity level.⁴

Notes: This work was conducted under CSPEAR's operational access to VA data. This material is the result of work supported with resources and the use of facilities at the VA Cooperative Studies Program Epidemiology Center in Seattle. The contents do not represent the views of VA or the US Government.

Definitions

TBI Case: Patient with a TBI diagnosis on record:

- Based on 9th and 10th revisions of International Classification of Diseases (ICD-9 and ICD-10) codes in any diagnostic position per VA TBI coding guidance⁵
- Assigned in an inpatient care, primary care, mental health, polytrauma, neurology, emergency/urgent care, ophthalmology, or rehabilitation setting

Annual TBI Prevalence: Proportion of Veteran VHA users with a TBI diagnosis on record during the given FY Visit the VA Centralized Interactive Phenomics Resource (CIPHER) for more information on the TBI phenotype: [https://phenomics.va.ornl.gov/web/cipher/phenotype-viewer?uqid=9b5757e39c16429dee8e4a90762cfacc&name=Traumatic Brain Injury_CSPEAR](https://phenomics.va.ornl.gov/web/cipher/phenotype-viewer?uqid=9b5757e39c16429dee8e4a90762cfacc&name=Traumatic%20Brain%20Injury_CSPEAR)

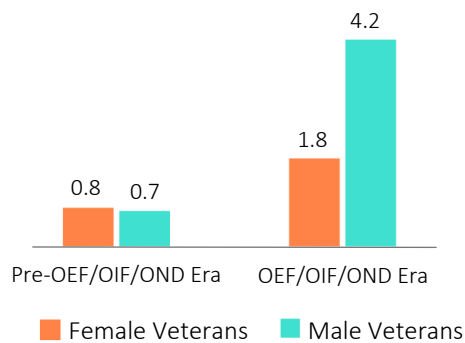
Visit [CSPEAR's website](https://phenomics.va.ornl.gov/web/cipher/phenotype-viewer?uqid=9b5757e39c16429dee8e4a90762cfacc&name=Traumatic%20Brain%20Injury_CSPEAR) or contact CSPEAR@va.gov for more information.

Suggested citation: VA Cooperative Studies Program Epidemiology Analytics Resource. Traumatic Brain Injury Fact Sheet: Data on Veterans Using VA Health Care. Cooperative Studies Program, Office of Research and Development, Department of Veterans Affairs (VA). 2020.

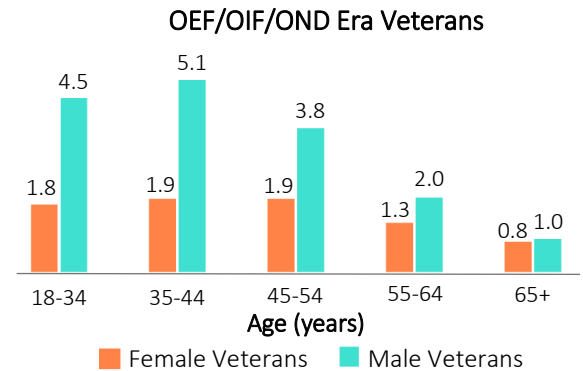


U.S. Department of Veterans Affairs
Veterans Health Administration
Cooperative Studies Program

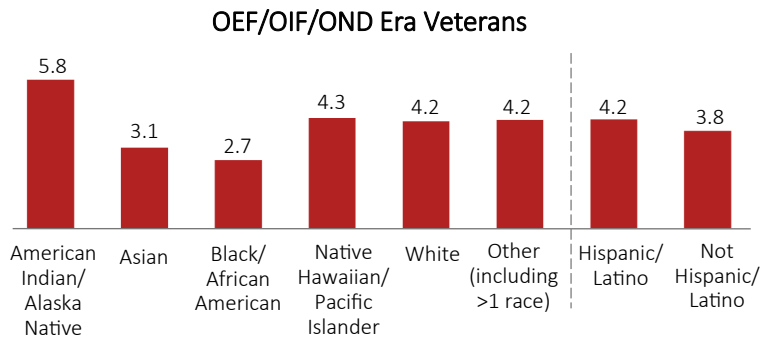
TBI Prevalence (%) by Sex and Era of Service, FY 2019



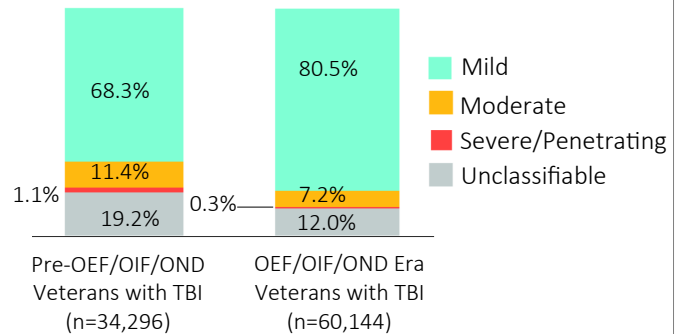
TBI Prevalence (%) by Age and Sex, FY 2019



TBI Prevalence (%) by Race and Ethnicity, FY 2019



Percentage of TBI Cases by Severity Level, FY 2019



Limitations and Challenges

- The increase in TBI prevalence in OEF/OIF/OND Veterans can be attributed in part to the introduction of the VA TBI screen in April 2007 for Veterans deployed during this era. However, experts report that these Veterans are more susceptible to TBI due to increasing use of explosive devices in warfare, improvements in body armor, and the increased number of service members deployed to combat.^{1,6}
- It is also reported that trends in TBI prevalence among Veterans in all eras may be influenced by increased awareness of TBI over time.^{1,7}
- Prevalence may be underestimated because TBI is often underreported, particularly among service members.⁸
- By the time Veterans enter VHA care, they may have difficulty recalling a TBI event or earlier diagnosis. Recall may also be affected by TBI-related cognitive impairment and a desire to avoid stigma associated with TBI.⁶
- Diagnoses are complicated by the overlap of TBI symptoms with those of frequent comorbid mental health conditions, such as PTSD and anxiety.^{2,6}
- Research suggests ICD codes alone do not differentiate well between mild and more severe TBIs.⁹
- These data do not capture TBI cases treated outside of VHA, TBI cases in which treatment was not sought, and TBI cases resulting in death prior to hospitalization.
- Variations in coding procedures and clinicians' diagnostic approaches may result in discrepancies in coding practices across facilities. Changes in TBI coding guidance and case definitions likely exacerbate these inconsistencies and limit the accuracy of reporting diagnoses.¹⁰

Summary

- Male OEF/OIF/OND era Veterans were more than twice as likely as female Veterans in this era to have a TBI diagnosis on record in FY 2019. TBI prevalence was higher in men than women for each age group <65 years.
- The FY 2019 TBI prevalence decreased with age in men ≥45 years and in women ≥55 years among OEF/OIF/OND era Veterans.
- Among OEF/OIF/OND era Veterans, TBI was highest in American Indians/Alaska Natives and lowest in Blacks/African Americans. TBI prevalence was slightly higher in Hispanics compared with non-Hispanics.

References and Resources

- Snell FL, Halter MJ. A signature wound of war: mild TBI. J Psychosoc Nurs Ment Health Serv. 2010 Feb;48(2):22-8.
- Greer N, et al. Relationship of Deployment-related Mild Traumatic Brain Injury to PTSD, Depressive Disorders, Substance Use Disorders, Suicidal Ideation, and Anxiety Disorders: A Systematic Review. HSR&D, VA ORD. 2019.
- CSPEAR. Traumatic Brain Injury Fact Sheet: VA Screening and Evaluation Data on Iraq and Afghanistan Era Veterans Using VA Health Care. VA ORD. 2020.
- Traumatic Brain Injury: DoD Standard Surveillance Case Definition for TBI Adapted for AFHSB Use. 2016, Armed Forces Health Surveillance Branch: Washington, D.C.
- VA Health Information Management, Office of Informatics and Analytics. Fact Sheet: Coding Guidance for Traumatic Brain Injury. Nov 2012 and Sep 2015.
- Halbauer JD, et al. Neuropsychiatric diagnosis and management of chronic sequelae of war-related mild to moderate traumatic brain injury. J Rehabil Res Dev. 2009;46(6):757-96.
- Taylor BC, et al. Three Year Trends in Veterans Health Administration Utilization and Costs after Traumatic Brain Injury Screening among Veterans with Mild Traumatic Brain Injury. J Neurotrauma. 2017 Sep;34(17):2567-2574
- Chapman JC, Diaz-Arrastia R. Military traumatic brain injury: a review. Alzheimers Dement. 2014 Jun;10(3 Suppl):S97-104.
- Carlson KF, et al. Sensitivity and specificity of traumatic brain injury diagnosis codes in United States Department of Veterans Affairs administrative data. Brain Inj. 2013 Jun;27(6):640-50.
- CDC, NIH, DoD, and VA Leadership Panel. Report to Congress on Traumatic Brain Injury in the United States: Understanding the Public Health Problem among Current and Former Military Personnel. 2013.

Visit www.research.va.gov/topics for information about VA research on TBI and other key topics relating to Veterans' health.