



Traumatic Brain Injury & Concussion

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Health Disparities and TBI



TBI has contributed to the deaths of more than one million Americans over the last two decades.¹ For survivors, a TBI can lead to short- or long-term problems that may affect all aspects of a person's life, including the ability to work^{2,3} or build relationships with others,⁴ and it can change how a person thinks, acts, feels, and learns.

Health disparities are differences in health outcomes and their causes among groups of people.⁵ Groups can be defined by factors such as race, ethnicity, sex, education, income, disability, geographic location (e.g., rural or urban), sexual orientation, and gender identity. When examining disparities in TBI, CDC analyzes differences in incidence rates, prevalence rates, and outcomes by group.

Which groups are most affected by TBI?

While anyone is at risk for getting a TBI, some groups have a greater likelihood of dying from a TBI or living with long-term problems that resulted from the injury.

TBI Health Disparities Infographic



Certain groups have a higher chance of sustaining a TBI.

Older adults

People aged 75 years and older had the highest numbers and rates of TBI-related hospitalizations and deaths. This age group accounts for about 32% of TBI-related hospitalizations and 28% of TBI-related deaths.

Racial and ethnic minorities

American Indian/Alaska Native children and adults have higher rates of TBI-related hospitalizations and deaths than other racial or ethnic groups.^{1,6-8} Factors that contribute to this disparity include higher rates of motor vehicle crashes,⁹ substance use,⁹ and suicide¹⁰ as well as difficulties in accessing appropriate healthcare.¹¹

In addition to differences in rates of TBI, racial and ethnic minority groups, particularly non-Hispanic Black and Hispanic patients, are less likely to receive follow-up care and rehabilitation following a TBI compared to non-Hispanic white patients.¹²⁻¹⁸ Racial and ethnic minorities are also more likely to have poor psychosocial, functional, and employment-related outcomes after sustaining a TBI than non-Hispanic white individuals.¹⁹⁻²³

Military service members and Veterans

More than 450,000 U.S. service members were diagnosed with a TBI between 2000 and 2021.²⁴ Military conflicts involve risks for TBI among service members,²⁵ still TBIs among this group most commonly occur when the person is not deployed, such as from a motor vehicle crash.²⁶ Studies suggest that service members and Veterans who have sustained a TBI may:

- have ongoing symptoms,^{27,28}
- experience co-occurring health conditions, such as post-traumatic stress disorder (PTSD) and depression,^{25,27,28}
- have difficulty accessing healthcare (particularly mental health services),²⁶ and
- report thinking about or planning a suicide attempt.²⁵



People in correctional or detention facilities

Research in the United States and from other countries suggests almost half (46%) of people in correctional or detention facilities such as prisons and jails have a history of TBI, but the exact number is not known.²⁹ Research shows an association between people in correctional or detention facilities with a history of TBI and:

- mental health problems, such as severe depression and anxiety,³⁰⁻³²
- substance use disorders,^{30,32}
- difficulty controlling anger,^{30,32} and
- suicidal thoughts and/or attempts.³²⁻³⁴

People in correctional or detention facilities with TBI-related problems may not be screened for a TBI or may face challenges with getting TBI-related care.^{35,36} These challenges may continue after a person is released from the facility.

People who experience homelessness

Compared to the general population, people who experience homelessness are:

- 2 to 4 times more likely to have a history of any type of TBI and^{37,38}
- up to 10 times more likely to have a history of a moderate or severe TBI.³⁷

People who experience homelessness and have a history of TBI have worse overall physical and mental health and are more likely to report experiencing violence and/or trauma during childhood,³⁹ substance use,⁴⁰ and thinking about or attempting suicide.³⁷

Survivors of intimate partner violence

Survivors of intimate partner violence who have a TBI due to an assault are more likely to:

- be diagnosed with PTSD,⁴¹ insomnia, and depression,⁴² and
- report worse overall health.⁴²

People with lower incomes and those without health insurance have less access to TBI care.

Survivors of a moderate or severe TBI may face a difficult road to recovery that requires services such as physical therapy and mental health treatment for months or years in order to return to pre-injury function. TBI survivors with lower incomes or who are uninsured face significant barriers in accessing appropriate TBI care. Compared with patients who have private health insurance, those who are uninsured are:

- Less likely to receive a TBI procedure (e.g., craniectomy/craniotomy, ventriculostomy, intracranial pressure monitor placement, arterial line placement, or central line placement).⁴³
- Less likely to receive inpatient services, such as rehabilitation.^{6,18,44,45}
- More likely to die in the hospital.⁴⁶



People in rural areas are more likely to die from a TBI.

People living in rural areas have a greater risk of dying from a TBI compared to people living in urban areas.⁴⁷⁻⁵¹ Some reasons for this disparity include:

- More time needed to travel to emergency medical care.⁵²
- Less access to a Level I trauma center (the highest level of medical care).⁵³
- Difficulty getting services, such as specialized TBI care.^{54,55}

Children living in rural areas are more likely to get a TBI and to die as a result of this injury compared to children living in urban areas.⁵¹ Children in rural areas may also be more likely to:

- Experience delays in getting TBI-related care.⁵⁵
- Be unnecessarily transferred to another hospital for TBI-related care.⁵⁵

What is CDC doing to reduce health disparities that increase the risk for TBI?

Reducing disparities is an important part of preventing TBI and lowering the chance for serious long-term health problems following a TBI. CDC has research underway to better understand and inform the development of programs to reduce health disparities that increase the risk for TBI and other injuries. In addition, CDC is creating resources for healthcare providers that can improve TBI care for all Americans. Some examples of these efforts include:

Conducting surveillance and research to support data-driven solutions.

A recent CDC surveillance report found American Indian/Alaska Natives consistently had the highest age-adjusted rates of TBI-related deaths from 2000-2017, and motor vehicle crashes accounted for the highest rate of these TBI-related deaths in all study years.⁹ In support of preventing motor vehicle crash-related injuries and deaths among tribal nations, CDC developed the Roadway to Safer Tribal Communities Toolkit. The toolkit's posters, fact sheets, and video include important actions to increase safety on the road, such as increasing child safety seat use, increasing seat belt use, and decreasing alcohol-impaired driving.

CDC created research-based tools designed to prevent and better identify survivors of intimate partner violence and individuals at risk for suicide. CDC worked with the Defense and Veterans Brain Injury Center [↗](#) and others to research and develop programs to support service members and Veterans living with TBI.

Using virtual training programs to educate and provide support to healthcare providers and school professionals in rural areas caring for and helping individuals with TBI.

In partnership with the American Academy of Pediatrics, CDC developed and piloted pediatric mild TBI and concussion-specific telehealth initiatives using the Project ECHO methodology.⁵⁶ These initiatives train two groups that are significantly involved in managing pediatric mild TBI—rural primary care providers and school professionals. ECHO uses video conferencing to train how to treat and manage complex diseases that would often need referral to a specialist. Over 150 people have participated in the ECHO programs to date, positively impacting thousands of children who have sustained a mild TBI.




Releasing clinical guidelines on mild TBI to ensure all patients get the best care possible.

CDC has developed guidelines for healthcare providers who care for children and adults with mild TBI and concussion. Since their publication, CDC has worked to increase use of these guidelines among healthcare providers to ensure that all patients receive care based on the best available science.

- Pediatric Guideline on Mild Traumatic Brain Injury
- Adult Guideline on Mild Traumatic Brain Injury


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