Prevention & Resources

What services are available

The Brain Injury Association of Montana (BIAMT) provides free information and referral services to all Montanans and families living with TBI and other acquired brain injuries. One of these services is The Resource Facilitation Service (RFS), which provides follow-up support to brain injury survivors, family members, and others. Information and referral to TBI community and statewide services, to local support groups, and to with assistance with financial and insurance issues are examples of help provided upon request. Activities of BIAMT are focused on supporting individuals to successfully cope with a brain injury. For more information on the BIAMT or RFS go to www.biamt.org or call 1-800-241-6442.

Prevention Recommendations

- Support the improvement and inclusion of all existing data sources to describe TBI in Montana.
- Educate high-risk populations about the importance of implementing strategies to use to prevent TBI.
- Promote seatbelt use, suicide and fall prevention, and helmet usage for activities such as riding motorcycles, bicycles, ATVs, horse and bull riding, snowboarding, skiing, and skateboarding.
- Raise awareness among athletic coaches on the potential long term impact of mild TBI and TBI prevention opportunities.
- Provide education on recognizing and treating the early signs of stroke.
- Encourage healthcare providers to raise their index of suspicion for TBI among adults on anticoagulation therapy.

For questions on this report, contact Senior and Long Term Care at 406-444-4077

Methods & Limitations

Data from the Montana Hospital Discharge Data System (MHDDS), Behavioral Risk Factor Surveillance System (BRFSS), and the Montana Office of Vital Statistics were used to compile this document. Data on mortality are collected from death certificates reported to the Office of Vital Statistics. Data on deceased persons with mention of TBI on the death certificate for years 2003-2008 were included in this analysis. TBI was identified by an ICD-10 Traumatic Brain Injury codes S01.0-T90.9. The MHDDS provides access to inpatient hospitalization data provided through the Montana Hospital Association and is based on the Uniform Billing 2004 form. Data from hospitalizations occurring in 2006-2008 are presented in this document. Montana residents hospitalized in Montana diagnosed with TBI are included and identified by ICD9 codes 800-804, 850-854. Race/ethnicity is not available from MHDDs, and ICD-9 Etiology coding is insufficient for reporting injury cause of admission at this time. Reporting for the MHDDS is not mandatory and Veterans Administration Hospitals, Indian Health Service Hospitals, and a few small hospitals do not report data to this system. The lack of available data from the VA and IHS suggests that TBI's are likely significantly underrepresented by this current reporting mechanism and that the problem is far more serious.

The BRFSS survey is a state-based random digit dial telephone survey of a sample of non-institutionalized adults conducted in all 50 states. In 2008, several questions were asked about TBI. All survey participants were asked "Have you had a brain injury that limited you for more than one week in any way in any activities?" and "Thinking about the adults aged 18 and older who live in your household including yourself, how many are currently limited in any way in any activities because of brain injury?" Persons responding yes were asked follow-up questions about cause and availability of help, and suggestions were solicited for needed services. Limitations of this dataset include those inherent in the nature of self-report and the bias introduced because those without a land line telephone are not included in the sample.

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MONTANA
Department of Public Health & Human Services

Traumatic Brain Injuries Among Montanans

WHAT IS TBI?

Traumatic Brain Injury (TBI) is defined as a disruption of normal brain function resulting from a blow or jolt to the head or a penetrating head injury (CDC, 2006). At the time of injury, each TBI is classified as either mild, moderate, or severe. Generally, a mild TBI is characterized by an initial concussion that may result in short-term memory and concentration difficulties. Usually these difficulties resolve, but for an estimated 15% percent, harmful effects on normal brain (neurological) functioning remain. Repeated mild brain injuries (sports injuries for example) can increase the likelihood of long term effects. Moderate traumatic brain injury is usually characterized by symptoms of lethargy, but is less well defined than the other categories of TBI. Severe TBI results in an extended period of unconsciousness or amnesia and presents the highest risk for death or disability after an injury. People who suffer from mild, moderate or severe TBI can have life-long difficulties resulting from the brain injury. Also, someone who has experienced a TBI is at greater risk for another head injury and increased impairment often results.

The National Perspective

It is estimated that currently 5.3 million Americans (approximately 2% of the total population) have a long-term need for help performing the normal routines of life as a result of TBI (CDC,2006). In the United States, the number of newly diagnosed people living with a TBI continues to grow by 1.4 million each year, making it one of the largest health concerns in the United States.

A Look at Montana: Second in the Nation

In Montana, the death rate from TBI (2000-2004 data) is the 2nd highest in the US at 30.2 deaths per 100,000 people, or 66% higher than the US average (18.2 per 100,000). Among people ages 1-24, the TBI mortality rate was third highest in the US during this same time. Adults 65+ are a particularly vulnerable population for TBI. An average of 75 older adults die each year as a result of TBI. Between 2006 and 2008, 914 people died from TBI in Montana.

While TBI is a concern nationwide, it is especially important in Montana, both because too many people die and because those who survive often live with the harmful effects from the injury for the rest of their lives. Living with a TBI can include dealing with cognitive impairments that interfere with the quality of life for both the individual and their friends and loved ones. It can also result in a loss of personal contribution to their home communities and society in general.

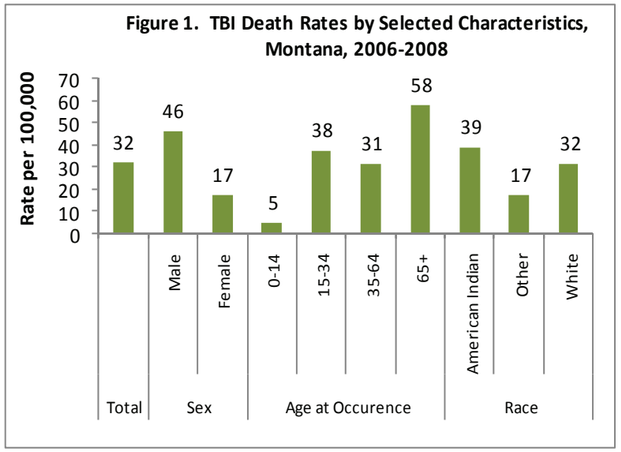
Montana ranks 2nd for TBI mortality

COMMON SIGNS AND SYMPTOMS OF TBI

- Fatigue
- Headaches
- Visual Disturbance
- Memory Loss
- Poor Attention
- Poor Concentration
- Sleep Disturbances
- Dizziness/loss of balance
- Irritability-emotional disturbance
- Feelings of depression
- Seizures
- Decreased speed of processing information
- Difficulties with communication
- Impulsiveness
- Difficulties with sensory perception including touch, smell, sight, taste and hearing
- Trouble regulating body temperature
- Appetite changes
- Change in mood
- Denial/ lack of awareness of the injury

Who is affected by TBI?

In the US, 1.4 million TBIs are reported each year. Of those, 50,000 result in deaths, 235,000 in hospitalizations, and 1.1 million require treatment in emergency departments. Among children ages 0-14 years, TBI causes an estimated 2,685 deaths, 37,000 hospitalizations, and 435,000 emergency department visits. The number of people with TBI who do not receive medical care is unknown. In Montana, both hospitalization and death due to TBI have similar distributions by age and gender (Figures 1 and 2). Males are roughly twice as likely to be hospitalized and three times as likely to die as are females. Those aged 15-34 and 65 and older are more likely to be hospitalized or die from TBI than other age groups. Finally, American Indians are somewhat more likely to die from TBI than individuals of other races.



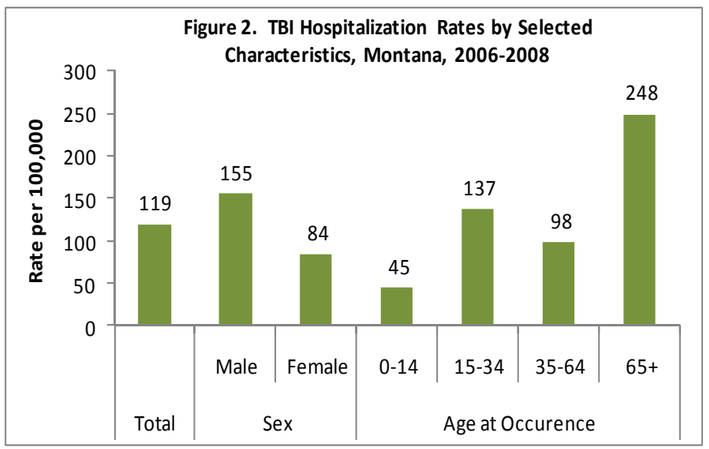


Table 1. Prevalence of Self-Reported Brain Injury by Selected Characteristics
Montana Adults, 2008, BRFSS

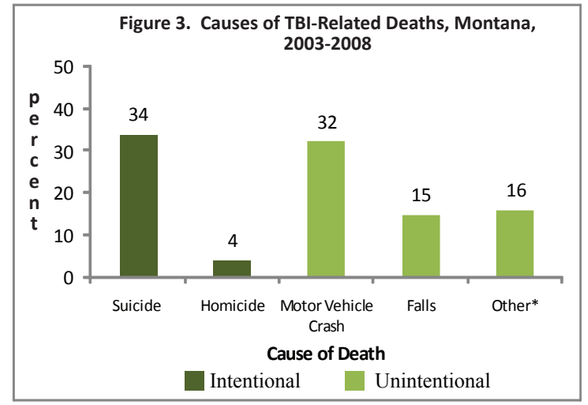
	Ever Had a Brain Injury	
	%	95% Confidence Interval*
All Adults	5.2	4.5 - 6.0
Education:		
<High School	10.4	6.3 - 16.7
High School	4.5	3.4 - 5.8
Some College	6.0	4.7 - 7.5
College Degree	4.3	3.4 - 5.4
Income:		
<$15,000	12.7	8.9 - 17.8
$15,000 - $24,999	5.6	4.0 - 7.8
$25,000 - $49,999	5.1	4.0 - 6.6
$50,000 - $74.999	3.1	2.1 - 4.6
$75,000 +	4.1	2.9 - 5.7
Race/Ethnicity:		
White, non-Hispanic	4.8	4.1 - 5.6
American Indian	10.4	6.7 - 15.7
Other or Hispanic	7.6	4.0 - 13.9
Disability:		
Disability	12.0	10.1 - 14.3
No Disability	2.9	2.4 - 3.6
Marital Status		
Unmarried	6.4	5.1 - 7.8
Married	4.5	3.7 - 5.3
General Health Status		
Fair/poor	11.9	9.4 - 14.4
Good/Very good/ Excellent	4.1	3.4 - 4.8
Employment		
Employed	4.0	3.3 - 4.8
Unemployed	7.2	5.8 - 8.6

* Non-overlapping confidence intervals indicate a statistical difference

The 2008 Behavioral Risk Factor Surveillance System (BRFSS) survey asked several questions about TBI among adults. Table 1 highlights the TBI experience reported by persons in selected groups. Among the groups reporting high rates are American Indians, people who earn less than $15,000 per year, and people who have not obtained a high school degree. Also, people with a disability, people with fair or poor health status, and people who are unemployed were significantly more likely to have reported a brain injury.

The BRFSS survey data also show that an estimated 9,400 Montana households report having one or two adults currently limited by a brain injury (data not shown). Of those, about 2,400 households report needing additional help that they are unable to get.

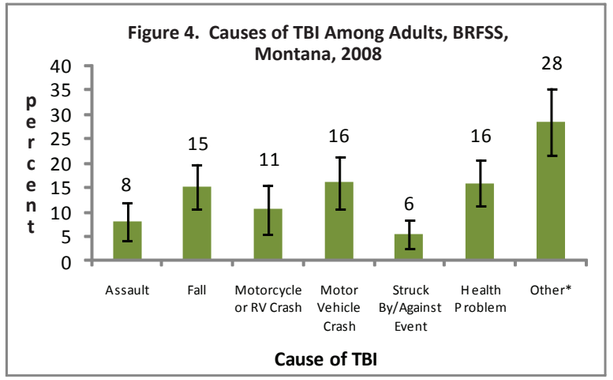
What causes TBI among Montanans?



* Other includes non-traumatic deaths, pedal cycle accidents, motorcycle accidents, all-terrain/off road vehicle accidents, animal-related accidents, drowning, other non-motor vehicle accidents, and undetermined TBI deaths.

On average, 300 people die each year in Montana due to a TBI. The most common causes are suicide (typically firearm induced), motor vehicle crashes, and falls. Four out of five TBI deaths in Montana can be attributed to these causes. While collectively other causes of TBI-related deaths make up about 16% of the total number of deaths, individual causes within this category accounted for less than 5% of the deaths (Figure 3). These data are similar to the United States on a whole. Finally, over 60% of TBI-related deaths in Montana are due to an unintentional cause (Figure 3). Self-reported causes of TBI from the BRFSS survey are consistent with those leading to TBI deaths (Figure 4). These statistics raise important questions about why Montana has such a high rate of TBI. Motor vehicle crashes and falls account for the highest percent of unintentional TBI-related injuries. Lack of seat belt use and driving while under the influence of alcohol and/or drugs play a large role in increasing the risk for obvious reasons. Important strategies for reducing the risk of TBI include raising awareness about safe driving, suicide prevention, fall prevention, recognizing and treating early signs of stroke, and wearing helmets with activities that might result in an impact to the head are needed. Ongoing, targeted, effective prevention is essential.

In Montana, approximately 25 people a month die from a TBI



* Other includes pedal cycle accidents, equestrian accidents, sports or recreation related events, lack of oxygen, and other causes.

Are we meeting national goals?

Healthy People 2010 Indicator: Reduce hospitalizations for nonfatal head injuries

Target: 45 hospitalizations per 100,000 population

MT (2008): 112 hospitalizations per 100,000 population

Healthy People 2010 presents health objectives that are used to measure progress toward increasing quality and years of healthy life while also eliminating health disparities in the United States. There are 28 focus areas, including unintentional injury and violence. In 1998, the baseline measure for nonfatal head injuries was 60.6 hospitalizations per 100,000 population. The target in 2010 is 45 hospitalizations per 100,000 population. Montana currently has a TBI hospitalization rate 2.5 times higher than the Healthy People 2010 target, and clearly trending above baseline.