Traumatic Brain Injury (TBI)– Data Brief Vermont Vital Statistics & Hospital Discharge Data

Background

Traumatic Brain Injury (TBI) is caused by a bump, blow, jolt, or penetrating head injury that disrupts the normal function of the brain¹. TBI has multiple causes (including firearms, motor vehicle traffic, falls, etc.) and multiple descriptions (including: open head wound, fracture of skull and facial bones, etc.). The severity of TBIs are difficult to determine in surveillance definitions. This data brief examines all causes, including contributing causes, of death related to TBI.

TBI Mortality

Primary Cause of TBI Death

Of the 815 TBI-related deaths from 2010-2014, all had a cause other than TBI listed as the primary cause of death. Of these, a third (35%) were due to firearms, three in ten (31%) were due to falls, and a quarter (24%) were due to motor vehicle traffic crashes. The remainder (10%) were made up of a variety of causes, each less than 2%, including drowning, machinery and being struck.

Trend

The rate of TBI related deaths among Vermont residents increased from 18.5 per 100,000 people in 2005 to 23.2 per 100,000 people in 2014. This increase was not statistically significant.



2010

2011

2012

2013

2014

2009

TBI Mortality Intent

More than six in ten (62%) of TBI-related deaths were unintentional. About four in ten (38%) were intentional (34% suicide, and 3% homicide), and 1% was of undetermined intent. About 50% of deaths in all age groups are unintentional, the exception being those 65+ where nearly 80% are unintentional. Additionally, among those <1-14, 30% of TBI related deaths are the result of suicides.

2006

2005



TBI Mortality by Description

Over a third (35%) of TBI-related deaths were due to an open wound of the head, while about a quarter (27%) were due to intracranial injury. Two in ten (21%) resulted from unspecified injuries of the head (unspecified injuries of the face, ear or nose and injuries classifiable to more than one of the other descriptions) and 15% were due to fracture of skull and facial bones. Few were due to other TBI.

Sex & Age

2007

2008

From 2010-2014, three quarters (73%) of TBI-related deaths were among men compared to 27% among women. As age increases so does the likelihood of dying from a TBI-related cause. The highest percentage of TBI-related deaths were among those over the age of 65 (41%) and the lowest were among those under 15 years of age (2%).

TBI-related deaths, by description 2010-2014 2%
1%
9 Open wound of the head
9 Intracranial injury
9 Other unspecified injuries of head
9 Fracture of the skull and facial bones
9 Sequelae of injuries of head

¹ Basic Information about Traumatic Brain Injury and Concussion. CDC. <u>https://www.cdc.gov/traumaticbraininjury/basics.html</u>

DEPARTMENT OF HEALTH

TBI Morbidity

Primary Cause of TBI Morbidity

From 2010-2014, nearly all (96%) TBI hospitalizations and ED visits also have an injury listed. Of these, 54% were due to falls, 22% were due to being struck by/against, 12% were due to motor vehicle traffic accidents, and 12% were related to some other type of injury. **TBI-related Hospitalizations & ED Visit rate**

2006

Trend

The rate of TBI related deaths among Vermont residents at Vermont hospitals increased significantly from 544.0 per 100,000 people in 2005 to 788.3 per 100,000 people in 2014.



2009

TBI Morbidity Intent

From 2010-2014, more than nine in ten (94%) of TBI-related Hospitalizations and ED Visits were unintentional. Six percent were intentional (<1% self-harm, and 6% assault).

2005



TBI Morbidity by Description

Nearly six in ten (58%) TBI-related hospitalizations and ED visits were due to unspecified injuries of the head. About four in ten (38%) were due to intracranial injuries, including concussion, contusion, laceration and hemorrhage. Few, less than five percent were due to fractures of skull (3%), other/unqualified multiple fractures of the skull (1%), shaken baby syndrome (<1%), and injuries to the optic nerve and pathways (<1%). ²

Sex & Age

2007

2008

More than half (52%) of TBI-related hospitalizations and ED visits were among men, with 48% among women. TBI-related hospitalizations and ED visits were highest among those under age 15 (24%). The proportion decreases significantly through age 64, before increasing among those 65 and older (19%).

2010 2011

2012

2013

2014



Summary

The cause of the decrease in TBI-related deaths and increase in hospitalizations/ED visits is unclear, however, this pattern is similar to the US³. Decreases in fatal motor vehicle traffic crashes, increases in fall-related deaths⁴, as well as increased awareness around TBI injuries are all possible factors in the changes to the morbidity and mortality trends⁵.

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² This analysis is of the first listed cause of TBI. Few (224) people had multiple causes listed.

³ Rates of TBI-related Emergency Department Visits, Hospitalizations, and Deaths — United States, 2001–2010. CDC. <u>ttps://www.cdc.gov/traumaticbraininjury/data/rates.html</u>

⁴ <u>http://www.healthvermont.gov/sites/default/files/documents/2017/02/HSVR_Injury_Mortality.pdf</u>

⁵ https://www.cdc.gov/mmwr/volumes/66/ss/ss6609a1.htm?s_cid=ss6609a1_w