

# Traumatic Brain Injury – *FACTS YOU SHOULD KNOW*

## What is traumatic brain injury (TBI)?

It is an injury to the brain that is caused by an external physical force. TBI can be caused by a blow to the head or the head striking an object. It can even be caused by shaking a baby or young child. Portions of the brain may be twisted or torn as it moves around inside the skull during a fall or collision, for example. More damage can occur as the brain swells or bleeds.

## What are the consequences?

Every injury to the brain is different depending on which areas are damaged. There can be physical changes ranging from headaches to seizures to weakness or paralysis and even changes in vision, hearing and the sense of smell and taste. Changes in cognition (the ability to think and learn) are the most common long-term consequences. Communication may be affected including speech, comprehension, writing and reading. Changes in behavior after a brain injury can range from depression, irritability, and impulsiveness to altered personalities.

## How much does it cost?

*The cost of traumatic brain injury in the United States is estimated to be \$48.3 billion annually. Hospitalization accounts for \$31.7 billion. Fatal brain injuries cost the nation \$16.6 billion each year.<sup>1</sup>*

There is also the lost income of the survivor of a brain injury, as well as the lost income of family members who give up working to provide care or supervision. Other costs are harder to measure such as decreased quality of life and the emotional impact on families over time.

## How many people are affected?

*Every 21 seconds, one person in the United States sustains a brain injury.<sup>2</sup>*

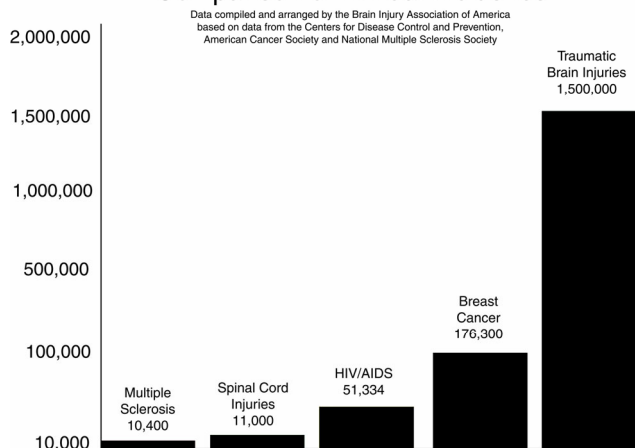
TBI is a major public health issue and cause of death and disability in children and adults. It occurs 8 times more often than the number of people annually diagnosed with breast cancer and 34 times more often than the number of new cases of HIV/AIDS.<sup>3</sup>

*Brain injury is the hidden silent epidemic.*

The Centers for Disease Control estimate that each year in the United States...

- as many as 1.5 million persons sustain mild to severe TBIs
- approximately 230,000 people with TBIs are hospitalized and survive each year
- over 1 million people are treated in an Emergency Department for TBI<sup>4</sup>

Comparison of Annual Incidence



<sup>1</sup> Lewin. ICF. The Cost of Disorders of the Brain. Washington, DC: The National Foundation for the Brain, 1992.

<sup>2</sup> Brain Injury Fact Sheet: Brain Injury Association of America [www.biausa.org](http://www.biausa.org)

<sup>3</sup> Centers for Disease Control, Natl. Center for Injury Prevention and Control [www.cdc.gov/ncipc/factsheets/tbi.htm](http://www.cdc.gov/ncipc/factsheets/tbi.htm)

<sup>4</sup> CDC NCIPC Website: [http://www.cdc.gov/ncipc/pub-res/tbi\\_toolkit/physicians/index.htm](http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/physicians/index.htm)

# Traumatic Brain Injury in North Carolina

## How many people are affected?

Approximately 43,000 NC residents currently live with the effects of TBI based on population data for the year 2000, assuming that the number of people with mild to severe brain injuries in North Carolina is similar to the national profile.<sup>5</sup> Regardless of whether traumatic brain injuries are classified as severe, moderate or mild, they extract a large toll on the individual as well as the medical, economic and social fabric of the state. The injury surveillance systems for TBI in North Carolina are imprecise. They can only identify the most severe cases of TBI, i.e., the number of residents who died or were hospitalized from a brain injury.

In 2001 - 1,800 NC residents died from a TBI (a rate of 22.1/100,000 population).<sup>6</sup> There were 4,600 TBI hospitalizations (a rate of 56.4/100,000).<sup>7</sup> Overall, the risk is twice as great in males than females in all age groups.<sup>8</sup>

## Age is a Factor – Young people

*Adolescents and young adults have the highest number of deaths and hospitalizations due to TBI. Primary causes for these age groups are motor vehicle crashes and firearms in homicides and suicides.*<sup>9</sup>

**North Carolina exceeds the national average for deaths due to motor vehicle crashes and firearms.**<sup>10</sup>

## Older Persons

The highest rates of TBI deaths and hospitalizations occur in older persons, primarily due to falls.

## Cost to North Carolina

In addition to the preventable loss of life, there are major economic consequences from TBI. In just one year, hospital charges in NC, excluding professional fees and medication, were over \$118 million for the year 2000.<sup>11</sup> This does not include lost time from work of people with TBIs, their families nor their caretakers. The estimated years of potential life lost due to TBI deaths during from 1989 through 1998 was 65 million years.<sup>12</sup>

*This Fact Sheet was developed in July, 2003.*

*For more information, contact the Brain Injury Association of North Carolina at 919-833-9634, 336-885-3307 or the NC Family Helpline at 1-800-377-1464. Website: [www.ncbraininjury.net](http://www.ncbraininjury.net).*

Fig 1. Traumatic Brain Injury Deaths by Age, North Carolina Residents, 2001

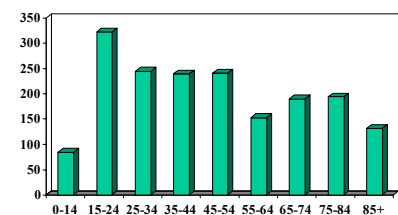
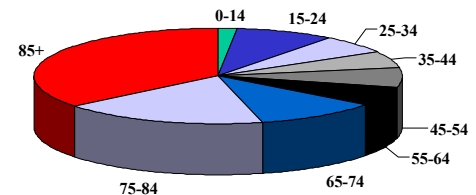


Fig. 2 Traumatic Brain Injury Death Rates by Age, North Carolina Residents, 2001



<sup>5</sup> [www.census.gov/prod/www/abs/decennial.html](http://www.census.gov/prod/www/abs/decennial.html)

<sup>6</sup> NC-State Center for Health Statistics Mortality Data

<sup>7</sup> NC- State Center for Health Statistics Hospital Discharge Data

<sup>8</sup> Smith CG, et al, NCMJ, vol 62 no. 6.

<sup>9</sup> 2001 TBI mortality data from the NC State Center for Health Statistics

<sup>10</sup> Smith CG, et al, NCMJ, vol 62 no. 6.

<sup>11</sup> Smith CG, et al, NCMJ, vol 62 no. 6.

<sup>12</sup> Sanford, Injury Data Books, 2001.