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# Fact Sheet

## Traumatic Brain Injury Selected Statistics

### Introduction

Traumatic brain injury (TBI) is an insult to the brain caused by an impact (e.g., fall or car accident), internal damage (e.g., gunshot or surgical intervention) or loss of oxygen. Although not always visible, TBI may cause enduring physical, emotional, intellectual and social changes for the survivor. Long-term effects place an enormous emotional and financial burden on the individual's family and strain medical and other service systems due to high costs and often life-long needs.

To date, there is no national registry on TBI. Statistics vary due to different data sources and nomenclatures. TBI definitions may include or exclude such categories as minor head injuries, skull fractures, non-hospitalized TBI survivors, hypoxic-anoxic injuries, or fatalities.

### Magnitude

- About two million head injuries of all types (including skull and facial fractures) occur each year in the U. S. (175 to 200 per 100,000 population).<sup>1</sup>
- Over 1.5 million Americans suffer nonfatal traumatic brain injuries each year which do not require hospitalization. About the same number are reported to sustain a brain injury resulting in a loss of consciousness but not severe enough to result in long-term institutionalization (an annual rate of 618 per 100,000 person-years).<sup>1,2</sup>
- Another 300,000 individuals suffer brain injuries severe enough to require hospitalization, with

99,000 resulting in a lasting disability. A total of 56,000 people die each year as a result of traumatic brain injury.<sup>1</sup>

- Traumatic brain injuries account for an estimated 34% of all injury deaths in the United States.<sup>3</sup>
- An estimated 62.3 per 100,000 adults age 15 and over are living in the community with enduring functional impairments due to TBI (excludes most survivors of mild TBI).<sup>4</sup>

### Who Is Injured?

- TBI affects males at twice the rate of females. Higher mortality rates among males indicate that males are more likely than females to suffer severe injuries.<sup>1</sup>
- Individuals age 15 to 24 have the highest risk of TBI. The risk also increases after age 60.<sup>1</sup>
- Research suggests that residents in rural areas have higher age-adjusted rates of both fatal traumatic brain injuries and those requiring hospitalization (an average of 97.8 per 100,000 for urban residents and 172.1 per 100,000 for rural residents).<sup>5</sup>

### Causes of TBI

- Motor vehicle accidents account for an estimated 28% of traumatic brain injuries; sports/physical activity account for 20%; assaults are responsible for 9%; 43% are due to "other" reasons. However, when considering those brain injuries

severe enough to require hospitalization, virtually

half (49%) are caused by motor vehicle accidents.<sup>2</sup>

- Alcohol was involved in 41% of all *fatal* crashes and 7% of *all* crashes in 1996. More than 321,000 persons were injured in accidents where alcohol was present—an average of one person injured every 2 minutes.<sup>28</sup>
- While brain injuries due to *car accidents* have declined an impressive 25% between 1984 to 1992, brain injuries resulting from *firearms* have risen 13% during the same period.<sup>6</sup>
- About 5% to 10% of skiing accidents result in head injuries.<sup>29</sup>

## Cost of Care

- The direct and indirect costs of traumatic brain injury in the U. S. have been estimated to be \$48.3 billion annually. Survivor costs account for \$31.7 billion and fatal brain injuries cost another \$16.6 billion (1991 dollars).<sup>7</sup>
- The lifetime costs for one person surviving a severe TBI can reach \$4 million.<sup>27</sup>
- An estimate of medical and non-medical (e.g., home modifications, vocational rehabilitation, health insurance) per TBI survivor averages \$151,587.<sup>7</sup>
- Average costs rise dramatically for those individuals who undergo rehabilitation. In one study, after a 4-year follow-up, average costs for medical and long-term care services averaged \$196,460 for survivors receiving rehabilitation services compared to \$17,893 for those receiving no rehabilitation.<sup>8</sup>
- *Acute* rehabilitation costs for survivors of a severe TBI have been shown to average \$110,891 per person, or about \$1,000 per day. The average length of stay for these severely injured persons in acute rehab is about 55 days.<sup>9</sup>
- Medical costs are the highest for those who do not survive (an average of \$454,717 per brain injury fatality).<sup>7</sup>
- One study showed that supported employment for helping TBI survivors return to work costs an average of \$10,198 for the first year of service.<sup>10</sup>

## Effects of Traumatic Brain Injury

- Although the largest group of TBI survivors are young adults in their prime working years, many survivors, particularly those with a severe TBI, do not return to work. Estimates vary widely, ranging from a low of 12.5% to as high as 80% who do not return to work. The ability to return to work is highly correlated to the post-acute functional limitations of the survivor.<sup>12, 13</sup>
- In a national survey in Canada, 66% of TBI survivors living in the community reported an ongoing need for assistance with some activities of daily living, 75% were not working, and 90% reported limitations or dissatisfaction with social integration.<sup>11</sup>
- Most injuries are mild. The ratio of mild to moderate to severe brain injuries is 8:1:1.<sup>1</sup>
- Survivors of a severe brain injury are likely to experience prolonged anxiety and depression, and are at a high risk for loss of friendships and social support.<sup>14</sup>
- Approximately 20% of survivors of *severe* TBI remain unresponsive for at least one month.<sup>15</sup>
- The majority of individuals who survive a period of coma eventually regain consciousness. Data from the Traumatic Coma Data Bank indicate that of 650 patients who experienced a vegetative state after a brain injury, only 14% were released from the hospital in a coma. And of those, about half had regained consciousness after one year's time.<sup>16</sup>
- Researchers have found that persons who suffer a severe TBI continue to make gradual improvements in functioning for at least 10 years post-injury.<sup>17</sup>

## Prevention

- Motorcycle helmets provide protection for motorcycle drivers for all types and locations of head injuries, and, contrary to a popular misconception, are not associated with increased neck injuries.<sup>21</sup>
- Studies indicate that the risk of brain injury in hospitalized motorcyclists is nearly twice that for unhelmeted motorcyclists and that unhelmeted drivers had acute care costs *three times* (\$30,365) that of helmeted drivers<sup>22, 23</sup>
- In California, the first year's implementation of the 1992 helmet law resulted in a *37.5% decrease* in statewide motorcycle crash fatalities over the previous year; those likely to sustain TBI-related impairments decreased 34%. California has demonstrated a more than 99% compliance rate in helmet use. This suggests that, with adequate enforcement, unrestricted helmet laws can achieve nearly 100% compliance.<sup>24, 25, 26</sup>
- As many as 74% to 85% of bicycle-related head injuries could be prevented if bike riders were to wear protective helmets. An average of 140,000 head injuries per year are attributed to children and adolescents in bicycle accidents.<sup>18, 19</sup>
- Air bags have been associated with a substantial reduction of fatalities in motor vehicle accidents involving **adults** (a 14% decrease in fatality for front passengers wearing seat belts and a 23% *decrease* for those *not* wearing seat belts). However, **children** younger than 10 (seated in the front seat) had a 34% *increased* risk of dying in frontal crashes in cars equipped with dual airbags.<sup>20</sup>

## Notes

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