

**INVESTMENT IN RESEARCH SAVES LIVES AND MONEY**

# Traumatic Brain Injury

Traumatic brain injury (TBI) is caused by a sudden blow or jolt that interrupts the normal functioning of the brain.<sup>1</sup> An estimated 75% of TBIs are considered mild or moderate; however, even these seemingly innocuous injuries have been linked to increased risk of Parkinson's disease<sup>2</sup> and dementia.<sup>3</sup> Severe TBI can cause lasting damage ranging from consistent headaches to chronic and debilitating cognitive or movement impairment. TBI is a major cause of mortality in the United States, comprising 30% of injury related deaths.<sup>4</sup> The very young, the very old, and military populations are most at risk of sustaining a TBI.<sup>5</sup> Each patient's symptoms and experience with TBI differs. Researchers are working to address the diversity of challenges that individuals with TBI can face, and more research is needed to better understand, prevent, and treat this high burden health threat.\*

**TODAY**

An estimated

**5.3 million**

Americans are living with a TBI-related disability.<sup>6</sup>

Military personnel are at a higher risk for TBI than the general population; it is estimated that

**11-23%** of

deployed U.S. military personnel experienced a probable TBI.<sup>7</sup>

There are nearly

**57,000**

TBI-related deaths each year in the U.S., including more than

**2,500**

**children.**<sup>8\*</sup>

**COST**

**\$11.5 billion:**

Annual TBI-related direct medical and health care costs in the U.S.<sup>9</sup>

**\$64.8 billion:**

Annual TBI-related indirect costs in the U.S. (including loss of wages and productivity and nonmedical expenses).<sup>9</sup>

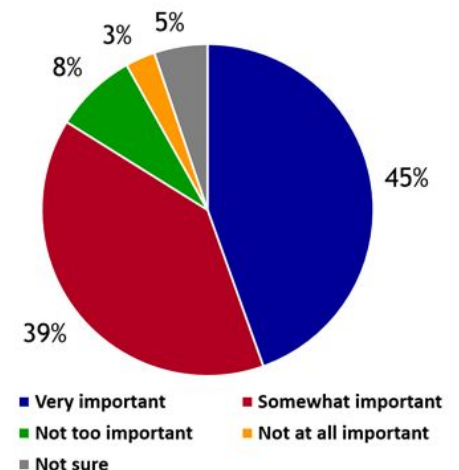
## Research Delivers Solutions

**Decompressive surgery** (partial removal of the skull) is being pioneered as a means of reducing the risk of death in severe TBI patients. After TBI, there can be harmful pressure increases inside the skull because of brain swelling. In preliminary surgical trials, patients' rate of mortality fell from nearly 50% to **less than 27%**.<sup>10</sup>

Scientists have found that the **immune system** plays an important role in healing damaged brain tissue immediately after a TBI, including the removal of dead cells and debris. A long-term elevated immune response, however, may be harmful. This critical finding has helped evolve efforts to address TBI toward therapies that **micro-target** specific immune responses rather than blunting the entire immune response.<sup>11</sup>

Mild TBI (mTBI) is the most common form of TBI affecting military personnel and while frequent blast exposure is a key risk factor, military-related mTBI can have a wide variety of causes from athletics and recreational activities to motor-vehicle accidents.<sup>12</sup> Repetitive mTBI is an especially crucial area of concern and research,<sup>13</sup> and the U.S. Department of Veterans Affairs has completed research showing that repetitive mTBI can cause chronic inflammation and reduce blood flow in the brain.<sup>13</sup> Further research, however, has shown that the anti-inflammatory drug anatabine improves spatial memory and reduces harmful brain inflammation after repetitive mTBI.<sup>14</sup>

How important is it for the President and Congress to assign a high priority to ensuring faster medical progress?



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2019

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## Then. Now. Imagine.

### THEN

In 2012, only 20 states had TBI surveillance systems in place to capture current and historical data on TBI, information needed to identify and develop successful interventions for at-risk populations.<sup>15</sup>

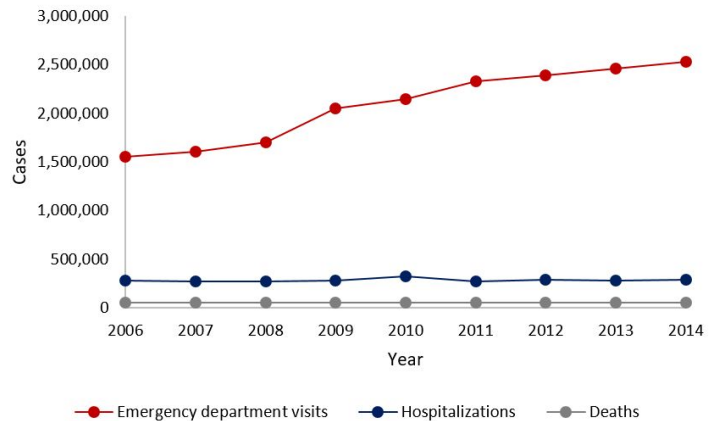
### NOW

In 2018, legislation was signed into law authorizing the Centers for Disease Control and Prevention to create a nationwide database to track TBI, giving scientists and health care providers data that is critical to addressing TBI.<sup>16</sup>

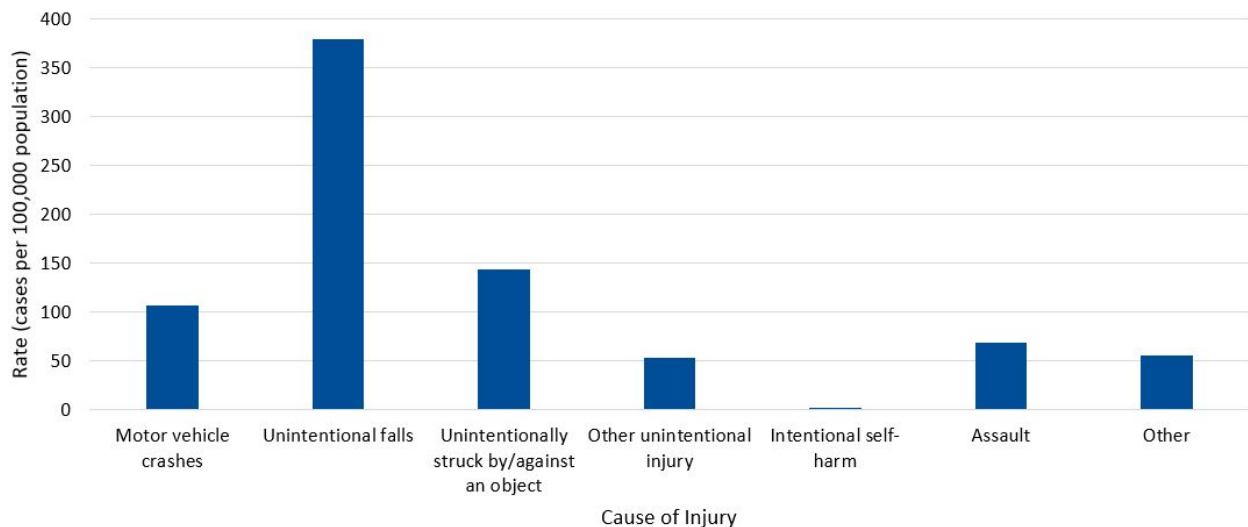
### IMAGINE

Full recoveries for patients with TBI.

## TBI-related Emergency Department Visits, Hospitalizations, and Deaths, 2006-2014<sup>8</sup>



## Causes of TBI-related Emergency Department Visits, 2014<sup>8</sup>



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14. Ferguson et al. "Acute or delayed treatment with anatabine improves spatial memory and reduces pathological sequelae at late time-points after repetitive mild traumatic brain injury." *J Neurotrauma*. 2017;34(8):1676-1691.
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\*As indicated in the citations, current data sources were used to compile this fact sheet; however, the best available statistics on TBI tend to be dated (2010-2014). Gaps in epidemiological and other data are among the research-related challenges surrounding TBI.<sup>5</sup>

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