

# Adherence to the 'Guidelines for Management of Severe Traumatic Brain Injury' saves lives

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Researchers found a significant reduction in the number of deaths of patients hospitalized in New York State with severe traumatic brain injury (TBI) between 2001 and 2009. The Brain Trauma Foundation, in collaboration with the American Association of Neurological Surgeons, published the first edition of the "Guidelines for Management of Severe Traumatic Brain Injury" in 1986. Data from 22 trauma centers in New York State were studied by researchers from Weill Cornell Medical College, the Brain Trauma Foundation, and Jamaica Hospital Medical Center in New York, and Oregon Health & Science University in Portland, Oregon. The reduction in deaths at the trauma centers between 2001 and 2009 corresponded to increased adherence to tenets of the Guidelines, particularly recommendations on monitoring of brain pressure and management of brain perfusion pressure. Detailed findings of this study are reported and discussed in "Marked reduction in mortality in patients with severe traumatic brain injury. Clinical article," by Linda M. Gerber, Ph.D., Ya-Lin Chiu, M.S., Nancy Carney, Ph.D., Roger Härtl, M.D., and Jamshid Ghajar, M.D., Ph.D., published today online, ahead of print, in the [\*Journal of Neurosurgery\*](#).

As part of a quality improvement initiative supported by the New York State Department of Health, the Brain Trauma Foundation set up an online Internet database, TBI-trac, in 2001. The database contains data from pre-hospital sources, emergency departments, and intensive care units at 20 Level I and 2 Level II trauma centers in New York State.

Using this database, the [trauma centers](#) can upload data on patients with severe TBI, track adherence to the Guidelines, and test hypotheses that may lead to improvements in the Guidelines.

To track how effective the Guidelines have been in reducing the number of deaths due to severe TBI, Gerber and colleagues examined data from the TBI-trac® database for the years 2001 through 2009, focusing on trends in adherence to the Guidelines over time. These trends were evaluated by examining data on intracranial pressure monitoring, use of steroid medications, nutritional intake, treatment thresholds for cerebral perfusion pressure and intracranial hypertension, presence of systemic hypotension, and treatment of intracranial hypertension within the first 1 or 2 days of hospitalization. The researchers also examined changes in the rate of case fatalities within the first 2 weeks after a severe TBI occurred. Studies have shown that approximately 85% of deaths from TBI occur during that time period. Data on 2347 cases of severe TBI were available for the analyses; the mortality analysis was based on 2320 cases due to a lack of sufficient documentation in the other 27 cases.

In their data analysis, the researchers noted a significant reduction in the case-fatality rate from 22% to 13% (p

The researchers found that the rates of intracranial hypertension and death in patients with severe TBI decreased significantly over the 9-year period, and these decreases were concurrent with increased monitoring of intracranial pressure and management of cerebral perfusion pressure—two major recommendations of the Guidelines. Gerber and colleagues conclude that adherence to the Guidelines' recommendations on increased monitoring of intracranial pressure and management of cerebral perfusion pressure improved outcomes in patients with severe TBI.

Summarizing the importance of the study, Dr. Jamshid Ghajar, president

of the Brain Trauma Foundation said, "Traumatic [brain injury](#) is the leading cause of death and disability in young people. Developing evidence-based guidelines and putting them into practice to improve outcomes are key priorities for the Brain Trauma Foundation. This remarkable reduction in deaths in New York State exemplifies our continued commitment to evidence-based [guidelines](#)."

**More information:** Gerber LM, Chiu YL, Carney N, Härtl R, Ghajar J: Marked reduction in mortality in patients with severe traumatic brain injury. Clinical article. Journal of Neurosurgery, published online, ahead of print, October 8, 2013; [DOI: 10.3171/2013.8.JNS13276](https://doi.org/10.3171/2013.8.JNS13276)

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