

## Quick Review of Model System Research

### Mortality following Traumatic Brain Injury among Individuals Unable to Follow Commands at the Time of Rehabilitation Admission<sup>1</sup>

#### What is the study about?

This study observed individuals with TBI that were unable to follow simple motor commands. Participants were beginning rehabilitation at the National Institute on Disability and Rehabilitation Research (NIDRR) TBI Model Systems Programs (TBIMS). The goal was to identify causes and risk factors of death and life expectancy.

#### Who participated in the study?

Participants had enrolled in TBIMS between 1988 and 2009. There were 387 individuals selected from 20 treatment facilities. 73 percent of subjects were men. The average age when their injury occurred was 33. The average time until they were admitted for rehabilitation treatment was 32 days. Subjects had to meet at least one of the conditions for moderate to severe TBI.

#### How was the study conducted?

Cases were identified using the TBI Model Systems (TBIMS) National Database (NDB). The database contains treatment information for each individual. NDB information was collected during acute care and at 1 year, 2 years, 5 years, and every fifth year around the anniversary of injury. TBIMS staff attempted to contact individuals for interview. The overall follow-up rate was 80%. Using that data, researchers compared study participants' death rates to estimated death rates of similar individuals in the general U.S. population.

#### What did the study find?

Individuals with a TBI who cannot follow commands when admitted to inpatient rehabilitation are at a higher risk of dying earlier than the U.S. general population. They are also at a much more likely to die earlier than individuals with moderate to severe TBI. People with a moderate to severe TBI who received inpatient rehabilitation were 2.2 times more likely to die. They also had a life expectancy 6.6 years shorter than individuals in the U.S. general population of similar age, gender and race. People who were unable to follow commands at the start of rehabilitation were 6.9 times more likely to die when compared to individuals of similar age, gender and race in the U.S. general population. Their average life expectancy was 12.2 years less. Compared to similar persons in the US general population, individuals who could not follow commands were more than 4 times as likely to die of circulatory conditions. They were also 44 times more likely to die of pneumonia and 38 times more likely to die of aspiration pneumonia.

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<sup>1</sup>Greenwald, B. D., Hammond, F., Harrison-Felix, C. L., Nakase-Richardson, R., Howe, L. L., & Kreider, S. (2014). Mortality following Traumatic Brain Injury among Individuals Unable to Follow Commands at the Time of Rehabilitation Admission: A NIDRR TBI Model Systems Study. *Journal of Neurotrauma*.