

## Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

### Recovery and Independence Are Common After Severe TBI

*A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).*

A traumatic brain injury (TBI) is a disruption of normal brain function from an external force, such as a fall or a car accident. Many people with TBI spend some time in a hospital and then transition to a rehabilitation center for therapies. People with a severe TBI may experience disorders of consciousness, such as a coma or a minimally conscious or vegetative state, during which they are unable to follow simple commands like “squeeze my hand.” Minimally Conscious State and Vegetative State may be brief (lasting a few hours or days) or extended (lasting months or indefinitely). These individuals may be unable to follow commands while in the hospital or even after transferring to a rehabilitation center. It has been commonly assumed that individuals with disordered consciousness after TBI would not have a meaningful recovery. However, newer research has found that many individuals with severe TBI may be able to recover and regain consciousness as well as much of their independence. In a recent NIDILRR-funded study, researchers looked at long-term data from a group of people with severe TBI who were still unable to follow commands when they moved from the hospital to a rehabilitation center. The researchers wanted to find out how much these individuals recovered in their mobility, self-care, and cognitive skills during the first decade after their injuries.

Researchers at the [TBI Model System Centers Indiana, Massachusetts, Pennsylvania, and Texas](#), and the Tampa Veterans Administration Polytrauma Rehabilitation Center looked at data from the TBIMS National Database. The researchers looked at data from 110 individuals aged 16 years or older who had received inpatient rehabilitation for a TBI, and who were unable to follow commands when they entered rehabilitation. The researchers looked at the hospital records to find out when each individual regained the ability to follow commands, if at all. These individuals (or their caregivers) were then interviewed by phone at 1, 2, 5, and 10 years after injury. During each interview, they were asked how much assistance the individual needed to perform 18 activities, on a scale from 1 (total dependence on another person) to 7 (completely independently). The activities included self-care tasks like bathing, eating, and dressing; mobility-related tasks like walking and climbing stairs; and cognitive tasks concerning memory and comprehension.

The researchers found that about 16% of the individuals regained the ability to follow commands in the first 28 days after their injury. Another 54% regained the ability to follow commands after more than 28 days after injury, but while they were still in the rehabilitation center. The remaining 30% of the individuals with TBI either regained the ability to follow commands after leaving rehabilitation, or they never regained this ability during the study period.

When the researchers looked at independence reported over the ten-year period, they found that many of these individuals recovered a great deal of independence. By the end of the **first year**, 56% were completely independent with self-care; 23% were completely independent with mobility; and 16% were completely independent with cognition. By the end of the **10 years**, those numbers increased to 72% for independent self-care, 70% for independent mobility, and 25% for independent cognition. When looking at the percentage of the individuals who were totally dependent on another person by the end of the 10 years, only 12% were totally dependent for self-care, 14% were totally dependent for mobility, and 11% were totally dependent for cognition.

The researchers also found that the individuals who regained their ability to follow commands “early” (within the first 28 days after injury), on average, recovered their independence much faster than the individuals who recovered ability to follow commands “late” (more than 28 days after injury) or not at all. Most of the individuals who recovered command-following ability early had recovered full independence in self-care and mobility and some independent cognition by the end of the first year. By comparison, only about half of the individuals who recovered command-following ability late recovered full independence in self-care by the end of their first year, and only about 12% recovered independent mobility and cognition during that time period. However, this group did see additional improvements in following years.

The authors noted that people with severe TBI may recover a great deal of their independence, even if they experience a prolonged disorder of consciousness like minimally conscious or vegetative state. Individuals with severe TBI may continue to progress in their recovery for months and years after they finish formal rehabilitation. Providers serving people with severe TBI may wish to develop ongoing follow-up and care plans lasting through the first decade after injury.

[To Learn More](#)

The [Model Systems Knowledge Translation Center](#) offers a large collection of information resources on TBI and recovery, including [an explanation of disorders of consciousness](#).

[BrainLine.org](#) is a service of WETA, offering an extensive collection of resources for TBI survivors, caregivers, and health professionals.

[To Learn More About this Study](#)

Hammond, F., et al. (2018) [Disorders of consciousness due to traumatic brain injury: Functional status ten years post-injury](#). Journal of Neurotrauma, 2018. This article is available from the NARIC collection under accession number J79963 and free in full text from the publisher.

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