

# Quick Review of Model System Research

## Long-Term Survival After Traumatic Brain Injury Part II: Life Expectancy<sup>1</sup>

### What is the study about?

This study compared the life expectancy (the mean survival time) of two groups of patients with moderate or severe traumatic brain injury (TBI) with the general United States population. Mortality rates were calculated over 2 decades to assess possible trends in improved survival for persons with TBI.

### Who participated in the study?

Researchers analyzed 12,481 long-term survivors with TBI. There were 7,365 persons with moderate to severe TBI at the age of 16 or older who were admitted to a Traumatic Brain Injury Model Systems (TBIMS) facility and survived 1 or more years post-injury, and 5,116 persons who sustained a TBI and received long-term services from the California Department of Developmental Services (CDDS). Study participants were classified into 4 comparison groups on the basis of their walking and feeding skills: (1) does not walk, fed by others; (2) does not walk, self-feeds; (3) some walking with a handheld device or unsteadily alone; and (4) walks well alone.

### How was the study conducted?

Researchers estimated mortality rates of persons with TBI and calculated life expectancy using life tables. The mortality rates of persons with TBI were compared with those of the age-, sex-, and calendar year matched U.S. general population by using the standardized mortality ratio (SMR)

### What did the study find?

The life expectancy of persons with moderate to severe TBI is lower than that of the U.S. general population. The magnitude of the reduction depends on age, sex, and severity of disability. Persons with the most severe disabilities, i.e., those who did not walk and were fed by others, had the shortest life expectancy. Those who were able to walk well alone had the longest life expectancy. Walking and feeding skills are powerful predictors of life expectancy, are easy to assess, and allow one to reliably distinguish persons with very mild disabilities from those with extremely severe disabilities. The study demonstrated that life expectancy for persons with moderate to severe TBI has not changed over the last 20 years. The reasons for the lack of improvement are not entirely clear.

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<sup>1</sup> Brooks, J.C., Shavelle, R.M., Strauss, D.J., Hammond, F.M., & Harrison-Felix, C.L. (2015). Long-term survival after traumatic brain injury part II: Life expectancy. *Archives of Physical Medicine and Rehabilitation*, 96: 1000-10005.