Editorial

Trends in Survival and Recovery From Stroke and Compression of Morbidity

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See related article, pages 563–565.

Substantial increases of life expectancy in developed countries are well documented, and further increases are anticipated in the 21st century. The question remains, however, whether this increased longevity can be achieved together with postponed functional limitation and disability or whether increasing life expectancy will yield greater disability. According to the Compression of Morbidity paradigm, “if the average age at first chronic infirmity is postponed, and if this postponement is greater than increases in life expectancy, then average cumulative lifetime morbidity will decrease, squeezed between a later onset and the time of death.”

Although the biological foundation of compression of morbidity remains unknown, data from various clinical/epidemiological databases can be helpful in our understanding of short- and long-term trends for major diseases, including disease incidence, survival, and recovery. In developed countries, the number of people greater than age 65 is increasing. When people age, they become more susceptible to disease, and their risk of mortality dramatically increases. However, an explosion of recent advances in disease-modifying factors, including specific prevention strategies, treatments, and rehabilitation options, should lead to decreases in both disease incidence and mortality, resulting in positive trends in life extension and recovery rates.

Worldwide, stroke remains 1 of the major causes of death and long-term disability. Stroke imposes substantial burden, both economic and social, on individuals, their families, and society. As with many other diseases, the incidence of stroke increases dramatically with age. The impact of stroke, and its disability. According to the Compression of Morbidity or whether increasing life expectancy will yield greater disability. However, although age-specific incidence might decline, will the overall rate of stroke also decline, and with that, will we see less stroke-related disability?

In the past 25 years, there has been a considerable decline in stroke-associated mortality in the United States. Such a decline could be attributed to a reduction in the incidence rate, due to the many factors mentioned previously. However, these explanations are not mutually exclusive, and it is worth noting that such distinctions can be made by analyzing existing biomedical and epidemiological data. For example, stroke survival significantly improved between 1984 and 2001 among older US adults, though with an increased rate of dementia in stroke survivors.

In this issue of Stroke, Yashin et al suggest a way of collecting information about trends in survival separately from stroke recovery by using data from the National Long-Term Care Survey (NLTCS) and merging these data with data from the national Medicare database. The authors suggest an indicator characterizing stroke recovery and evaluate its changes over time. They propose a working definition of the “recovery rate” based on analysis of Medicare records as being “survival free of stroke recurrence” or, as they called it, “recovery or sustained remission.” Time to recovery was defined as the period of time after the last inpatient or outpatient visit related to the stroke according to ICD codes. These definitions allowed the authors to report “survival and not-yet recovery,” to apply Kaplan-Meier estimators, to plot and analyze “not-yet-recovery” curves, and also to calculate corresponding statistics. Although the recovery curves corresponding to better survival are situated above those corresponding to worse survival, the lower “not-yet-recovery” curves indicate better recovery; median survival times can be derived from these estimators.

The authors compared 2 cohorts of people with a stroke diagnosis between 1994 to 1996 and 1999 to 2001. Five-year follow-up was reported for both groups. Although the authors did not find significant differences in mortality, they did find that the “recovery time from stroke” was significantly decreased during the period between 1994 and 1999. Most important, the authors found that recovery improvement was significant in each age group and in each comorbidity and disability stratum. By contrast, no significant changes in mortality rates were found (authors’ Figure 1, right panels).

The results of the analysis stratified by sex, age, comorbidity, and disability levels can be seen as a validation of their approach, as the results are readily interpreted. The improvement in recovery rate was significant in women but not in
With respect to the inpatient care of stroke patients, the results of this study may not be a surprise to front-line workers, as it has been proven that organized, interdisciplinary care on a geographically defined stroke unit results in increased survival and reduced short- and longer-term disability. This is in fact the current accepted standard for inpatient stroke care. The present study may be another in a long line of comparative studies that support this concept.

The replication of the results of this study in different datasets and particularly with extension to larger periods between the cohorts would be of great interest and allow a fuller understanding of trends in recovery. The addition of information regarding the process of care may help us to understand some of the many potential factors associated with these trends. It also seems that positive trends in recovery may support the compression of morbidity hypothesis, especially if the lesser recovery seen in groups with greatest vulnerability would be associated with high mortality.

Disclosures

None.

References


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