

Stroke risk and death rates fall over past two decades

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

Fewer Americans are having strokes and those who do have a lower risk of dying from them finds a new study led by Johns Hopkins Bloomberg School of Public Health researchers.

The study found a 24 percent overall decline in first-time strokes in each

of the last two decades and a 20 percent overall drop per decade in deaths after [stroke](#). However, the decline in [stroke risk](#) was concentrated mainly in the over-65 set, with little progress in reducing the risk of strokes among young people. In contrast, the drop in stroke-related deaths each decade was primarily found among those under age 65, with mortality rates holding firm in older people.

A report on the results is published in the July 16 issue of the *Journal of the American Medical Association (JAMA)*.

"We can congratulate ourselves that we are doing well, but stroke is still the No. 4 cause of death in the United States," says study co-author Josef Coresh, MD, PhD, a professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health. "This research points out the areas that need improvement. It also reminds us that there are many forces threatening to push stroke rates back up and if we don't address them head-on, our gains may be lost."

Coresh says he worries what the future of stroke will look like as the obesity epidemic, which began in the 90s, matures. As millions more are diagnosed with hypertension and diabetes – which often go hand-in-hand with obesity—they will face increased risk for stroke.

For their analysis, researchers used results from the Atherosclerosis Risk in Communities (ARIC) study, a prospective study of 15,792 residents of four U.S. communities who were between the ages of 45 and 64 when the study began in the late 1980s. In this analysis, they followed 14,357 participants who were free of stroke in 1987, looking specifically for all [stroke hospitalizations](#) and deaths between then and the end of 2011.

Seven percent of the study sample (1,051) had a stroke over that period. Of those, 10 percent died within 30 days, and 21 percent, 40 percent and 58 percent died within one year, five years and by the end of the study in

2011. Each decade, the number of deaths occurring within 10 years of a stroke was reduced by roughly eight deaths per 100 cases. The decrease was not across the board. Instead it was primarily the result of [stroke victims](#) under the age of 65 surviving longer. While they varied by age, the results were similar across race and gender, a finding that researchers were heartened to discover since a previous study suggested African-American stroke rates were not improving.

The researchers found that the decrease in [stroke incidence](#) and mortality is partly due to more successful control of risk factors such as blood pressure, smoking cessation and the wide use of statin medications for controlling cholesterol. However, an increase in diabetes likely acted in the opposite direction, pushing up stroke rates, though to a lesser extent. Stroke severity and improvements in treatment likely also impacted the data, though the study could not measure the exact role they played.

The age disparities in outcomes suggest areas where physicians and researchers may want to focus in the future to prevent strokes in those under 65 and reduce deaths in those over 65.

Nearly 800,000 Americans suffer strokes each year; of those, about 600,000 are first-time strokes. "Stroke is not only one of the main causes of death, but a leading cause of long-term disability in adults. Therefore, prevention is the best strategy," says study leader Silvia Koton, PhD, MOccH, a visiting faculty member at the Bloomberg School and incoming nursing department chair at Tel Aviv University.

National data show that the number of death certificates listing stroke as the underlying cause of death has decreased for a long time. However, only research studies such as this one can distinguish whether the decline is due to a reduction in the number of strokes or whether people are just living longer after having them, researchers say. In this study,

researchers also confirmed the occurrence of each stroke by reviewing each medical chart using uniform criteria. Researchers focused on deaths from all causes because following a stroke, many patients die from other causes including heart disease and pneumonia.

"Since rates are not equally falling across the board, physicians and policymakers need to pay closer attention to specific subgroups," Koton says. "These data are also helpful in monitoring the results of how we care for people of all ages, hopefully helping them even before they have a stroke."

More information: "Stroke Incidence and Mortality Trends in US Communities, 1987 to 2011," *JAMA*, 2014. [DOI: 10.1001/jama.2014.7692](https://doi.org/10.1001/jama.2014.7692)

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