Factors influencing the decline in stroke mortality: a statement from the American Heart Association/American Stroke Association.

BACKGROUND AND PURPOSE: Stroke mortality has been declining since the early 20th century. The reasons for this are not completely understood, although the decline is welcome. As a result of recent striking and more accelerated decreases in stroke mortality, stroke has fallen from the third to the fourth leading cause of death in the United States. This has prompted a detailed assessment of the factors associated with the change in stroke risk and mortality. This statement considers the evidence for factors that have contributed to the decline and how they can be used in the design of future interventions for this major public health burden.

METHODS: Writing group members were nominated by the committee chair and co-chair on the basis of their previous work in relevant topic areas and were approved by the American Heart Association Stroke Council, Council on Cardiovascular and Stroke Nursing, Council on Quality of Care and Outcomes Research, Council on Functional Genomics and Translational Biology.
Heart Association Stroke Council's Scientific Statements Oversight Committee and the American Heart Association Manuscript Oversight Committee. The writers used systematic literature reviews, references to published clinical and epidemiological studies, morbidity and mortality reports, clinical and public health guidelines, authoritative statements, personal files, and expert opinion to summarize evidence and to indicate gaps in current knowledge. All members of the writing group had the opportunity to comment on this document and approved the final version. The document underwent extensive American Heart Association internal peer review, Stroke Council leadership review, and Scientific Statements Oversight Committee review before consideration and approval by the American Heart Association Science Advisory and Coordinating Committee.

RESULTS: The decline in stroke mortality over the past decades represents a major improvement in population health and is observed for both sexes and for all racial/ethnic and age groups. In addition to the overall impact on fewer lives lost to stroke, the major decline in stroke mortality seen among people <65 years of age represents a reduction in years of potential life lost. The decline in mortality results from reduced incidence of stroke and lower case-fatality rates. These significant improvements in stroke outcomes are concurrent with cardiovascular risk factor control interventions. Although it is difficult to calculate specific attributable risk estimates, efforts in hypertension control initiated in the 1970s appear to have had the most substantial influence on the accelerated decline in stroke mortality. Although implemented later, diabetes mellitus and dyslipidemia control and smoking cessation programs, particularly in combination with treatment of hypertension, also appear to have contributed to the decline in stroke mortality. The potential effects of telemedicine and stroke systems of care appear to be strong but have not been in place long enough to indicate their influence on the decline. Other factors had probable effects, but additional studies are needed to determine their contributions.

CONCLUSIONS: The decline in stroke mortality is real and represents a major public health and clinical medicine success story. The repositioning of stroke from third to fourth leading cause of death is the result of true mortality decline and not an increase in mortality from chronic lung disease, which is now the third leading cause of death in the United States. There is strong
Evidence that the decline can be attributed to a combination of interventions and programs based on scientific findings and implemented with the purpose of reducing stroke risks, the most likely being improved control of hypertension. Thus, research studies and the application of their findings in developing intervention programs have improved the health of the population. The continued application of aggressive evidence-based public health programs and clinical interventions is expected to result in further declines in stroke mortality.

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