Toward Solutions for Minimizing Disparities in Stroke
National Institute of Neurological Disorders and Stroke Update
Katherine Pahigiannis, PhD; Salina P. Waddy, MD; Walter Koroshetz, MD

Unequal Burden of Stroke
The higher burden that many diseases pose on racial and ethnic minorities in the United States represents one of the most significant public health problems facing modern society. Stroke is no exception, with dramatic disparities in incidence and outcome among racial and ethnic minorities, rural, and disadvantaged socioeconomic groups. National Institute of Neurological Disorders and Stroke (NINDS) efforts to address health disparities in stroke are guided by a report from the NINDS Strategic Planning Advisory Panel on Health Disparities Research, which recommended ways for the institute to achieve maximal impact with its investments in health disparities research (see http://www.ninds.nih.gov/about_ninds/plans/NINDS_health_disparities_report.htm). As outlined below, NINDS has implemented recommendations within this report and continues to incorporate the expert panel’s suggestions as new health disparities initiatives are developed and executed.

The impact of stroke is higher among racial and ethnic minority groups, with an increased overall incidence and especially at younger ages among blacks, Mexican Americans, and Native populations. Geographic differences also exist with a 20% higher mortality rate in the so-called stroke belt of the southeastern United States and 40% higher in the stroke buckle. The disparities are only expected to amplify. Minority groups will make up ≥40% of the population by 2030. A higher prevalence of risk factors, such as high blood pressure, and reduced identification of a stroke combined with not seeking immediate medical attention after a stroke contribute to the disparities. However, the primary drivers of the disparities are complex and influenced by many integrated factors. Research to better understand and ultimately diminish the unequal burden of stroke experienced by these population groups is a high priority for the NINDS.

Laying the Foundation for Action
NINDS supports population-based studies to uncover major factors contributing to the disparities observed in specific populations. The Reasons for Geographical and Racial Differences in Stroke (REGARDS) project is a prospective longitudinal cohort study of >30000 participants that has helped characterize disparities observed in the stroke belt and between blacks and whites in general. Results demonstrate a higher risk of stroke in those who resided in the stroke belt during adolescence, especially blacks. Blood pressure increases of 10 mmHg led to disproportionately higher risk of stroke in blacks compared with whites. The good news is that even a small improvement in any 1 of the 7 major cardiovascular health factors identified by the American Heart/Stroke Association’s Life’s Simple 7 had a big impact on stroke risk. The Northern Manhattan Stroke (NOMAS) study, the Brain Attack Study in Corpus Christi (BASIC), and the Greater Cincinnati Northern Kentucky Stroke Study (GCNKSS) are also generating data on stroke risk and outcomes in more localized communities, which are helping us pinpoint cultural and local factors that may impart unique influences on stroke risk. Data from these studies will foster development of targeted interventions that take into account cultural context.

Seeking Solutions
These and similar studies have generated an evidence base from which to translate this knowledge into solutions for improving stroke prevention and care among high-risk populations and communities. Several NINDS studies are testing whether targeted behavior change strategies are effective at improving hospital arrival times for acute stroke treatment in blacks or Hispanics, as well as preventing the occurrence of a first or second stroke through improved risk factor management. Stroke Warning Information and Faster Treatment (SWIFT) and Preventing Recurrence of Thromboembolic Events Through Coordinated Treatment in the District of Columbia (PROTECT-DC) concentrate their messaging at the time of hospital discharge when persons are most receptive to health-related information. The approaches used in these studies are tailored to the community of interest. For example, the Stroke Health and Risk Education (SHARE) program is working with churches to disseminate messages about risk factor improvement in Mexican Americans, recognizing the strong foundation of faith as a cornerstone of this community. In another study, kids are educated about stroke symptoms through hip hop music, with the hopes that they will then relay key messages to their parents.

Regional collaborations recently funded through the NINDS Stroke Prevention/Intervention Research Programs (SPIRP) initiative are also generating data and developing high-impact culturally tailored interventions to address specific problems. Projects within these programs develop and test culturally tailored interventions that use approaches such as new health disparities initiatives are developed and executed.

From the Offices of the Director (K.P., W.K.) and Clinical Research (S.P.W.), National Institutes of Health, National Institute of Neurological Disorders and Stroke, Bethesda, MD.
Correspondence to Walter Koroshetz, MD, National Institutes of Health, National Institute of Neurological Disorders and Stroke, Bldg 31, Room 8A52, 31 Center Dr, MSC 2540, Bethesda, MD 20892. E-mail koroshetzw@mail.nih.gov.


Stroke is available at http://stroke.ahajournals.org
DOI: 10.1161/STROKEAHA.113.001418

© 2013 American Heart Association, Inc.
as community health workers and mobile health technology and also include observational studies and registries.

These studies demonstrate that the time is truly ripe for applying what has been gleaned from the epidemiological studies to develop and test interventions to reduce stroke disparities. The NINDS will hold a workshop in fiscal year 2014 to engage and mobilize research experts and stakeholders and establish community-driven priorities and strategies for reducing the disparities in the burden of stroke.

**Future Outlook**

Identifying and implementing effective solutions to combat disparities in stroke will require sustained and concerted effort from the research community, and NINDS-supported research is making important strides toward the ultimate goal of achieving health equity in stroke. However, much remains to be done, and until a measurable impact is made on a large scale, this problem will remain a national priority.

More information on NINDS health disparities research activities can be found on the NINDS Health Disparities Website (http://www.ninds.nih.gov/research/health_disparities/index.htm).

**Acknowledgments**

The authors thank Ms Katherine Saylor for her contribution to this research update.

**Disclosures**

None.

---

**Key Words:** epidemiology ■ health behavior ■ primary prevention ■ secondary prevention ■ stroke
Toward Solutions for Minimizing Disparities in Stroke: National Institute of Neurological Disorders and Stroke Update
Katherine Pahigiannis, Salina P. Waddy and Walter Koroshetz

Stroke. 2013;44:e129-e130; originally published online September 10, 2013;
doi: 10.1161/STROKEAHA.113.001418

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/44/10/e129

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Stroke can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Stroke is online at:
http://stroke.ahajournals.org/subscriptions/