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Quantifying and Addressing Persistent Stroke Disparities in Hispanics

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Over the last decade we have made significant strides in reducing the stroke burden in the US demonstrated by decreased age-adjusted rates in stroke incidence and mortality.^{1,2} Recurrent stroke also appears to be decreasing.³ Accordingly, the disability-adjusted life-year (DALY) rank for stroke in the US decreased from 5th in 1990 to 7th in 2010.⁴ Improvement in vascular risk factor control^{1,5} and greater access to evidence-based preventive and acute stroke treatments⁶ has certainly contributed to these favorable trends.

Future predictions for stroke in the US, however, demonstrate a consistent rise in prevalence due to the aging of our population.⁷ Moreover, the race and ethnic composition of the US population is dramatically and rapidly changing and could lead to further alterations in the US stroke profile. Racial and ethnic minorities now account for 37% of the population, including 16.9% Hispanics and 13.1% African Americans;⁸ it is anticipated that by mid-century Hispanics will account for 28% of the US population.⁹

There is strong evidence of greater stroke incidence and mortality in blacks,¹⁰ and relatively few studies have addressed stroke in Hispanics. The Brain Attack Surveillance in Corpus Christi (BASIC), which evaluated Mexican Americans (MA), and the Northern Manhattan Stroke Study (NOMAS), which included primarily Caribbean Hispanics, described a greater age adjusted incidence of ischemic stroke in Hispanics compared to whites.^{11–13}

Over the next 4 decades, forecasts estimate that there will be 1.3 million strokes each year in the US, with the greatest growth coming from Hispanics.¹⁴ Furthermore, the accumulated cost of stroke from 2005 to 2050 is expected to balloon to 1.52 trillion with almost half attributed to minorities.¹⁵ Given these alarming forecasts, it is of great importance to elucidate and address these stroke disparities in the Hispanic population.

Morgenstern and colleagues¹⁶ contribute to the emerging picture of stroke in Hispanics by reporting on ischemic stroke incidence trends over a long period of time in the BASIC study. Corpus Christi, Texas, is a bi-ethnic non-immigrant community where Mexican-Americans (MA) account for two thirds of the population. Over the 11 years of surveillance, a total of 4,646 ischemic strokes were recorded. Active hospital surveillance methods, supplemented by passive review of stroke discharge codes and county coroner records, and event validation by trained physicians, provide a robust methodological basis for detecting and ascertaining most strokes. From January 2000 to December 2010, the rate of ischemic stroke significantly declined by 35.9% and this was similar for both MA and non-Hispanic whites (NHW). However, the disparity in stroke incidence persisted for those under age 75. The age and sex-adjusted rate ratio for a first ischemic stroke was 1.34 for MA compared to

NHW, but the disparities were greater at younger ages: 1.94 for those 45–59 years of age, 1.50 for those 60–74, and 1.0 for those 75 and older. Similar trends were detected for first and recurrent stroke. Therefore, despite similar reductions in stroke incidence in both ethnic groups, disparities in stroke incidence have persisted and are more prominent in younger age groups.

The greater disparity in stroke incidence in the young has also been reported among African Americans. The biracial Greater Cincinnati/Northern Kentucky Stroke Study has reported stroke incidence trends between 1993 and 2005: ischemic stroke incidence decreased in whites but remained stable for blacks.¹⁷ Moreover, a significant increase in ischemic stroke was noted for those aged 20–54 in both races, but the incidence in this younger group was 2.7 times greater in blacks compared to whites.¹⁸

Observational epidemiological surveillance studies are critical for establishing temporal trend data that is often difficult to document. However, such studies sometimes are not set up to provide definite explanations for the disparities. Matching trend data on the prevalence of known stroke risk factors are helpful, but still only provide speculative evidence. Various explanations have been suggested to explain the ischemic stroke incidence disparities in Hispanics. The impact of known vascular risk factors, such as diabetes, obesity, physical inactivity and the metabolic syndrome, is greater in Hispanics compared to whites^{19,20} the prevalence of ideal cardiovascular health is less among Hispanics,²¹ and control of risk factors, particularly diabetes and hypercholesterolemia, has not improved for MA.²² The relative contribution of genetic polymorphisms is an area of interest^{23,24} but biological determinants of health need to be approached cautiously given the significant disparity in socioeconomic factors in Hispanics, including decreased access to health care resources, lower income and less insurance.^{25,26}

Given the anticipated increase in stroke prevalence, the expected growth in the Hispanic population, and the persistent disparities in stroke, it is imperative to address these gaps in a comprehensive and effective manner. One of the CDC Healthy People 2020 goals is to “achieve health equity, eliminate disparities, and improve the health of all groups”.²⁷ This is no easy task, given the complex causes of health disparities, and will call for innovative solutions. To close the gap, various interventions are required, including increasing awareness among health care providers, the general public, and key stakeholders, including payers and policy makers, smart deployment of targeted resources, educating those most at risk and increasing research on interventions to reduce stroke disparities. Community awareness, education, and provider and institutional cultural competence, are required to effectively address these issues.

Identification and quantification of disparities through research reports such as the Morgenstern et al publication are the first steps in recognition of the problem, and need to be followed by design, testing, and implementation of solutions. The NIH/NINDS has recognized the importance of addressing stroke disparities by awarding the Stroke Prevention/Intervention Research Program (SPIRP) to 4 centers in the US.²⁸ These programs will further define the causes of stroke disparities and institute innovative strategies to prevent stroke among Blacks and Hispanics. We are hopeful that these projects

will develop effective interventions that can be implemented in wider segments of the population to eliminate the persistent stroke disparities that continue to greatly impact the health of Americans.

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