

Reducing the Global Burden of Ischemic Heart Disease and Stroke

A Challenge for the Cardiovascular Community and the United Nations

Sidney C. Smith, Jr, MD

Noncommunicable diseases (NCDs), which include cardiovascular diseases (CVD), cancer, diabetes mellitus, and chronic pulmonary disease, are the leading cause of global mortality accounting for 36 million (63%) of the 57 million deaths worldwide in 2008.¹ Recognizing the global pandemic and burden of NCDs in a landmark decision, the United Nations has scheduled a high-level meeting on September 19 and 20, 2011 to determine priority actions and interventions in response to this crisis. The greatest increase in NCDs is in low- and middle-income countries whose resources for surveillance, prevention, and treatment are severely limited. Among NCDs, CVD is the leading cause of death, and ischemic heart disease (IHD) and stroke are the major contributors to CVD. Worldwide, 80% of deaths from CVD now occur in low- and middle-income countries.¹ Thus, there is a special and urgent need for data and treatment strategies concerning CVD in low- and middle-income countries.

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Although IHD and stroke are major contributors to global mortality, causing 7.2 and 5.7 million deaths, respectively, in 2004,² and have 9 established risk factors in common,^{3,4} the relative contributions of stroke and IHD to mortality on a country-to-country basis and the relative contribution of the various risk factors are not well documented. In the current issue of *Circulation*, Kim and Johnston⁵ report an analysis of mortality and disability adjusted life year loss rates from stroke and IHD from 192 World Health Organization member countries, along with national estimates of risk factors and national income data from World Bank estimates. In 74 countries (39%), stroke mortality was greater than that for IHD. Stroke disability adjusted life year loss rates were higher than IHD rates in 62 countries (32%). Significant variation in stroke mortality was seen in comparison with that for IHD, ranging from 12.7% higher to 27.2% lower. The burden of stroke was substantially higher in China, Africa, and South America, whereas IHD burden was higher in the

Middle East, North America, Australia, and most of Europe. Lower national income was associated with significantly higher relative mortality and disease burden from stroke. When vascular risk factors were considered, hypertension, heavy alcohol use, and advancing age were stronger predictors for stroke than IHD. Dyslipidemia, diabetes mellitus, and smoking were more strongly linked to IHD. The disease burden for stroke was especially high in China, probably because of the high rates of hypertension and the higher case fatality rates associated with their greater incidence of hemorrhagic strokes. By contrast, the high burden of IHD in India might be explained by increases in diabetes mellitus associated with rising prevalence of obesity and dyslipidemia. Thus, for the 2 most populous countries in the world, where economic resources are limited, the strategies directed toward reducing the burden of CVD by use of medical therapies may differ. The finding that mortality from IHD and stroke does not track uniformly and the observation that the burden of stroke is especially high in certain lower-income countries is important and requires further study that should be included in the deliberations leading to the upcoming United Nations high-level meeting. The importance of stroke as a major contributor to global death and disability was recently emphasized at the First Global Ministerial Meeting on NCDs and Healthy Lifestyles in Moscow on April 28 and 29, 2011. It is clear that careful monitoring and surveillance of risk factors and the relative burden of IHD and stroke by all countries is essential to the implementation of successful prevention and treatment strategies.

In China, the most populous country in the world, >230 million people have CVD associated with 2 million myocardial infarctions, 7 million strokes, and 3 million deaths. There are 200 million Chinese with either high blood pressure or high cholesterol and 350 million who are current smokers.⁶ An alarming increase in CVD events (>50%) is predicted for China between 2010 and 2030 on the basis of aging and the growth of the population, if steps are not taken to change the risk factor profile from its current level. Stronger tobacco control, which would lower active smoking prevalence to 20% by 2020 and 10% by 2030, would reduce total mortality in Chinese men despite unfavorable trends in other risk factors. Lowering population blood pressure by 3.6 mm Hg would reduce CVD and non-CVD mortality in both men and women even if total cholesterol and diabetes mellitus increased and smoking prevalence remained at year 2000 levels.⁷ Strategies directed toward reduction of multiple risk factors at the population level and improving acute care for CVD patients, especially those with stroke, could have a

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From the University of North Carolina School of Medicine, Chapel Hill, NC.

Correspondence to Sidney C. Smith, Jr, MD, University of North Carolina School of Medicine, Director, Center for Cardiovascular Science and Medicine, CB # 7075, Bioinformatics Building, 160 Dental Drive, Chapel Hill, NC 27599-7075. E-mail scs@med.unc.edu (*Circulation*. 2011;124:278-279.)

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profound effect on reducing premature death and disability from CVD in China and on improving the lives and productivity of many.

In India, high incidence rates of obesity, hypertension, and diabetes mellitus are reported from the New Delhi Birth Cohort.⁸ Among 1100 young adults, aged 29 years at baseline and followed for an average of 7 years, the prevalence of central obesity was 71% for men and 70% for women. During this same period, the prevalence of hypertension tripled in men and women, reaching 34% in men and 15% in women, and diabetes mellitus doubled, reaching 12% in men and 7% in women. It should be emphasized that the mean age of this cohort was only 36 years at the end of this study. These are important observations for India where there are now 32 million living with ischemic heart disease,⁹ and the prevalence of diabetes mellitus is expected to reach 80 million in the next 20 years.¹⁰ As is the case for China and almost all other nations with developing economies, these observations call for major preventive and therapeutic interventions if the full personal, economic, and societal impact of the evolving pandemic of CVD is to be controlled.

The upcoming United Nations high-level meeting on September 19 and 20, 2011 represents an unprecedented opportunity for those involved in the prevention and treatment of CVD and all other concerned parties, including the member nations of the United Nations and their health ministries, to act and initiate priority programs and interventions that can avert the evolving pandemic of CVD and address the devastating worldwide effect of NCDs. The Lancet NCD Action Group and the NCD Alliance Group have proposed 5 high-priority interventions that include tobacco control, salt reduction, improved diets and physical activity, reduction in harmful alcohol intake, and access to essential drugs and technologies.¹¹ It is estimated that the implementation of these interventions (cost/person/year) would be \$1.72 in China and \$ 1.52 in India and is generally affordable worldwide. Salt reduction and tobacco control are the 2 population-directed interventions with the highest health impact. Full implementation of the Framework on Tobacco Control strategies would avert 5.5 million deaths over 10 years in 23 low- and middle-income countries.¹² Reduction of salt intake by only 15% through mass media campaigns and industry reformulation of food products would avert 8.5 million deaths in 23 high-burden countries over 10 years.¹² The World Heart Federation, representing 198 societies of cardiology and heart foundations worldwide, is acting with strong support and involvement from its member societies in developed nations, such as the American Heart Association, American College of Cardiology, and European Society of Cardiology, whose expertise and experience with the prevention and treatment of CVD are substantial, to advocate for and

assist with the implementation of effective strategies and initiatives that will lessen the global burden of CVD. One hopes that, at their high-level meeting in September, the United Nations will rise to the challenge and not miss this unique opportunity to institute effective programs to lessen the global burden of CVD and NCDs.

Disclosures

None.

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