Journal of the American College of Cardiology
© 2008 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 52, No. 23, 2008
ISSN 0735-1097/08/$34.00
doi:10.1016/j.jacc.2008.08.049

STATE-OF-THE-ART PAPER

Global Inequalities in Access to Cardiovascular Health Care

Our Greatest Challenge

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Cardiovascular disease (CVD) was the leading cause of death globally in 2005, responsible for 17.5 million deaths, more than 80% of which occurred in low- and middle-income countries (LMIC). In these regions, CVD occurs at a much younger age than in high-income countries, thereby contributing disproportionately to lost potential years of healthy life as well as lost economic productivity. Many effective interventions for CVD prevention and management are now affordable for all but the very poorest countries, but large treatment gaps still exist because of poor prescribing practices, limited availability of medicines, and lack of appropriately skilled health care providers. Despite the increasing awareness of the growing epidemic of CVD in LMIC, this public health priority has received little attention from those who determine the international health agenda. Although the burden of CVD is already enormous in developing countries, there exists a window of opportunity to prevent the epidemic reaching its full potential magnitude. This requires the rapid deployment of strategies already proven to be effective in high-income countries. Such strategies need to be tailored for LMIC for them to be affordable, effective, and accessible to disadvantaged groups and the burgeoning middle classes. Ideally, the control of CVD in these countries would involve a dual approach in which evidence-based clinical strategies for CVD prevention and treatment are complemented by evidence-based population level strategies. We propose that upgrading primary health care services is a central requirement for the control of the CVD epidemics facing the developing world. (J Am Coll Cardiol 2008;52:1817–25) © 2008 by the American College of Cardiology Foundation

Although it is now well recognized that cardiovascular disease (CVD) is a major and growing health problem for low- and middle-income countries (LMIC), it is less well recognized that it is also a major cause of the widening inequity in the health status of the rich and poor. No longer can CVD be considered a problem of affluence (1). In most high-income countries, rates of CVD reached a peak in the middle of the 20th century, and have declined progressively ever since, because of a combination of successful population-wide preventive strategies, effective primary and secondary preventive health care, and improved treatment for acute cardiovascular events. However, although cardiovascular mortality has decreased by around three-quarters over the past 3 decades in countries such as Australia, Canada, the United Kingdom, and the U.S., rates in many LMIC have increased over the same period (2,3). At the beginning of the 21st century, this epidemic is gaining pace and is already the leading cause of death in many LMIC. Although safe and effective preventive treatments are available at low cost, it is still the case that most individuals for whom such treatments are recommended do not receive any care (4). Hence, interventions that have been so successfully deployed in high-income settings to curb the growth of CVD are still largely missing from the health care services of most LMIC.

The development and implementation of strategies to prevent and treat CVD in LMIC will require major efforts to direct scarce resources to interventions that are cost effective, culturally appropriate, and sustainable. This has implications not only for resources currently directed toward the health problems associated with poverty, but also for resources currently directed toward high-technology procedures such as percutaneous coronary interventions (5). In this article we review the burden of CVD in LMIC, describe the escalating inequalities in access to primary CVD health care, and discuss practical solutions that could be implemented to reduce such inequalities, using rural China as an example.

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Manuscript received May 16, 2008; revised manuscript received July 31, 2008, accepted August 5, 2008.

JACC Vol. 52, No. 23, 2008
December 2, 2008:1817–25

Abbreviations and Acronyms

CVD = cardiovascular disease

DALYS = disability-adjusted life years

GDP = gross domestic product

LMIC = low- and middle-income countries

WHO = World Health Organization

The Problem of CVD in LMIC

Disease burden. Worldwide in 2005, CVD was estimated to have caused approximately 17.5 million deaths, of which more than 80% occurred in LMIC (6). By 2030, the number of cardiovascular deaths is projected to increase to 23 million, with about 85% occurring in these countries (Fig. 1) (7). This increase is of roughly equal magnitude to the projected increase in deaths from human immunodeficiency virus (HIV) infection over the same period. Already, CVD is the leading cause of death in China (8) and India (9), the world's 2 most populous countries. Even in countries such as South Africa, where deaths from HIV still dominate, the rate of deaths from high blood pressure has increased by 25% in less than a decade (10). The CVD burden suffered by many LMIC now exceeds that suffered by many high-income countries. For example, in 2003, the disability-adjusted life years (DALYs) lost because of coronary heart disease were 27 and 20 per 1,000 population in the Russian Federation and India compared with 5 and 8 per 1,000 in Australia and the U.S., respectively (Table 1). Similarly, DALYs lost because of stroke in China were 12 in 1,000 compared with 4 in 1,000 in the United Kingdom (11).

Fueling the increasing mortality rates from CVD in LMIC are upward trends in the prevalence of risk factors such as obesity, high blood pressure, tobacco smoking, and diabetes. Although similar trends for some of these risk factors, such as obesity, are present in high-income countries, the rate of increase in the prevalence of risk factors is higher in developing countries (12). In China, for example, obesity has increased 4-fold in the last 2 decades (13). Consequently, the average level of total cholesterol among Chinese men age 25 to 64 years has increased from 4.15 mmol/l in 1984 to 5.25 mmol/l in 1999 (11). In India, the prevalence of diabetes is projected to increase from 32 million in 2000 to 79 million in 2030 (14). By 2025, the prevalence of hypertension is expected to increase to 500 million in India and China (15). Even in settings where risk factor rates are already high, the trends are not encouraging; for example, over the past decade the prevalence of smoking among adult men in Russia has increased from 57% to 62% (16), in contrast to Australia, where it decreased from 28% to 25% (17). Furthermore, within these countries, individuals of lower socioeconomic status are often more vulnerable to CVD as a consequence of greater exposure to risk factors such as smoking and reduced access to health care and health education (3).

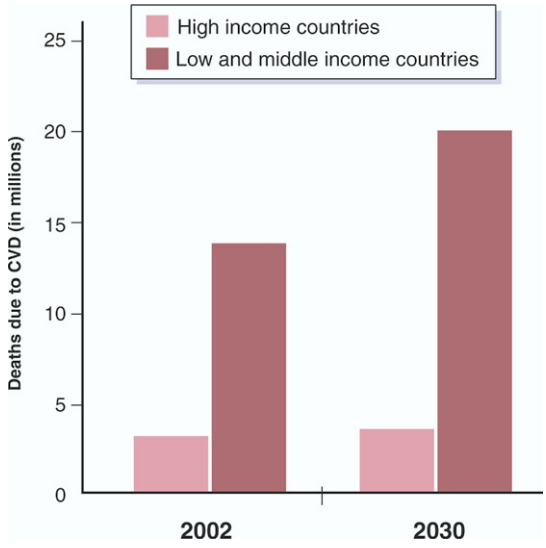

Figure 1 Global CVD Mortality

CVD = cardiovascular disease.

Economic burden. CVD has a huge economic impact on individuals, households, and countries. The effects are particularly marked in LMIC, where CVD more frequently affects those of working age, and for this reason contributes disproportionately to lost potential years of healthy life. In such countries, approximately one-half of all cardiovascular deaths occur before the age of 70 years, compared with just one-quarter in high-income countries (12). An example of the stark difference between high- and lower-income regions is provided by Tanzania, where stroke-related death among people age 15 to 59 years is 3 to 8 times higher than that in England and Wales (12). Similarly, in India, CVD mortality in the working age population (30 to 59 years) is twice that in the U.S. (18).

Recent estimates of foregone gross domestic product (GDP) associated with CVD and diabetes for 23 LMIC highlight how such illnesses can significantly impair economic growth (19). It was estimated that the aggregate loss in GDP across these countries in 2006 as a consequence of these diseases was $6.8 billion, with China, India, and Russia each incurring annual losses of over $1 billion. Furthermore, it is projected that if there is no change in disease trends, the annual foregone GDP across these 23 countries will increase to 150% of current levels by 2015, resulting in a cumulative loss over this 10-year period of $84 billion. Hence, efforts to produce even modest reductions in age-specific disease rates could have very large economic impacts. For example, a 2% annual reduction in cardiovascular death rates, as proposed by the World Health Organization (WHO) in 2005 (20), may avert the loss of $8.1 billion over a decade, including $1.36 billion in China, $1.64 billion in India, and $1.49 billion in Russia (Table 2).

However, such estimates of the costs of illness are unreliable and often tend to underestimate macroeconomic impacts (21). For instance, coping strategies used by house-