Protecting a Billion Hearts

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Several innovations have saved billions of lives [1] over the years including the following: 1) staving of hunger with the development of the synthetic fertilizer [2,3] and the Green Revolution [4]; 2) the chlorination of water; 3) the identification of blood groups and the introduction of blood transfusions; 4) prevention of communicable disease with vaccinations against small pox, measles, and polio; 5) development of antibiotics such as penicillin; 6) use of oral rehydration for acute diarrheal diseases; and 7) introduction of aspirin, statins, and coronary angioplasty for treatment of coronary artery disease. Prevention of death from cardiovascular diseases has the potential to make an impact of a similar magnitude [5,6].

The United Nations [7] estimates that the world's population will increase to 9.1 billion by 2050. Half of this increase will occur in 9 nations including the United States and in some of the least developed countries including India, China, Pakistan, Nigeria, the Democratic Republic of Congo, Bangladesh, Uganda, and Ethiopia. Of the 7.1 billion people worldwide, 0.8% die every year [7]; of these, 7.4 million people died of ischemic heart disease and 6.7 million of stroke. Ischemic heart disease and stroke are not only the leading cause of mortality worldwide, but they also account for an annual loss of 129 million [8,9] and 102 million [10] disability-adjusted life years, respectively. In 2010, Eastern Europe and Central Asia had the highest mortality rates due to ischemic heart disease, and more deaths due to ischemic heart disease occurred in South Asia than in any other region of the world [11]. Moreover, this increase in mortality due to ischemic heart disease in South Asia, North Africa, the Middle East, and Sub-Saharan Africa occurred at a younger age than in most other regions [12]. The World Health Organization projects that by 2020, 71% of ischemic heart disease deaths and 75% of stroke deaths will occur in developing countries [13]. In addition, the burden of nonfatal ischemic heart disease also continues to grow in part due to aging of the population—there was an increase in the burden of ischemic heart disease by 29 million disability-adjusted life-years (29% increase) worldwide between 1990 and 2010 [14]. At the current rate, over a billion individuals will either be disabled or succumb to ischemic heart disease and stroke over the next decade worldwide.

This special issue of *Global Heart* is focused on atherosclerotic cardiovascular disease in lower- and middle-income countries (LMIC). Bedi et al. [15] discuss the utility of B-mode ultrasound in detection and management of subclinical atherosclerosis, whereas Zhao et al. [16] discuss the evidence for using calcium screening for the early detection and management of coronary artery disease. Evaluation of the Malaysian National Cardiovascular Registry by Lu et al. [17] highlights important sex differences in acute coronary syndromes in a multiethnic Asian population. Menon et al. [18] have discussed the importance of involving community health workers in the management of coronary artery disease in rural areas of a developing country. Given that there are several complexities involved in the management of ST-segment elevation myocardial infarction (STEMI) in LMIC, this issue of *Global Heart* offers several articles pertaining to this topic. Itamar et al. [19] demonstrate the cost-effectiveness of primary and secondary prevention of acute MI. Gupta et al. [20] discuss the impact of electronic intensive care units in reducing mortality in STEMI patients in resource-limited regions of LMIC, and Thomas et al. [21] share their innovative model of providing STEMI care—the STEMI-INDIA model. Smith et al. [22] present the World Heart Foundation consensus statement on antiplatelet therapy for East Asian patients with acute coronary syndromes or who are undergoing percutaneous coronary intervention. Wong and Moran [23] discuss the implications for implementation of the recent U.S. prevention cardiovascular guidelines in LMIC. Baliga et al. [24], a panel of experts, from Asia and Africa have organized a working white paper on the management of STEMI in LMIC. This special issue also includes seminal papers on hypertension and stroke in LMIC.

This issue of *Global Heart* includes important papers from various LMIC that provide a wealth of data indicating that a system-wide approach [25] is required to reduce the burden of ischemic heart disease and stroke [26]. National and local governments [27] can facilitate this effort by introducing legislation, implementing policy measures, redefining marketing practices, modifying taxation, and imposing punitive measures when necessary [28]. Governments, health systems, and insurers may need to reconfigure health care delivery systems to provide continuous care to prevent and manage chronic illnesses [29]. They can help to promote adherence of low-cost therapies such as aspirin, statins, and antihypertensive agents. A shortage of manpower in the health care industry must be addressed [30]. Better use of cell phones and cloud technologies would help to provide remote data collection and remote monitoring and to provide supportive diagnostic and therapeutic options. This issue is a small effort to promote the system-wide approach to the prevention of ischemic heart disease and stroke [31–33] and to create awareness that a billion hearts can be protected from death or disability in the next decade.

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