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Low Priority of Cardiovascular and Chronic Diseases on the Global Health Agenda A Cause for Concern

Valentin Fuster, MD, PhD; Janet Voute, MA; Marilyn Hunn, BS; Sidney C. Smith, Jr, MD

At the beginning of the 20th century, cardiovascular disease (CVD) was responsible for $\approx 10\%$ of all deaths worldwide; today, that figure has risen to $\approx 30\%$, with 80% occurring in developing countries. Current efforts toward CVD control are insufficient, particularly in low- and middle-income countries.¹ In 2001, CVD was already the No. 1 cause of death worldwide,² yet little global attention has been paid to the challenge of reducing this burden in developing countries, where it is on the rise. In addition to CVD, other chronic diseases such as diabetes mellitus, chronic respiratory disease, and cancer are being ignored by policy makers, development aid agencies, and leading foundations.³

One reason that CVD and other chronic diseases remain underrecognized and underfunded is the United Nation's Millennium Development Goals (MDGs) process. Representatives of the chronic disease specialties were not appreciably involved.⁴ The United Nation's MDGs are designed to reduce poverty in developing countries by the year 2015. Of the 8 goals (Table 1), 3 are specifically targeted at health issues: to reduce child mortality, to reduce maternal mortality, and to prevent the spread of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), malaria, and other diseases.⁵ Whereas the linkage between health and economic development is clearly established, the health goals are too narrowly defined and do not include the diseases affecting the majority of the world's population. We believe that to truly begin to reduce poverty, both infectious and chronic diseases must be addressed. The correct approach is "and," not "or."

Four compelling arguments can be made for including CVD in the MDG process and as such on the Global Health Agenda (Table 2). First, the most recent data on global burden of disease clearly reveal the predominance of CVD and other chronic diseases. Second, CVD in low- and middle-income countries, largely through the combined impacts of tobacco and overweight, strikes younger working-age people and at higher rates than in high-income regions, clearly hampering economic growth while increasingly threatening children. Third, health systems cannot be built vertically disease by disease but must include the integration

of CVD and other chronic diseases so that health personnel can add strength to weak systems. And fourth, cost-effective policy, program, and treatment initiatives for CVD and other chronic diseases could have a major impact on poverty and general health.

The Global Burden of Disease: Predominance of CVD and Other Chronic Diseases

According to a recent publication of the World Health Organization, total global deaths in 2005 amounted to 58 million, of which 35 million were a result of chronic diseases. Chronic diseases accounted for 6 of 10 deaths, 80% of which occurred in low- and middle-income countries. CVD, with a mortality toll of 17.5 million, is the leading cause of death globally. In contrast, the infectious diseases included in the MDGs caused the following mortality in 2005: 2.8 million deaths from HIV/AIDS, 1.6 million from tuberculosis, and 0.8 million from malaria.⁶ As can be seen, CVD causes 3.3 times more deaths than these infectious diseases combined. Thus, cardiovascular and other chronic diseases are the leading cause of death in every part of the world except the lowest-income countries, the majority of which are in sub-Saharan Africa. In all other countries, chronic diseases dwarf the infectious burden. Nevertheless, even the low-income countries, where an estimated 14 million deaths from infectious diseases occurred, faced >12 million deaths from chronic disease.⁶ Moreover, CVD in sub-Saharan Africa is on the increase according to hospital-based information and limited national surveys.⁷ Cohort studies on hypertension in Nigeria and Zimbabwe and epidemiological information show that between 10 and 20 million people in sub-Saharan Africa may have hypertension and that cost-effective treatment could prevent $\approx 250\,000$ deaths each year.⁸ An evaluation of male mortality in South Africa conducted by the Medical Research Council clearly reveals that chronic diseases are the dominant cause of death beginning as early as 45 years of age (Figure 1).⁹

CVD and the Young

In low- and middle-income countries, cardiovascular risk factors, particularly smoking and obesity, are on the rise. As

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Table 1. The United Nation's MDGs

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

Source: United Nations website, <http://www.un.org/millenniumgoals>.

a result, the victims of CVD in these countries are younger people of working age, which portends a clear negative impact on economic growth while simultaneously threatening children. Mortality from CVD among working-age people in India, South Africa, and Brazil has been found to be 1.5 to 2 times as high as that of the United States. In South Africa, 41% of all deaths from heart disease during 2000 to 2003 occurred in people 35 to 64 years of age, with a similar high figure (35%) in India.¹⁰ In North America, New Zealand, Australia, and parts of Europe, only 10% of those deaths occur among individuals <65 years of age (Figure 2).¹¹

In the United States, 116 deaths per 100 000 men 35 to 59 years of age are caused by heart disease and stroke each year. In Russia, the figure is 576. In Brazil, 28% of heart attack and stroke victims are <65 years of age.¹¹ Within urban Indian industrial settings, a study of 2122 men with a mean age of 42 years (and 90% <50 years of age) revealed that 47% of respondents had at least 2 cardiovascular risk factors.¹² This study demonstrates the high prevalence of CVD and its risk factors against a background of poor awareness and control. The negative impact of CVD and other chronic diseases on working-age populations has obvious repercussions on the economy. In 2000, 1.1 million years of productive life were lost in the workforce of Brazil.¹¹ Thus, any strategy to reduce poverty must include a plan to fight premature cardiovascular and other chronic diseases.

Two modifiable risk factors play a pivotal role in the CVD epidemic in developing countries. Active smoking is more important as a risk factor in people 41 to 65 years of age than in people of other age groups.¹³ In addition, smoking habits in adults have an obvious negative impact on the individuals themselves and on their children. Overweight and obesity affect not only adults but increasingly also children and adolescents, boding ill for their present and future health. In 1995, 200 million adults around the globe were considered obese; by 2004, that number was estimated to have risen to 300 million. Of greater concern is the increasing proportion of young people who are overweight and indeed obese. Today, an estimated 10% of children worldwide—155 million individuals—are overweight, and some 30 million to 45 million are classified as obese.¹⁴ Childhood obesity is rapidly emerging in low- and middle-income countries. In the Americas as a whole, almost a third of children between 5 and 17 years of age are overweight or obese; in Europe, 21%; in the Near and Middle East, 18%; and in Asia-Pacific, 5%. In Beijing, considering only the number of obese (not just

Table 2. Arguments for Including CVD and Other Chronic Diseases in the MDGs

1. Predominance of CVD and other chronic diseases in the global burden of disease
2. CVD affects people of working age at higher rates in countries with low and middle incomes, affecting economic growth
3. Health systems cannot be built vertically, disease by disease; integrating chronic diseases will contribute to the strengthening of weak health systems
4. Cost-effective policy, program, and treatment initiatives already exist for CVD and other chronic diseases; they can be applied now to improve health and to reduce poverty

overweight) children, the prevalence reaches 20%. In the Middle East, rates of female obesity are at an all-time high, setting a dangerous lifestyle precedent for future generations of young women. Overweight children are 3 to 5 times more likely to suffer a premature heart attack (before 65 years of age) than are children of normal weight. In other words, the next generation faces the distinct possibility of a shorter, less healthy life.¹⁵

Interestingly, overweight and malnutrition increasingly coincide. Even in sub-Saharan Africa, obesity and malnutrition coexist not only in the same country but even in the same community. In Tanzania, 4.5% of men and 10% of women are obese.¹⁶ In South Africa, the figures are 9% and 23%, respectively.¹⁷ In Mexico and Brazil, overweight used to be a mark of wealth; it now often indicates poverty. Higher-calorie, processed, and fast foods are now widely and cheaply available. The poor have fewer affordable healthy food choices and more limited access to education on nutrition.¹⁸ This situation requires a concerted effort on healthy nutrition, which is relevant to both the overnourished and undernourished.

Programs are urgently needed in countries and communities to combat sedentary lifestyles and unhealthy diets. The World Heart Federation's Colombia Model Youth Program and Grenada Heart Project are community-based programs that address both lifestyle and healthy diets. The Colombia Model Youth Program will reach out to young children and their parents via a partnership with Sesame Workshop. The Plaza Sésamo program, which originated in Mexico, will be adapted and rolled out in Colombia, using media to educate young children on healthy habits for life. The medical community will support this effort not only by advising on health issues but also by helping to distribute Sesame Workshop educational materials to children and their parents. The Grenada Heart Project reaches adults and children through a community risk factor assessment model, which serves as the basis for development of a sustainable population-based program. The project, which uses members of the local community to develop awareness and advocacy campaigns, is integrated with the Ministry of Health through its Chronic Disease Program.

Integrated Health Systems

Increasing consensus exists that stronger health systems are the key to achieving improved health outcomes. Much less

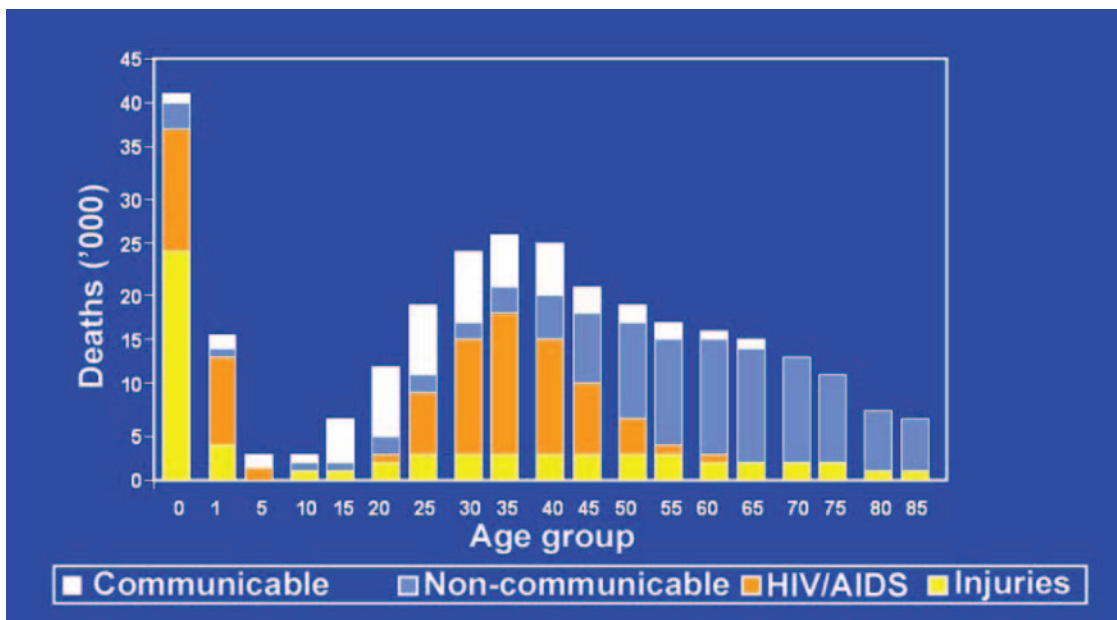


Figure 1. Distribution of diseases responsible for mortality across different age groups in South Africa in the year 2000. Chronic (non-communicable) diseases become the leading cause of death after 45 years of age. Reproduced from Bradshaw et al⁹ with permission of the publisher. Copyright © 2003, the South African Medical Association.

agreement exists on how to strengthen them.¹⁹ HIV/AIDS clearly has an infectious origin but requires long-term management by the healthcare system. As such, it has a great deal in common with type 2 diabetes mellitus and hypertension.²⁰ Vertical programs addressing specific diseases are doing vital work, providing interventions that may save lives or prevent illness, but for the health system to deliver those interventions over long periods of time, one must address the financing, human resources, and information base of a health system. It is more efficient to create a platform or model that integrates all these aspects rather than each priority program reinventing its own financing, human resources, and information system,

the approach most often applied currently.²¹ To date, little or no effort has been made to conduct joint infectious/chronic disease primary prevention programs in resource-constrained settings and to evaluate the leverage to be gained from such a collaborative approach.

The MDGs are unlikely to be reached in several if not most regions by 2015 because of shortfalls in the capacity of health systems. Countries that have the highest burden of disease are struggling with poor service delivery and infrastructure; inadequate financing; shortages of doctors, nurses, and other trained healthcare workers; and a lack of basic information on health indicators.²² Infectious, CVD, and other chronic dis-

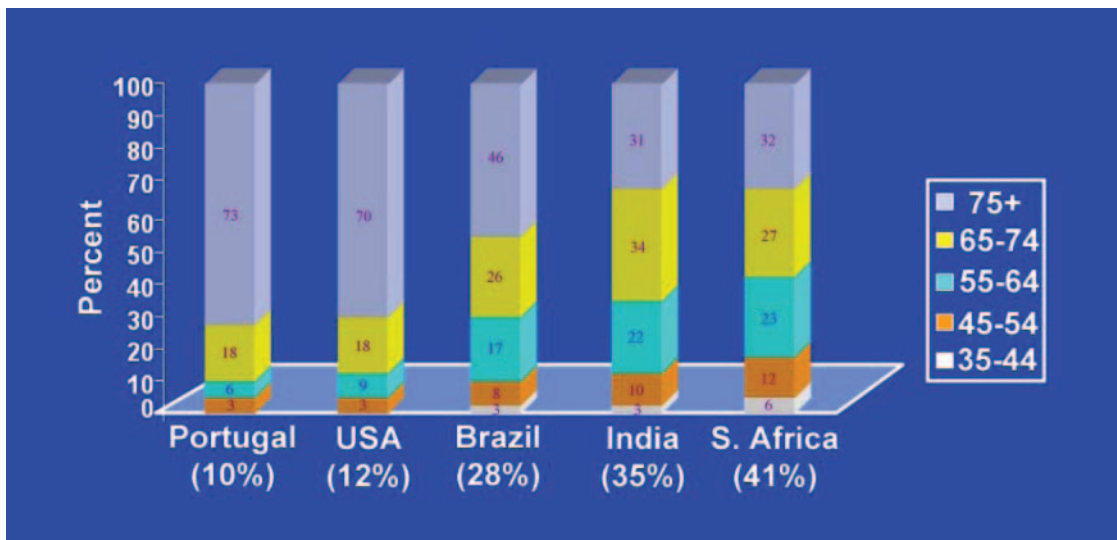


Figure 2. Projected cumulative CVD mortality from 2000 to 2030 in various age groups and countries across the globe. CVD is responsible for a significant percentage of deaths in the working-age population (numbers in parentheses), particularly in developing countries. Reproduced from Leeder et al¹¹ with permission of the publisher. Copyright © 2004, the Trustees of Columbia University in the City of New York.

ease programs must combine forces; working together, health personnel can add strength to weak systems. Donor agencies should focus on this collaboration.

Cost-Effective Policy, Program, and Treatment Initiatives in CVD

Community-based programs have proven potential as an approach to CVD control. The North Karelia Project, launched in 1972 as a community-based (and later as a national) program in Finland, influenced diet and other lifestyles that are crucial in the prevention of CVD. Evaluation has shown how the diet (particularly fat consumption) changed and led to a major reduction in population serum cholesterol and blood pressure levels. Ischemic heart disease mortality in a working-age population declined by 73% in North Karelia and by 65% in the whole country from 1971 to 1995.²³

Work site/employer-based health programs are cost-effective for the employer and have proved to be effective in many locations around the globe. Intervention components are most effective when they include the establishment of an infrastructure that comprises health education and promotion, professional training, detection and management of hypertensive patients, dietary counseling (including a focus on salt intake and reducing overweight), quitting smoking, and restricting alcohol. Work site-based comprehensive intervention for CVD prevention and control was feasible and cost-effective in decreasing CVD risk factors, incidence, and mortality in a Chinese urban population.²⁴ Similarly, the Johnson & Johnson's Health and Wellness Program in the United States successfully reduced 8 of 13 risk categories for employees, including tobacco use, aerobic exercise, high blood pressure, high cholesterol, dietary fiber intake, seat belt use, and drinking and driving habits.⁶

Complementary approaches include the implementation of programs with a wider scope. The World Health Organization Global Strategy for Diet Physical Activity and Health provides a framework for multistakeholder interventions to promote increased physical activity and healthier diets. Government-recommended healthy diets can help guide popular eating habits; eg, recommended European Union-wide food-based dietary guidelines are potentially the basis of large health gains in Europe, and cost-effectiveness studies tend to support their adoption.²⁵ Accordingly, agricultural policies need to be better aligned with these health objectives.

The Framework Convention on Tobacco Control, the world's first global health treaty, has recently been ratified by 143 countries. This treaty provides governments, the medical profession, and many others with suggested policies and programs for reducing tobacco use. Its provisions have been proved to be effective. In 1994, the government of South Africa announced a 50% tax on the retail price of tobacco products. Along with other tobacco control interventions, tax increases have contributed to a 33% reduction in tobacco use. Similarly, advocacy for clean indoor air can change the health prospects for many. Awareness-building efforts such as the World Heart Day²⁶ (celebrated the last Sunday of each September), the International Diabetes Day (celebrated in November), and the successful Go Red for Women Campaign

Table 3. Summary of Recommendations

CVD and the young
Reduce smoking, tobacco use, and exposure among parents and children
Fight childhood overweight and obesity via creative and concerted efforts to promote healthy nutrition and to increase physical activity
Integrated health systems
Apply experience from long-term management of infectious diseases to chronic diseases
Create a platform that integrates all aspects of the health system (financial, human resources, information) rather than 1 model for each disease
Join infectious and chronic disease primary prevention programs in resource-constrained settings
Evaluate the leverage of such a collaborative approach
Focus donor agencies on this collaboration
Cost-effective policy, program, and treatment initiatives in CVD
Implement policy recommendations contained in the World Health Organization Global Strategy on Diet, Physical Activity and Health and the Framework Convention on Tobacco Control, including taxes on tobacco products and support for clean indoor air policies
Implement community-, school-, and worksite/employer-based health programs
Improve patient care through better training for health workers and development of resource-appropriate guidelines, and pursue innovative approaches to cost-effective secondary prevention (polypill)

(designed to raise awareness among women of their risk of heart disease) are cost-effective means to begin to educate populations.

Finally, in the realm of specific medical provisions, patient care also can be improved if healthcare workers receive the training that they need and deserve. Treatment guidelines can and must be written in accordance with national circumstances and include only those medications that are cost-effective in that environment. Cardiological and other medical societies should adapt international guidelines to meet the real needs of their own patients and lead the education efforts for the primary care physicians. In unison, national policy should set priorities for public health and clinical interventions appropriate to the country.²⁷ The "polypill," combining 3 therapies in 1 single pill, must be seriously considered as an affordable option for patients with CVD in low-resource settings and as a mean to improve compliance.

Conclusions and Recommendations

A summary of our recommendations is presented in Table 3. We propose a modification of MDG No. 6, which currently reads, "Combat HIV/AIDS, malaria and other diseases." This should become, "Combat infectious diseases such as HIV/AIDS and malaria, along with chronic diseases such as cardiovascular disease, diabetes mellitus, and cancer, using an integrated approach." Much can be done with limited resources, but nothing can be done with nothing. The MDGs have been developed as a zero-sum game in the health arena; they are designed to mean that no health issues other than those specifically contemplated exist in poor countries. The absence of investment in CVD and other chronic diseases in low- and middle-income countries is a mistake. The chronic

disease epidemic needs recognition and support to begin to tackle what is already becoming an overwhelming burden of disease. The inclusion of chronic diseases in the MDGs is mandatory. The time to act is now.

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Disclosures

None.

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