

# Challenges and Opportunities to Scale Up Cardiovascular Disease Secondary Prevention in Latin America and the Caribbean

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Cardiovascular disease (CVD) is the leading cause of death throughout the world; however, a reduction of 21% (age-standardized cardiovascular mortality rates per 100,000 inhabitants) was observed between 1990 and 2010, with more substantial reductions in CVD mortality evident in high-income countries (~42% reduction in CVD deaths) (Table 1) [1,2].

## CARDIOVASCULAR DISEASE BURDEN IN LATIN AMERICA AND THE CARIBBEAN

In the Americas, CVD represents about 38% of non-communicable disease (NCD) deaths and is the leading cause of death, with 1.6 million deaths per year, one-half million occurring before age 70 [3]. Although mortality due to CVD in the Americas declined 19.2% from 2000 to 2007, higher median CVD mortality was found in low-income (242 per 100,000) and medium-income (186 per 100,000) countries, compared with high-income countries (154 per 100,000) [4]. Between 2000 and 2010, premature CVD mortality (<70 years of age) in the Americas decreased by 21%, with a statistically significant 2.5% average annual decline in the rate of change in the final 5 years. Declines in mortality from ischemic vascular disease (overall, 25%; men, 24%; women, 26%) and cerebrovascular disease (overall, 27%; men, 26%; women, 28%) were observed during the first decade of this century. These declines were not uniform across all countries, with notable disparities in country-specific premature mortality rates (region average, 132.7 per 100,000), including rates above 200 per 100,000 in Guyana, Trinidad and Tobago, the Dominican Republic, Bahamas, and Brazil [5]. Although, substantial decreases in CVD mortality rates have been seen in most regions, including the Americas from 1990 to 2013, the CVD burden, and specifically the absolute number of cases and deaths have risen in some but not all countries of the region [6]. CVD disproportionately affects the poorest population sectors [7], affecting families, communities, and governments due to treatment costs and potential years of life and productivity lost due to premature death and disability [8,9]. Therefore, the direct and indirect

costs of these diseases absorb resources that could otherwise be spent in health promotion efforts at the community and clinical levels [7].

In terms of the global economic burden, direct and indirect costs of CVD were estimated to be US\$863 billion in 2010, potentially rising to US\$1.04 trillion by 2030 [10]. Even countries such as Brazil, Chile, Mexico, Argentina, and Peru, which experienced some economic growth in recent years, lack economic assets to efficiently provide resources to prevent and manage CVD [11]. A comprehensive approach to CVD prevention and management is needed for long-term improvements in cardiovascular health. This report focuses on efforts to improve secondary prevention using existing frameworks, tailored to the Latin American and Caribbean (LAC) context.

## THE FRAMEWORK OF CVD SECONDARY PREVENTION

Secondary prevention of CVD can be defined as the use of intensive risk-reduction therapies and adoption of healthy lifestyle behaviors in patients with established coronary and/or other atherosclerotic vascular diseases. This would include peripheral artery disease, atherosclerotic aortic disease, and carotid and cerebral artery disease with clinical benefits of 75% estimated efficacy. Efficacy with these outcomes has been assessed by a variety of outcomes, including improved survival, reduced recurrent events, the need for revascularization procedures, and improved quality of life [12-14]. Risk-reduction therapies and healthy lifestyle changes include pharmacological and non-pharmacologic interventions. Examples of pharmacologic interventions for these populations include antiplatelet agents, beta-blockers, angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARB), 3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitors (e.g., statins), and pharmaceutical therapy for tobacco cessation. Examples of nonpharmacologic interventions include smoking cessation counseling, physical activity, and healthy diet. Both pharmacologic and non-pharmacologic interventions aim to reduce the probability

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Pan American Health Organization or the U.S. Centers for Disease Control and Prevention.

This paper is a product of a joint consultation meeting with important contributions from several international organizations (Pan American Health Organization, World Heart Federation, Latin American Society of Hypertension, Inter-American Society of Cardiology, Caribbean Public Health Agency, Center for Disease Prevention and Control) and representatives of Ministries of Health of selected countries (Brazil, Chile, Cuba) held in São Paulo, Brazil at the end of 2015.

The authors report no relationships that could be construed as a conflict of interest.

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GLOBAL HEART  
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VOL. ■, NO. ■, 2017  
ISSN 2211-8160/\$36.00.

<http://dx.doi.org/10.1016/j.jgheart.2017.05.002>

**TABLE 1.** Changes in age-standardized all CVD, IHD, and CVD mortality rate and DALY by country group and selected countries (1990 to 2010)

	All Cardiovascular and Circulatory Diseases						IHD			Mortality Rate			Ischemic Stroke					
	Mortality Rate		DALY		% Change		Mortality Rate		DALY		% Change		Mortality Rate		DALY		% Change	
	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010
Globally	298.1	234.8	-21.2	5688.8	4470.9	-21.4	131.3	105.7	-19.5	2423.3	1972	-18.6	59.6	42.3	-29.0	795.9	597.9	-33.1
High income*	240.2	140.2	-41.6	4159.5	2429	-41.6	131.6	71.4	-45.7	2259.8	1218.1	-46.1	42.9	22.9	-46.7	533.8	301.5	-77.0
Latin America and the Caribbean	265.1	200.8	-24.3	5214.4	3750.3	-28.1	119.5	93.3	-21.9	2282	1729.2	-24.2	46.5	33.1	-28.9	685.3	462.4	-48.2
Country-specific examples within Latin America and the Caribbean																		
Mexico	169.4	148.9	-12.1	3146.3	2778.4	-11.7	85.7	83.9	-2.2	1551.8	1521.2	-2	27.8	21.2	-23.9	381.1	303.8	-25.4
Guatemala	173.7	145.7	-16.1	3391.9	3026	-10.8	84.4	79.4	-5.9	1540.3	1560.3	1.3	25.7	19.3	-25.0	374.6	307.8	-21.7
Brazil	320.4	225.2	-29.7	6457.7	4314.7	-33.2	130.7	91	-30.4	2634.7	1808.8	-31.3	61.3	40.9	-33.2	909.8	570.5	-59.5

CVD, cardiovascular disease; DALY, disability adjusted life years; IHD, ischemic heart disease.  
 \*Global region.  
 Data from the Institute for Health Metrics and Evaluation [2].

of recurrent cardiovascular events in patients with clinically evident atherosclerotic cardiovascular disease [15]. Moreover, clinical practice guidelines for the management of care with appropriate updates have been periodically published by several medical societies to guide physician prescription of proven, effective treatments in comprehensive CVD care [12,16-23]. Optimal risk factor management through nonpharmacologically based approaches (Table 2) may include tobacco cessation counseling, regular participation in physical activity, achieving a healthy diet, limited alcohol intake, and weight management; with clinical outcome improvements in blood pressure control, lipid management, and diabetes control [12,15,24-28]. Although these interventions have been shown to be effective, their uptake by patients can be challenging, and clinical and public health programs are encouraged to adapt resources to the culture and capability of those they serve. Programs addressing these areas are often composed of a multidisciplinary team of providers and should include individual level interventions using targeted education and behavior modification programs to counterbalance the “continuum” of the atherosclerotic process. Population-wide interventions (e.g., limiting exposure to secondhand tobacco smoke, sodium reduction) to reduce exposures to risk factors should complement individualized interventions that support risk factor management.

**CVD SECONDARY PREVENTION IN LATIN AMERICA AND THE CARIBBEAN: A SITUATION ANALYSIS**

A large body of robust evidence to guide therapeutic decision making and enhance long-term adherence after an acute episode of CVD, such as ST-segment elevation myocardial infarction, non-ST-segment elevation acute coronary syndromes, or revascularization procedures exists. Despite this, we frequently observe substantial discrepancies between the evidence-based recommendations and what is actually delivered in clinical practice. This can be appropriately documented based on contemporary real-world data on the use of beneficial secondary prevention medications among several geographic regions, including LAC. Examples include clinical as well as community-based studies. The REACH (REduction of Atherothrombosis for Continued Health) registry included data from North America, Europe, Australia, Asia, Latin America (Brazil, Chile, Mexico, Panama, Costa Rica, Dominican Republic, Ecuador, Guatemala, and Peru), and the Middle East. The use of secondary prevention medications was ascertained among 32,247 patients. Among these patients, a significant gap was detected between clinically indicated and actual rates of use at the first visit assessment and after 3 years of follow-up: aspirin alone (baseline: 56.6% and 3-year follow-up: 56.9%); aspirin plus another antiplatelet agent (14.5% and 12.8%); other antiplatelet agents alone (13.6% and 14.2%); and statins (68.3% and 71.9%) [29]. Compared with patients in North America in the REACH registry, patients from Latin America and Asia were less

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