

What the Million Hearts Initiative Means for Stroke : A Presidential Advisory From the American Heart Association/American Stroke Association
Ralph L. Sacco, Thomas R. Frieden, Drew E. Blakeman, Edward C. Jauch and Stephanie Mohl

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What the Million Hearts Initiative Means for Stroke A Presidential Advisory From the American Heart Association/American Stroke Association

Ralph L. Sacco, MS, MD, FAAN, FAHA, Chair; Thomas R. Frieden, MD, MPH, Co-Chair;
Drew E. Blakeman, MS; Edward C. Jauch, MD, MS, FAHA; Stephanie Mohl

Stroke remains a leading cause of disability and death for people of all races and ethnicities. Nearly 800 000 Americans experience a stroke each year—1 every 40 seconds—and ≈135 000 die.¹ Approximately 600 000 of these are first or new strokes, and those who survive are at increased risk of a future stroke.¹ In 2010, strokes cost the United States an estimated \$53.9 billion, including both healthcare costs and productivity losses.²

There are significant racial and ethnic disparities in stroke rates, with blacks having nearly twice the risk of whites of having a first stroke,¹ and blacks and Hispanics are more likely to die after a stroke than are whites.¹ There are also geographic disparities, with higher stroke incidence in the southeastern United States.³ And although stroke risk increases with age, strokes can occur at any age; about 25% of strokes occur in people who are <65 years of age.^{3a}

Stroke is the leading cause of serious long-term adult disability in the United States. As many as 30% of people who experience a stroke become permanently disabled, losing their speech, sight, mobility, and the ability to perform the simplest life tasks.⁴ For some, the final years of life can be transformed in an instant from what had been envisioned as an enjoyable time spent with family and friends to one of frustration, isolation, and despair.

As the US population ages, the burden of cardiovascular diseases, including stroke, is expected to increase dramati-

cally in coming decades. Assuming no changes in current trends, by 2030, the prevalence of stroke is projected to increase by 25%, and the economic costs of stroke will nearly triple.² Because improvements in medical care are reducing stroke mortality even further, the prevalence of adult stroke-related disability is likely to increase.

We need to prove these forecasts wrong. Stroke is often preventable and could be reduced by as much as one third with improved implementation of feasible interventions.⁵ However, there is much more work needed to improve primary stroke prevention and reduce the impact of stroke on the lives of people and their families, including a need for specific, quantifiable goals and accountability for achieving these goals. Despite its name, the recently launched “Million Hearts” initiative,⁶ a new public-private partnership, is designed to have a major impact on prevention of all cardiovascular diseases, including stroke.

To focus on reducing mortality attributable to cardiovascular disease, including stroke, and improving overall cardiovascular health, including brain health, the American Heart Association/American Stroke Association (AHA/ASA) established a 2020 Health Impact Goal to improve the cardiovascular health of all Americans by 20% while reducing deaths related to cardiovascular diseases and stroke by 20%.^{6a} Similarly, the US Department of Health and Human Services has established a Healthy People 2020 target of reducing the rate of death attributable to stroke by 20% from a 2007 baseline.^{6b}

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Table. Key Components of Million Hearts and Targets

Clinical prevention—Improve care of ABCS:	
Focus on ABCS	
	Increase aspirin use among those at high risk from 47% to 65% in the population and 70% in clinical systems
	Increase hypertension control from 46% to 65% in the population and 70% in clinical systems
	Increase cholesterol control from 33% to 65% in the population and 70% in clinical systems
	Reduce smoking prevalence from 19% to 17%
Health information technology	
	Alignment of ABCS measures across health system
	Health information technology, including meaningful use criteria
	Electronic health records
Clinical innovations	
	Team-based approaches to care
	Interventions to increase medication adherence
Community prevention—Reduce treatment need:	
Strengthen tobacco control and reduce smoking	
	State and local action to reduce tobacco use
	Community Transformation Grants
	Graphic pack and ad warnings
	Media campaigns
	Other evidence-based tobacco control interventions
Improve nutrition through decreased sodium and artificial <i>trans</i> fat consumption	
	Reduce sodium intake by 20%
	Reduce <i>trans</i> fat intake by 50%

ABCS indicates Aspirin therapy, Blood pressure control, Cholesterol management, and support for Smoking cessation.

The Million Hearts Initiative

To realize these goals of reducing the burden of cardiovascular disease and stroke, in 2011, the federal government and many public and private partners launched the Million Hearts initiative, with a commitment to prevent 1 million cardiovascular events over 5 years; prevention of stroke contributes significantly to the 1 million lives improved by this campaign.⁶ Million Hearts is a collaboration among the Centers for Disease Control and Prevention (CDC) and the Centers for Medicare and Medicaid Services, along with other Department of Health and Human Services agencies and federal agencies, in addition to a broad range of nonprofit and private sector organizations, including the AHA/ASA among many others.

The goal of Million Hearts is to address and greatly reduce the burden of cardiovascular diseases, including stroke, and reduce their risk factors through both clinical and community-based prevention (Table).⁷ Because many strokes are the result of cardiovascular disease, and stroke and heart attack share many similar risk factors, it is critical that stroke prevention is a key component of Million Hearts. The public is generally not fully aware of the connections between heart disease and stroke and that improvements in cardiovascular health will also lead to better brain health. Million Hearts is focused entirely on

prevention and therefore does not directly address early recognition or better treatment of either heart attacks or strokes, important issues that are addressed by other public and private sector initiatives.

Importance of Stroke Prevention

Because stroke mortality has declined but stroke prevalence has increased,¹ a record number of US stroke survivors and their families are confronting the human and financial costs associated with stroke-related disability. Although acute stroke treatment and stroke center certification have made a tremendous impact in improving the delivery of stroke care, primary prevention—the main focus of Million Hearts—is particularly important, because ≈77% of strokes each year are first events.¹

Ischemic stroke shares most of the same risk factors as myocardial infarction and coronary heart disease. Age, family history, hypertension, cigarette smoking, diabetes mellitus, dyslipidemia, atrial fibrillation, unhealthy diet, physical inactivity, and obesity are well-documented risk factors for ischemic stroke and cardiovascular disease in general. Many of these risk factors are modifiable, and their reduction is associated with a decrease in the incidence of major stroke.⁸ However, effective clinical and community prevention strategies are underutilized; complementary efforts at the clinical and community levels are needed to achieve optimal prevention of stroke and its associated risk factors.

More specifically, clinical preventive services can reduce stroke incidence, but their use remains low because of lack of access to healthcare services and insurance coverage, gaps in delivery by the healthcare system, and lack of patient adherence to medications and physician recommendations. Currently, for example, only 47% of Americans at highest risk of cardiovascular disease take daily aspirin or another antiplatelet agent, 46% with hypertension have it adequately controlled, 33% with high cholesterol receive adequate treatment, and 23% of smokers get help to quit smoking.⁶ Increasing the use of these simple clinical interventions could save more than 100 000 lives a year.⁹

Million Hearts targets improvements in clinical preventive practice on the “ABCS” of heart disease and stroke prevention: appropriate Aspirin therapy, Blood pressure control, Cholesterol management, and support for Smoking cessation. Although the “ABCS” are associated with cardiovascular disease prevention generally, they are also specifically relevant to the prevention of strokes.

Aspirin (and Other Antiplatelet Treatment)

Although evidence of the benefits of aspirin use for primary prevention of strokes is less clear, aspirin for cardiovascular prophylaxis (including stroke) is recommended for at-risk individuals.⁸ Aspirin can be particularly useful in the prevention of first stroke in women. In a study¹⁰ of asymptomatic women who were ≥45 years of age, there was a 17% reduction in risk of stroke among women who received aspirin versus a placebo. Aspirin also prevents stroke among patients who have experienced a recent ischemic stroke or transient ischemic attack; its use is associated with a 15% reduction in relative risk.¹¹

Blood Pressure

Hypertension is the most important modifiable risk factor for stroke.⁸ Treatment of hypertension is among the most effective strategies for preventing both ischemic and hemorrhagic stroke. Yet despite the ease of diagnosis and monitoring, a large portion of the population still has undiagnosed or inadequately treated hypertension.

Cholesterol

Although hyperlipidemia is less of a risk factor for all strokes than for myocardial infarctions, most epidemiological studies find an association between higher cholesterol levels and an increased risk of ischemic strokes, particularly those attributable to atherosclerotic disease. Treatment with statins to lower low-density lipoprotein cholesterol has been shown to reduce the risk of all strokes by $\approx 21\%$.⁸

Smoking Cessation

Cigarette smoking is a potent risk factor for stroke and is associated with an approximate doubling of risk for ischemic stroke and a 2- to 4-fold increased risk for subarachnoid hemorrhage.⁸ The annual number of stroke deaths attributed to smoking is estimated at between 17 800 and 21 400, which suggests that smoking contributes to 12% to 14% of all stroke deaths.¹²

Community-Based Prevention

Effective community prevention initiatives are available to help prevent stroke, but as with clinical preventive services, these population interventions have been underutilized. A key goal of Million Hearts is to make it easier for Americans to make healthier choices through individual empowerment and community prevention. For example, reducing the amount of sodium in the food supply could be a highly effective means of reducing hypertension and stroke incidence. A 3-g per day reduction of dietary salt intake (approximately half) in the general population would prevent an estimated 32 000 to 66 000 strokes annually.^{13,13a}

Another effective intervention is reducing tobacco use through implementation of effective tobacco control programs, such as those included in the World Health Organization's MPOWER strategy,¹⁴ which discourage smoking initiation and encourage cessation. The Institute of Medicine has concluded that the most direct and reliable method for reducing tobacco use is to increase the price of tobacco products, which prompts adults to quit and reduces the number of youth who start using cigarettes or other tobacco products.¹⁵ Exposure to secondhand tobacco smoke is associated with an 82% increase in the risk of acute stroke in men and women,¹⁶ which suggests that efforts to expand smoke-free air laws will also be helpful in preventing stroke.

Obesity, physical inactivity, and an unhealthy diet are associated with increased risk of stroke.⁸ Community-based interventions that promote access to healthy and affordable foods, encourage physical activity, and otherwise help to reduce obesity can therefore be expected to reduce stroke incidence.

Million Hearts Activities

Many Million Hearts interventions to reduce cardiovascular diseases and stroke are already in place. The Centers for Medicare and Medicaid Services has included targets for cardiovascular health in its scope of work for Quality Improvement Organizations, which help providers improve healthcare quality.

In September 2011, the CDC's Community Transformation Grants program awarded $\approx \$103$ million in prevention funding to 61 states and communities serving 120 million Americans. The Community Transformation Grants funding supports community-level efforts to reduce chronic diseases, including stroke and other cardiovascular disease, with awards distributed among state and local government agencies, tribes and territories, and state and local nonprofit organizations to programs that promote healthy lifestyles.

The Department of Health and Human Services, through the Centers for Medicare and Medicaid Services, announced in November 2011 that it will award \$900 million in Health Care Innovation Grants to healthcare providers, local governments, and community organizations for programs designed to improve quality and reduce healthcare costs for people enrolled in Medicare, Medicaid, and the Children's Health Insurance Program. Funded by the Affordable Care Act as part of President Obama's "We Can't Wait" initiative, an expected 100 grantees will receive up to \$30 million for 3 years of program funding beginning in March 2012.

Other federal activities that support Million Hearts include ongoing collaboration between the US Department of Agriculture and the US Food and Drug Administration to explore ways to reduce the sodium content of food. The Food and Drug Administration is also requiring new graphic health warning labels on cigarette packages, which will be implemented in 2012 pending resolution of tobacco industry lawsuits. And in November 2011, Medicare announced it will cover obesity screening and behavioral counseling in primary care settings, with no copayment requirements for beneficiaries.

Future activities anticipated for Million Hearts will support additional interventions for cardiovascular disease and stroke prevention. These include disclosure of the nutritional content of menu items offered in chain restaurants and in vending machines, which will give consumers information needed to make healthier food choices. Provisions of the Affordable Care Act are increasing coverage of preventive health services; there will in many cases be no copay requirements for patients, which will increase the use of these lifesaving measures. Quality measures for cardiovascular and stroke care will be harmonized across the health system, facilitating improved monitoring and comparison among providers and facilities. Increased use of information technology, such as prevention-oriented electronic health records and clinical decision support, will help promote innovations in care provision.

The AHA/CDC Partnership

The AHA/ASA and the CDC have a long history of working together on mutual goals to reduce mortality related to cardiovascular disease and stroke. The launch of Million

Hearts is an unprecedented opportunity to enhance our coordination and partnership through complementary efforts by our respective organizations. For example, AHA/ASA's Get With The Guidelines-Stroke and CDC's Paul Coverdell National Acute Stroke Registry have collaborated since their inception in 2001. Get With The Guidelines-Stroke is now the stroke quality improvement program of choice for >1600 hospitals and has demonstrated the ability to improve care and reduce healthcare disparities for stroke patients,^{17,18} and the Coverdell Registry has served as a model for state-based stroke registries in states currently receiving CDC funding for this initiative, as well as in other states seeking to implement such registries.

The AHA/ASA and CDC are further committed to being accountable for achieving the goals of the initiative. Million Hearts is consistent with the Department of Health and Human Services Healthy People 2020 objectives, as well as the AHA/ASA's 2020 Impact Goal, and reducing stroke incidence will be critical to achieving these objectives. If

Million Hearts is able to achieve and sustain its projected 10% annual reduction in heart attack and stroke events over 5 years, it has the potential to contribute more than half of the progress toward the AHA/ASA's Impact Goal.¹⁹ For stroke, assuming that the current ratio of myocardial infarction and stroke remains the same, this will likely translate to several hundred thousand fewer stroke events and tens of thousands fewer stroke deaths over 5 years (M. Turner, MPH, AHA/ASA statistician, email communication, December 16, 2011).

The focus that Million Hearts places on cardiovascular disease and stroke prevention is already creating synergies among federal health agencies and private sector organizations to implement sustainable initiatives that will ultimately prevent cardiovascular disease and stroke, save lives, and help us achieve our shared goals. We are dedicated to maintaining and building on the progress that has already been made and to ensuring that stroke prevention remains a central focus as Million Hearts proceeds.

Disclosures

Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/Honoraria	Expert Witness	Ownership Interest	Consultant/Advisory Board	Other
Ralph L. Sacco	University of Miami Miller School of Medicine	None	None	None	None	None	None	None
Thomas R. Frieden	Centers for Disease Control and Prevention	None	None	None	None	None	None	None
Drew E. Blakeman	Self-employed (CDC Consultant)	None	None	None	None	None	None	None
Edward C. Jauch	Medical University of South Carolina	DSMB*; NINDS FAST- Mag Study*; NIH/NINDS IMS-3 Study†; NIH/NINDS STOP-IT Study†; NIH/NINDS ALIAS2 Study†	None	None	None	None	None	None
Stephanie Mohl	American Heart Association	None	None	None	None	None	None	None

This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (1) the person receives \$10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (2) the person owns 5% or more of the voting stock or share of the entity, or owns \$10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

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