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# The American Heart Association's 2008 Statement of Principles for Healthcare Reform

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Building healthier lives, free of cardiovascular diseases and stroke" is the mission of the American Heart Association (AHA). The AHA realizes that the current healthcare crisis in the United States threatens this mission. Thus, we have prepared this statement regarding healthcare reform with particular emphasis on cardiovascular diseases and stroke. We intend to promote and actively engage in a dialogue within the country that addresses these critical issues.

There is an urgent need to reform our healthcare system to improve the lives of individuals who have (or who are at risk for developing) cardiovascular diseases and stroke. Nearly 15 years have passed since healthcare reform became a prominent national policy issue. In 1993 and 1994, a series of articles appeared in *Circulation* describing the principles, recommendations and concerns of the AHA regarding healthcare reform.[1–6]

Tremendous accomplishments have been made over the intervening years in the biological and clinical sciences, resulting in significant improvements in the prevention, diagnosis and treatment of cardiovascular diseases and stroke. Unfortunately, new challenges threaten to reverse these gains, including the aging of the population and unwise lifestyle choices related to smoking, diet and physical activity. Children with congenital heart disease, who formerly would have died, now survive to confront these challenges. Barriers—often arising from the cost of care in the current healthcare system—make the delivery of patient-centered health care increasingly difficult. Many patients cannot readily access high-quality, evidence-based healthcare services, and healthcare providers face similar difficulties when trying to deliver these services.

With over 46 million uninsured individuals in the United States and continued increases in the cost of both health insurance and health care, the need for meaningful healthcare reform is much greater today than it was 15 years ago. Unfortunately, the 46 million uninsured individuals include over 8 million children who have limited access to health care simply because their parents are uninsured.[7]

This paper presents the AHA's current, updated principles and recommendations for healthcare reform, considering the important scientific advances that have occurred over the past 15 years, the evolution of the healthcare delivery system, and most importantly, the needs of individuals of all ages with or at risk for cardiovascular disease and stroke.

## Background

As the nation's oldest and largest voluntary health organization dedicated to reducing death and disability from cardiovascular diseases and stroke, the AHA has focused its efforts on achieving healthcare reform that serves the best interests of patients. The AHA's vision for healthcare reform describes the changes needed to make the healthcare system work for every American, including: improving patient access to affordable health care and coverage; addressing healthcare disparities that limit the equitable delivery of health care; organizing healthcare delivery systems to ensure the highest quality and most efficient care; educating and empowering patients with relevant and contemporary information; supporting the workforce needed for both healthcare delivery and research; and investing sufficiently in biomedical research. The full range of evidence-based healthcare services, including prevention and treatment, must be readily available to all who can benefit from them.

To realize the AHA's mission of "building healthier lives free of cardiovascular diseases and stroke," the AHA has invested nearly $3 billion in research over the past 60 years to advance scientific knowledge regarding the prevention and treatment of cardiovascular diseases and stroke. This research has included a broad range of efforts in the basic and clinical sciences, healthcare delivery and patient outcomes, involving all forms of congenital and acquired cardiovascular diseases and stroke.

The AHA also has worked tirelessly to promote the application of research findings to the daily lives of individuals with, or at risk for, cardiovascular diseases and stroke,

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and to take our message into homes, schools and the workplace. The development of clinical practice guidelines, the creation of quality improvement programs that foster adherence to these guidelines, and the dissemination of public and patient education programs and materials have been vital components of the AHA's strategy. The AHA has endeavored to educate policy makers at the federal, state and local levels in its efforts to modify public policy and to improve clinical outcomes for individuals with cardiovascular diseases and stroke.

## The Burden of Cardiovascular Diseases and Stroke in the United States

Although the death rates for cardiovascular diseases (including coronary heart disease and heart failure) and stroke have declined, these diseases remain the leading causes of death in the United States. Nearly 2400 Americans die of cardiovascular diseases or stroke each day—an average of one death every 37 seconds. In the aggregate, cardiovascular diseases and stroke claim approximately as many lives each year as cancer, chronic lower respiratory disease, accidents and diabetes mellitus combined.[8]

Although the age-adjusted mortality rates are improving, the number of individuals with various forms of cardiovascular diseases and stroke is staggering. Nearly one in three adults in the United States have hypertension, 16 million have coronary heart disease, 5 million have heart failure, and 5.8 million are stroke survivors. In addition, each year approximately 780 000 Americans experience a new or recurrent stroke, 770 000 have a new myocardial infarction, 430 000 have a recurrent myocardial infarction, and 660 000 have newly diagnosed congestive heart failure. Approximately 36 000 infants are born each year with congenital heart defects, many requiring medical and surgical intervention.[8] These children are now surviving into adulthood and face the additional burden of acquired heart disease.

In 1999, the AHA established a 10-year goal to reduce the death rates and risk factors for coronary heart disease and stroke by 25 percent by 2010. At the beginning of 2008, the AHA reported success—2 years ahead of schedule—in achieving the targeted reductions in the death rates for coronary heart disease. More recently, the target for stroke was also achieved. Multiple factors drove this success, including scientific discoveries made through research, advances in clinical interventions, adoption of prevention strategies, improvements in patient education and increasingly sophisticated implementation of new scientific knowledge into day-to-day medical practice.

Nonetheless, much work remains as the risks for and consequences of cardiovascular diseases and stroke remain alarmingly high. A growing epidemic of obesity and diabetes (in both children and adults) threatens to reverse many of the gains that have been achieved in reducing the adverse impacts of cardiovascular diseases and stroke.[9,10] In addition, the burden of cardiovascular diseases and stroke in the United States is projected to increase significantly with the aging of the baby boomers, defined as individuals born between 1946 and 1964. For example, death rates due to cardiovascular diseases are projected to increase 2.5 times faster than the growth of the population, and the prevalence of heart diseases is projected to increase by 16 percent per decade.[11] Deaths due to ischemic stroke (the most common form of stroke) are projected to increase by nearly 100 percent from 2000 to 2032.[12]

### Unmanaged Risk Factors, Healthcare Services and Costs

Cardiovascular diseases and stroke have a significant impact on the utilization of healthcare services and the associated costs. In 2005, there were more than 4 million visits to emergency departments and more than 6.7 million outpatient department visits with a primary diagnosis of cardiovascular diseases and stroke. Approximately 1 of every 6 hospital stays resulted from these diseases, and more than 81 million physician office visits were for a primary diagnosis of one of these conditions.[8]

The total direct and indirect cost for cardiovascular diseases and stroke in 2008 is estimated to exceed $448 billion. One fourth of the aggregate cost of hospital care in the United States is for these conditions. In 2005, coronary atherosclerosis resulted in more than $44 billion in expenses, acute myocardial infarction hospital charges totaled $31 billion and congestive heart failure expenses equaled $29 billion.[8] The net cost of congenital heart disease is difficult to estimate, but includes the societal impact of premature death.

A sizable portion of cardiovascular diseases and stroke is preventable.[13] Despite the opportunities for effective prevention, cardiovascular risk factor management remains inadequate. For example, more than 20 percent of the population continues to smoke, and nearly two-thirds of adults with hypertension have blood pressure that is not adequately controlled.[8] Similarly, of those individuals who meet the evidence-based guidelines for lipid-lowering treatment to reduce the risk of coronary heart disease, less than half are receiving therapy. As a result, less than 20 percent of patients with coronary heart disease have achieved the targeted level for low-density lipoprotein (LDL).[14] Furthermore, only approximately half of the suitable patients with atrial fibrillation receive appropriate medical treatment (anticoagulation) to prevent stroke.[15]

Although primordial prevention and primary prevention are the best ways to protect the health of Americans of all ages and potentially ease the economic burden of cardiovascular diseases and stroke, many effective prevention strategies and programs are not being implemented for lack of federal, state and private sector investment in these efforts. Our current system is reactive instead of proactive, and as a result, we treat disease much more avidly than we prevent disease. For example, in 2007, the Centers for Disease Control and Prevention (CDC) funded 33 states and the District of Columbia to implement programs to reduce risk factors for heart disease and stroke, improve emergency response and quality care, and end treatment disparities. Thus, 17 states did not receive any funding from the CDC in 2007 either to plan or implement cardiovascular prevention programs,[16] and only a few states have appropriated funds to support these important initiatives.

### Lack of Health Insurance

The burden of cardiovascular diseases and stroke can be particularly problematic for individuals without health insur-

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ance. Adults with cardiovascular diseases and stroke who are uninsured have difficulty affording health care. Data derived from an AHA-commissioned analysis of the National Health Interview Survey (which included underinsured and uninsured patients) demonstrate that more than one-third of the uninsured with cardiovascular diseases and stroke (34.2 percent) reported not getting needed health care due to the cost—almost 5 times the share of the insured reporting cost as a barrier to needed care (7.3 percent). Similarly, the uninsured with cardiovascular diseases and stroke were almost 4 times as likely as their insured counterparts to report postponing healthcare services due to cost (10.3 percent versus 3.84 percent) and being unable to afford prescription drugs (37.5 percent versus 10.2 percent).[17]

Other studies show that in comparison to people with heart diseases and stroke who have insurance, the uninsured with heart diseases and stroke experience higher mortality rates,[18–20] poorer blood pressure control,[21] greater neurologic impairments and longer lengths of hospital stay after stroke,[18] as well as a lower likelihood of taking appropriate medications.[22]

In today's complex healthcare environment, even individuals with health insurance can find it difficult to access medically necessary healthcare services due to rising insurance premiums, significant deductible and copayment requirements, insurance restrictions (such as limitations in access to rehabilitative services, exclusions for preexisting conditions and caps on lifetime benefits) and other insurance practices that favor low-risk enrollees over individuals with or at risk for developing chronic disease. In addition, the fragmented nature of the healthcare delivery system and the lack of coordination of healthcare services often create challenges for all patients with chronic illness, including those with cardiovascular diseases and stroke. For the millions of individuals in the United States with cardiovascular diseases and stroke who do not have healthcare insurance, the challenges are even greater.

## A Patient-Centered Approach to Healthcare Reform

The AHA has a longstanding commitment to approaching healthcare reform from the perspective of the patient. This focus—including the important roles that healthcare providers, biomedical research and the healthcare delivery system play in promoting the interests of individual patients—is reflected in AHA's past and current positions on healthcare reform.

### The AHA's Initial Principles Established in the Early 1990s

In 1992, the AHA's Board of Directors approved 5 principles for access to health care. Listed below, these principles focused on patient access to preventive services and quality health care, as well as the pursuit of ongoing biomedical research to improve the prevention and treatment of cardiovascular diseases and stroke:

- All United States residents should have access to quality medical care;
- Universal coverage for basic medical care should be available;
- Coverage of preventive care must be part of any proposal for healthcare access;
- Funds must be allocated for biomedical research, research training and clinical training; and
- The AHA should participate in the development of guidelines for appropriate patient care and should support research into methods for measuring quality, outcomes and cost-effectiveness.[1]

Fifteen years later, some progress on these 5 principles has been made—primarily with regard to the development of guidelines for appropriate patient care and for developing methods to measure quality, evaluate outcomes and determine cost-effectiveness. Progress on the remaining principles, however, has been minimal, and as a result, health care in this country is not optimal. More Americans than ever lack health insurance, presenting a major barrier to accessing quality health care. After an initial doubling, the NIH research budget has been flat with an actual reduction in purchasing power because funding has failed to keep pace with biomedical research inflation.

## The AHA's Principles for Healthcare Reform: 2008 and Beyond

In the context of the AHA's past stated principles, we now update what we believe to be the critical principles that must be addressed if health care in the United States is to be effective, equitable and excellent.

- All residents of the United States should have meaningful, affordable healthcare coverage;
- Preventive benefits should be an essential component of meaningful healthcare coverage, and incentives should be built into the healthcare system to promote appropriate preventive health strategies;
- All residents of the United States should receive affordable, high quality health care;
- Race, gender and geographic disparities in health care must be eliminated;
- Support of biomedical and health services research should be a national priority, and inflation-adjusted funding for the National Institutes of Health must be maintained and expanded; and
- The United States' healthcare workforce should continue to grow and diversify through a sustained and substantial national commitment to medical education and clinical training.

***Principle 1: All residents of the United States should have meaningful, affordable healthcare coverage***

Every individual should have affordable healthcare coverage that provides access to appropriate healthcare services and that guarantees protection from extraordinary or catastrophic medical costs. Such coverage must guarantee equitable and sustained medical care for individuals with chronic disease.

*Discussion*

Over the past decade, there has been a significant increase in both the number and percentage of Americans without healthcare insurance, including individuals with cardiovascular disease and stroke. At the same time, a growing number of

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people with healthcare insurance coverage are underinsured, meaning that their healthcare insurance does not provide adequate financial protection when they are sick.

Numerous studies have documented the detrimental health effects of being uninsured on individuals with heart diseases and stroke. For example, people who lack health insurance experience a 24-to-56 percent higher risk of death from stroke than those who are insured.[18] A 12-year study of over 7000 Americans shows that individuals without health insurance experience a dramatic improvement in health when they become eligible for healthcare coverage through Medicare at age 65. The impact of gaining healthcare coverage is greatest for those with a history of heart disease, stroke, high blood pressure or diabetes.[23]

One measure of underinsurance is the financial burden of health care, or the share of family income needed to pay for health care. A recent federal study indicated that in 2004, 45 million Americans—almost 18 percent—belonged to families that spent more than 10 percent of their income on health care. Those with high financial burdens were also more likely to have problems accessing healthcare services and to have foregone needed healthcare services due to the cost.[24]

In the current healthcare system, individuals with chronic diseases such as heart diseases and stroke can face numerous challenges obtaining comprehensive, affordable healthcare coverage, often being denied coverage or charged higher premiums for a preexisiting condition. For example, young people with congenital heart defects whose age renders them ineligible for their parents' health insurance are often unable to obtain coverage because of their risk profile. Rather than continue to allow people with chronic diseases to become uninsured or underinsured, successful healthcare reform must address these insurability practices and create a fair and equitable system that does not discriminate against individuals with chronic diseases. Investment in quality healthcare services will yield dividends for individuals and society.

The cost of meaningful, affordable healthcare coverage for all Americans is considerable, and the rising expenditures on publicly funded health care threatens our country's future financial health. However, this problem is not insurmountable, and the AHA believes that the initiation of a meaningful dialogue among the major stakeholders to resolve this problem in a cost-sensitive manner must be given our country's highest priority.

***Principle 2: Preventive benefits should be an essential component of meaningful healthcare coverage, and incentives should be built into the healthcare system to promote appropriate preventive health strategies***

All public and private sector health insurance benefits' packages should provide for the identification, monitoring and treatment of risk factors that lead to cardiovascular diseases and stroke in patients of all ages. These primordial, primary and secondary preventive benefits should be based on the AHA's scientific guidelines, the US Preventative Services Task Force recommendations and the findings of other authoritative, nationally recognized clinical consensus bodies. At a minimum, the coverage of preventive benefits should include monitoring of blood pressure, cholesterol and blood glucose levels, as well as assessment of smoking, nutrition and physical activity. Healthcare reform initiatives should also be coupled with public health interventions to promote community-based prevention of obesity and other cardiovascular risk factors.

*Discussion*

Cardiovascular diseases and stroke exact an enormous financial toll on the nation and have devastating and long-term consequences for millions of individuals and families. However, many risk factors for heart diseases and stroke are well known. Effective prevention strategies that are implemented early and followed over the long-term can mitigate the tremendous burden of cardiovascular diseases and stroke.

Missed opportunities in prevention are numerous. Blood pressure is elevated in 69 percent of people who have a first heart attack, 77 percent who have a first stroke; 74 percent of individuals who have congestive heart failure have blood pressure that is higher than the clinically recommended standard. One-hundred-six million Americans have elevated total cholesterol levels.[8] One third of people with diabetes—a major risk factor for cardiovascular diseases and stroke—are unaware of their disease status.[25]

The risk factors for cardiovascular disease and stroke can develop early in life, and there is a growing epidemic of childhood obesity in the United States. The prevalence of children who are overweight tripled between 1980 and 2000. In 2000, an estimated 9 million children and adolescents ages 6 through 19 were overweight.[8]

Healthcare coverage for preventive services that can identify risk early and allow for timely intervention varies among insurers. Healthcare coverage should consistently include evidence-based risk identification, monitoring and management services supported by the best available science. Efforts to reform healthcare insurance coverage should be coupled with public health interventions that address primordial prevention and provide community-based solutions to minimize the burden of cardiovascular diseases and stroke in all age categories.

Cost-sharing for preventive services also can present challenges to those patients with or at risk for chronic illness. Recently, some employers have lowered or removed cost sharing for certain preventive benefits and the interventions used to reduce identified risks (eg, prescription drugs used to treat high blood pressure, high cholesterol and diabetes). In these purchasers' assessments, an investment in the control of risk factors is a strategic way to reduce the serious and costly consequences of heart attacks, strokes and other cardiovascular diseases. Such efforts should be encouraged and provide a valuable model for consideration during the healthcare reform debate.

***Principle 3: All residents of the United States should receive affordable, high quality health care***

Healthcare reform should promote improvements in, and evaluation of, the quality of care delivered, including adherence to clinical practice guidelines and education efforts to help consumers evaluate healthcare quality. Reform initiatives should be designed to improve the value of care delivered, minimize unnecessary interventions and treatment, and ensure that individuals always receive appropriate care that is delivered both safely and efficiently.

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*Discussion*

In its landmark report, *Crossing the Quality Chasm*, the Institute of Medicine (IOM) declared that, "Between the health care we have and the care we could have lies not just a gap, but a chasm."[26] In fact, Americans only receive the care recommended by best practice guidelines approximately half of the time.[27]

To improve healthcare quality, the AHA develops clinical practice guidelines that translate clinical evidence into specific written recommendations to inform healthcare provider decision-making. The AHA integrates these practice guidelines into continuous quality improvement tools for both healthcare providers and consumers to use when evaluating healthcare choices. The increasing sophistication of these tools and the pace of advances in health information technology provide a glimpse of the role that healthcare reform could play in promoting informed clinical decision-making.

The AHA also works closely with the healthcare community to report and assess quality through the development of performance measures that are integrated into quality improvement tools. This work has demonstrated the importance of evaluating quality using measures that are risk-adjusted, standardized and evidence-based.[28] Quality-of-care measures can help create learning environments for healthcare professionals and ensure that best practices are applied uniformly to all patients. These measures should be broad in scope, and include measures of patient satisfaction, access and convenience to promote care that is truly patient centered.

Increasing healthcare costs and research on variations in how care is delivered have led research and policy organizations to focus on the value of healthcare services and assess quality measures in conjunction with indicators of service utilization and cost. The *2008 Dartmouth Atlas of Health Care: Tracking the Care of Patients with Severe Chronic Illness* found that the Medicare program spends considerably more in some regions of the country for care that is no better, and in some cases slightly worse, than care delivered in other areas of the country. A comparison of health outcomes following acute myocardial infarction and other serious conditions between higher spending and lower spending regions found mortality over a period of up to 5 years to be slightly greater in higher spending regions following acute myocardial infarction and other serious illnesses. Patients in higher spending regions also reported poorer access to care and greater waiting times.[29] Outcomes were, therefore, slightly worse where more money was spent.

This counterintuitive result is, in part, a consequence of the current inappropriate financial incentives under Medicare in which an increase in the amount of delivered services results in more payment, regardless of whether the services are truly needed or of benefit to the patient. These regional disparities in the volume of services have enormous fiscal consequences. Researchers estimate that nearly 30 percent of Medicare's costs could be saved without affecting health outcomes if spending in the high- and medium-cost areas of the country were reduced to spending levels in benchmark, low-cost areas.[29]

Cost-effectiveness metrics need to be integrated within the healthcare delivery system. Healthcare reform initiatives should consider mechanisms for better aligning payment with the goal of improving healthcare quality. Programs that use specific financial incentives to promote quality, known as pay-for-performance programs, are increasingly being adopted as a means of addressing variations in healthcare quality. Although the goal of pay-for-performance programs should be to improve patient outcomes, to date, there is limited evidence of the impact of this strategy. Pay-for-performance proposals, therefore, should be considered carefully and should include evaluation mechanisms to assess their impact on patients and patient care.[28] These and other potential mechanisms for financing healthcare reform should continue to be tested to measure the impact on outcomes and costs and to ensure that there are no unintended consequences.

***Principle 4: Race, gender and geographic disparities in health care must be eliminated***

To address disparities in care, healthcare reform proposals should, at a minimum, encourage monitoring, reporting and evaluation of data regarding the consistency and equity of healthcare delivery. Standardized, evidence-based quality measures should be used for this purpose. In addition, healthcare reform initiatives should promote cultural competency training for healthcare professionals and health literacy education for all consumers, particularly vulnerable populations.

*Discussion*

Compared to whites, African Americans have 2 to 3 times the likelihood of dying from cardiovascular diseases or stroke at any given age.[30] Studies also have shown disparities in heart disease and stroke risk factor management, such as blood pressure control, lipid level management and the treatment of diabetes and obesity.[8,31]

Disparities in healthcare delivery play some part in these outcomes. In its 2003 report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, the IOM noted that, "studies of racial and ethnic differences in cardiovascular care provide some of the most convincing evidence of healthcare disparities." In addition, the IOM noted that racial disparities in coronary revascularization procedures are associated with higher mortality among African Americans.[32]

The presence of disparities in health care has been recognized for more than 20 years. The groundbreaking 1985 report of the US Secretary of Health and Human Services' Task Force on Black and Minority Health found that between 1979 and 1981, there were nearly 60 000 more deaths in minority populations than would have been expected based on the rate in the nonminority population. About one-third of these 60 000 "excess deaths" were due to heart disease and stroke.[33] In the 1990s, while documenting a 10 percent decrease in age-adjusted ischemic heart disease death rates, the CDC highlighted that the rates of decline were faster for whites than blacks and faster for men than women. In 2000, the US Department of Health and Human Services reported that heart disease death rates were more than 40 percent higher for African Americans than for whites and set a national goal of eliminating health disparities by 2010.[34]

The overall decline in cardiovascular diseases and stroke death rates have not been distributed equally among racial and ethnic groups, and the rate of improvement has not kept pace, especially in the southern part of the United States.[35,36]

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Sekikawa and Kuller found that as much as a 2.5-fold difference in coronary heart disease mortality exists between black and white women ages 45–54.[37] Mensah and Brown reported similar disparities in stroke mortality between blacks and whites.[38]

The AHA convened the *Minority Health Summit* 2003 to examine healthcare disparities involving cardiovascular diseases and stroke and to develop recommendations in a number of areas, including public policy. The issues are complex, in large part because the genesis of disparities in health care is multifactorial, involving differences in access to care, health behaviors across populations, cultural and environmental factors, socioeconomics, genetics, and, perhaps, bias.[39,40] For example, an AHA-commissioned analysis of the National Health Interview Survey found that nonwhites and Hispanics with cardiovascular diseases and stroke are more likely to be uninsured than their Caucasian counterparts.[17] As a result, healthcare reform initiatives should incorporate a multifaceted approach to addressing these issues.

The delivery of healthcare services should be monitored using standardized clinical measures of care that are evidence-based and risk-adjusted, such as those developed through the AHA's clinical guideline and performance measurement development processes. These measures should be reported by race, gender and geography to identify any potential inconsistencies or inequities in healthcare delivery.

Efforts also should be made to enhance healthcare providers' knowledge of diverse cultural and behavioral traditions that may influence patient understanding of and adherence to recommended healthcare regimens. These educational efforts should be incorporated into clinical training and continuing medical education efforts. Additional approaches that should be pursued include: further research into the causes of disparities in health care; efforts to increase the number of minority healthcare providers and investigators; inclusion of diverse populations in clinical trials; public health efforts to improve health in minority populations; and outreach and health literacy education efforts with vulnerable populations.

***Principle 5: Support of biomedical and health services research should be a national priority, and inflation-adjusted funding for the National Institutes of Health must be maintained and expanded***

Healthcare reform initiatives should support increased investments in biomedical research to accelerate the identification of causes and the cures for disease, especially cardiovascular diseases and stroke. Health services research should continue to document effective healthcare delivery strategies and develop delivery and financing models that support the best clinical care and patient outcomes. The research enterprise should be structured to deal effectively with the unique challenges posed by specific populations of interest, including children and racial and ethnic minorities. The research agenda must include population-based prevention (public heath) and behavioral research (to better understand how to affect community, family and individual lifestyle change).

*Discussion*

Death rates from heart disease fell by 40 percent and death rates from stroke by 51 percent between 1975 and 2000.[41] Wide-ranging advancements in the understanding of cardiovascular diseases and stroke and the development of new interventions drove these significant reductions in mortality outcomes. Many of these advances were realized because of public and private investment in biomedical research.

For example, the federally funded National Institutes of Health (NIH) supports a wide variety of large-scale studies and clinical trials that have greatly influenced the trajectory of cardiovascular diseases and stroke prevention and treatment. NIH-supported work includes the landmark, 50-year-old Framingham Heart Study, which helped identify many of the major risk factors for heart disease.[42] During the 1970s, the randomized coronary artery surgery study (CASS) confirmed that patients with stable ischemic heart disease can safely defer coronary artery bypass graft surgery until symptoms worsen.[43] The Thrombolysis in Myocardial Infarction Trial helped demonstrate that recombinant tissue-type plasminogen activator is preferable to streptokinase in responding to a blocked artery.[44] The Bypass and Angioplasty Revascularization Investigation (BARI) found, that coronary artery bypass surgery and percutaneous coronary intervention procedures were equally effective in selected nondiabetic patients with coronary artery disease.[45] Recent NIH-supported trial findings include the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT), which found that diuretics work better than newer therapies in treating high blood pressure and reducing heart disease risk–providing clinical evidence for cost-effective treatment interventions.[46] These and other significant federally supported research trials have had a dramatic impact on the health and well-being of Americans. Between 1970 and 2000, overall life expectancy increased 6 years, and 3.9 years of this increase was due to improvements in the prevention and treatment of cardiovascular diseases and stroke.[47]

Today, the United States spends more than $7100 per person each year on healthcare services. Despite the potential for research to influence these costs, the United States spends only $95 per person on federally funded biomedical research at NIH.[48] Healthcare reform initiatives should ensure that the research investment keeps pace with the significant opportunities to improve clinical outcomes and enhance the cost-effectiveness of health care.

The sequencing of the human genome has opened the next frontier in scientific advancement and offers significant possibilities for reducing the devastation of heart disease and stroke. This potential, however, will be realized only through commitment to ongoing, substantial public prioritization and investment in biomedical research. A meaningful commitment to future research also is the essential signal needed to ensure that young researchers understand that meaningful career-paths still exist in the sciences, ensuring that talented individuals will continue to dedicate themselves to becoming the groundbreaking investigators of tomorrow.

Although Congress demonstrated an historic federal commitment to biomedical research by doubling NIH's budget between 1999 and 2003, in subsequent years funding has not kept pace with increases in the Biomedical Research and Development Price Index, which is a measure of inflation for biomedical research that is calculated by the US Department of Commerce and NIH. When adjusted for biomedical research inflation, the NIH budget for cardiovascular diseases

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research is estimated to be 15 percent lower in 2008 than in 2003. According to NIH, budget shortfalls resulted in a decline in the success rate of new research project grant applications to approximately 18 percent in 2007.[49] Low grant approval rates create uncertainty about the viability of careers in the sciences and can have a devastating effect on new, young investigators. At a time of great potential in scientific discovery and renewed interest in America's global competitiveness, federal investments should be encouraging and supporting— rather than discouraging—talented young researchers to pursue careers in biomedical science.

At the same time, a renewed effort should be made to translate clinical research into practice through health services research. The quality, safety, efficiency and effectiveness of health care has been and can continue to be improved through the development and dissemination of clinical practice guidelines and the establishment of valid measures of healthcare quality. The AHA has been an active leader in developing initiatives that help move scientific knowledge into daily clinical practice, including the AHA's efforts to translate scientific discoveries into clinical practice tools such as the Get With The Guidelines program, an evidence-based program for in-hospital quality improvement.

The Agency for Healthcare Research and Quality (AHRQ) is the health services research arm of the US Department of Health and Human Services that is charged with coordinating the federal agenda for improving the quality of health care. AHRQ leads federal efforts involving: quality improvement and patient safety; outcomes and effectiveness of care; clinical practice and technology assessment; healthcare organization and delivery systems; and evaluating healthcare costs. AHRQ also has a very modest portfolio of research on the cost-effectiveness of alternative therapies. Despite AHRQ's crucial role, the nation spends only $1 per person on AHRQ's work.[48] Implementation of a healthcare reform agenda will require a much larger commitment to the research necessary to improve the quality of health care in the United States.

### *Principle 6: The United States' healthcare workforce should continue to grow and diversify through a sustained and substantial national commitment to medical education and clinical training*

Any healthcare reform proposal should provide sufficient public health funding, medical education funding and clinical training resources for programs that improve chronic disease management, care coordination and patient-centered care. To address the growing needs of the population and to respond to the success of team-based approaches to care delivery, healthcare reform efforts also should support and promote the development of new models of care delivery, including those that emphasize the roles of allied health professionals.

*Discussion*

Individuals aged 55 years and older are expected to be the fastest growing segment of the population between 2006 and 2016. The number of individuals in this age group will nearly double between 2005 and 2030.[50] This reality will present the healthcare system with large numbers of older patients with more complex chronic health needs. Among the challenges will be the issue of how best to ensure a sufficient healthcare workforce with the knowledge and skills to adequately provide needed care.[50]

Several observers have predicted a shortage of physicians.[51–53] The Association of American Medical Colleges has called for a 30 percent expansion of US medical schools and changes in federal reimbursement to meet the growing demand.[54] In a recent report, the Council on Graduate Medical Education found that although the supply of practicing physicians in the United States is expected to increase 24 percent between 2000 and 2020, the demand for physicians is likely to grow even more rapidly over this period. The Council concluded that if the US population "continues to use services in the future as it has in the past, and if physicians practice in the future as they have in the past, then the Nation is likely to face a shortage of physicians in the coming years."[55]

Others argue that healthcare reform should mean that healthcare service use and physician practice will not necessarily continue in the future as in the past. Goodman and Fisher concluded that the presence of more physicians strongly correlates to higher healthcare spending. In their assessment, regional variations in physician supply results in areas with large volumes of physicians performing less efficiently in using healthcare resources than other areas.[56] Nonetheless, the investigators found that over a 20-year period, 4 of every 5 new physicians settled in regions where the physician supply was already high.

These new physicians increasingly are choosing practice specialties that best meet their lifestyle and income expectations while addressing the burden of educational debt and the frustrating barriers that exist under the current healthcare delivery system to providing patient-centric, high-quality health care. The inappropriate incentives mentioned earlier are a major determinant of physician workload and incomes, which directly impact career choices by new medical graduates. The number of medical graduates choosing family medicine, general internal medicine, pediatrics and general surgery continues to decline.[48] Rather than increasing the supply of physicians, Goodman and Fisher argue for greater efforts to reduce the disparities in the distribution of the physician workforce, including reallocating medical education funding to favor primary care, geriatric and palliative care, which are areas that have the greatest potential to improve care coordination and chronic-disease management for adults.[56]

At the same time that primary care faces these challenges, there is a nursing shortage that is likely to be exacerbated by the aging of the baby boomers. In April 2006, the Health Resources and Services Administration projected that the nation's nursing shortage would grow to more than 1 million nurses by 2020.[57] Inadequate levels of nursing staff jeopardize the safety of patient care, reduce care coordination and weaken efforts to improve chronic disease management. The AHRQ concluded that the shortage of registered nurses, in combination with an increased workload, poses a potential threat to the quality of care provided.[58]

Many factors contribute to the nursing shortage. The total population of registered nurses is growing at a slower rate than previously, and with fewer nurses entering the profession, the

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average age of working nurses is increasing. Enrollment in schools of nursing is not growing fast enough to meet the projected demand over the next 10 years. In addition, many nurses are leaving the profession due to poor job satisfaction.[59,60]

As the healthcare system responds to changing workforce dynamics, new models of care delivery are evolving, including greater use of non-physician providers, allied health professionals and public health professionals. The long-term care of people with chronic diseases such as congestive heart failure and diabetes demands a coordinated approach involving all categories of healthcare professionals. New service delivery models offer opportunities for enhanced care coordination and other strategies aimed at reducing the burden of chronic disease.

Concurrent with the changes in the healthcare workforce, medical education and clinical training will need to change in ways that prepare these professionals for the growing challenges of the future. These challenges include addressing the needs of an aging patient population and placing increasing emphasis on the need for healthcare providers to work as integrated teams in providing preventive services and managing chronic disease. Healthcare reform initiatives should be attentive to these issues and ensure that these efforts are appropriately supported.

## Conclusion

The internal crisis represented by our flawed healthcare system is as great as any external crisis the country faces—it demands our immediate attention. Healthcare reform needs to be a national priority and will remain an emphasis of the AHA's policy activities. Removing barriers to affordable health care and preventive benefits, improving the delivery of quality health care, eliminating disparities, continuing appropriate funding of biomedical

## Disclosures

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*Modest.

†Significant.

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research, and supporting the training of a diverse, skilled healthcare workforce, will bring the country closer to the AHA's mission of "building healthier lives free of cardiovascular diseases and stroke."

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