In science and in medicine, we live in extraordinary times. The lifespan of man has been nearly doubled over the past century, and the quality of life has also been vastly improved. Science promised a great deal, and it has delivered, at least in part. But why has it not delivered that promise in full and transformed all of our lives? Can we do better? I think we can. Let’s start where it all comes together—with a patient:

Our patient, a 74-year-old white male living in the suburbs of a major US city, is fortunate. He has just been discharged from the hospital after a 2-day stay for an ST elevation myocardial infarction and a coronary artery stenting procedure. He benefited from multiple technologies developed through research over many years.

His father died of an MI at age 54. Because of research and the development and dissemination of evidence-based guidelines, our patient’s physician knew that he should screen this man for risk factors.¹ So, at age 45, he was diagnosed with hypertension and had it effectively treated. He stopped smoking, exercised, lost weight, and restricted sodium in his diet. At age 66, a statin was added to his regimen because of an elevated cholesterol level.

On the day of his admission, the patient, who had been coached by his physician, knew to call 911 immediately when he experienced chest pain. And the emergency medical personnel, seeing the ST elevation on the portable EKG done on site, knew where to transport him.²

After his successful primary angioplasty, his hospital team provided high-quality care using the Get With The Guidelines program,³ a Web-based tool developed by the American Heart Association to help translate scientific knowledge into day-to-day practice, and he went home with effective secondary prevention.

This patient’s experience represents much of the progress in cardiovascular care over the last several decades. This progress was made possible through the committed work of basic scientists, clinical scientists, and behavioral and population scientists. Because of tremendous progress in cardiovascular disease prevention and treatment, this patient experienced his first major cardiovascular event 20 years later than his father and survived the episode with a good prognosis.

This story is reflected in the data demonstrating impressive reductions in coronary heart disease age-adjusted death rates. In Figure 1, we see the data for white men in the United States. At the beginning of this decade, the American Heart Association committed to an impact goal of reducing CHD and stroke death rates by 25% by the year 2010—a bold goal indeed. The most recent analysis of progress toward this goal reveals a 23.2% reduction in CHD since our base year of 1999. Stroke deaths decreased 19% during the same period.⁴

Over the last 2 to 3 decades, many of us—certainly in the United States, as we’ve pointed out, and in a number of the industrialized western nations—have seen a dramatic decrease in CVD death rates, including stroke. All of us working in this field should be proud of these results. But a dark cloud looms over the progress we are enjoying: this dark cloud is the challenge of health disparities. By health disparities I mean significant differences in health status among population groups defined by specific characteristics. In the United States, major differences are seen with socioeconomic status, race/ethnicity, gender, and geographic location. The details are different in every country, but it is a rare nation that doesn’t need to address these issues to some extent.⁵ We only have time to focus on a few of them, and I’ll use the United States as the example I know best, but I believe the concepts can be generalized and are important for all of us to think about.

We can contrast the experience of our first patient with that of another. This patient is a 38-year-old black female living in a rural area of a southern state. She is being discharged from the hospital to a nursing home after a 2-week stay for management of a stroke.

The patient’s mother died in her early 40s of a stroke. The patient was diagnosed with diabetes and hypertension at age 24, and dyslipidemia at age 27. She worked most of her adult life as a waitress. She received insurance coverage through Medicaid during both her pregnancies but was otherwise uninsured. She took her prescribed medications intermittently, mostly when samples were provided by her physician, whom she saw only when she was forced to by symptoms of acute illnesses such as urinary tract infections or respiratory illnesses.

On the day of her stroke, her young daughter called a relative when her mother fell to the floor, and when the relative arrived, they drove the victim to the local hospital. She arrived in the ER about 2 hours after the onset of paralysis of her right arm and leg and loss of speech. On initial evaluation, in addition to the paralysis and aphasia, she
was found to have poorly controlled diabetes, hypertension, and dyslipidemia. Her BMI was 42. Her brain imaging study confirmed a large cerebral infarct. Her rural hospital provided reasonably good care, but was not a Primary Stroke Center, and did not have the Get With The Guidelines programs available to help assure that patients are treated according to guidelines. She would have been eligible for thrombolytic therapy, but her scan was not read until 4 hours after her stroke began, so she did not receive it. Her hospital stay cost $110,000. Later that year, her family declared bankruptcy over the medical debt. And the hospital director made the difficult decision to delay participating in the Get With The Guidelines programs yet another year because the hospital had not generated a sufficient margin to fund the program. The patient remains in a nursing home, and her daughter lives with relatives.

Clearly, there is much about the challenge of health disparities to cause great concern. While in the United States the medical care cup is indeed half full, I’d like us to spend a few moments to focus on the half that is empty. In fact, to make this metaphor more apt, the cup is clearly full for some of us—most of us in this room—but it is nearly completely empty for many of our neighbors. And I believe we must find ways to address the serious disparity in CVD outcomes across geography, race, gender, and economics.7

Although age-adjusted CVD death rates have fallen dramatically over the last 25 years, notable disparities have emerged. In the early 80s, death rates were similar for white men in most states. But, over the last 2 to 3 decades, the rate of improvement has not kept pace in some states, especially in the south. Comparing death rates for white men in my favorite state of Mississippi with national rates demonstrates the disparity seen for the southern United States\(^4\) (Figure 2).

And there are similar disparities related to race. Over these years, death rates in the United States have fallen more for white than for black men. This disparity in outcomes appears to be worsening with time.

When we compare death rates for black men in Mississippi, we see the profound disparity produced by the combination of race and geography. Indeed, over the last 2 decades, whereas rates have been falling for most of the country, rates for black men in many southern states have not declined. And, even more alarming, rates for black women in the southern United States are not falling and may even be rising. As you can see, age-adjusted CVD mortality rates for black women in Mississippi now exceed the rates for white men in other parts of the country.

These disparities are stark. And they are representative of disparities in health outcomes based on race, geography, and socioeconomic or educational status that occur throughout the world.

Although the existence of these health disparities has been recognized for some time, the causes are still not well understood. Certainly, in the United States, some of the disparities result from unequal access to care.\(^7\) But although we should all be committed to removing these particular disparities, resolving access problems in other countries has not entirely resolved disparities in outcomes. Complex interactions of genetic, environmental, behavioral, and social/political issues appear to contribute to these disparities.

As an example, much of the racial disparity in CVD death rates can be explained by differences in standard CVD risk factors, especially those related to the metabolic syndrome. Compared to white Americans, black Americans have higher rates of obesity, hypertension, and diabetes. Differences in body weight appear to drive much of the excess risk, especially for women\(^4\) (Tables 1 and 2).

But there also appear to be both genetic and environmental influences. The African diaspora offers insight revealing a progression of obesity rates and cardiovascular risk as migration progressed. Women of African ancestry living in rural Africa have relatively low rates of obesity and CV risk. Populations of women of African ancestry living in African urban areas have higher rates of obesity and CV risk. Women with essentially the same genetic background living further

![Figure 1. Age-adjusted cardiovascular disease death rates for white men.](http://hyper.ahajournals.org/)

![Figure 2. Age-adjusted cardiovascular disease death rates.](http://hyper.ahajournals.org/)

**Table 1. Prevalence Rates for US Black and White Men**

<table>
<thead>
<tr>
<th></th>
<th>HBP</th>
<th>Diabetes</th>
<th>Obesity</th>
<th>Obese/Overweight</th>
</tr>
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<tbody>
<tr>
<td>Black</td>
<td>42.6%</td>
<td>10.7%</td>
<td>30.8%</td>
<td>67.0%</td>
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<tr>
<td>White</td>
<td>32.5%</td>
<td>6.7%</td>
<td>30.2%</td>
<td>71.0%</td>
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</tbody>
</table>

shocking and inhumane.”

Luther King taught us this many years ago when he said: “Of the problem of health disparities a social issue outside our area of interest? No, we should not and must not. From a strategic standpoint, if the American Heart Association is to effectively address this problem. No society is well served by providing opportunities for good health to only certain segments of its population. More importantly, working to eliminate health disparities is the right thing to do. Dr Martin Luther King taught us this many years ago when he said: “Of all the forms of inequality, injustice in health care is the most shocking and inhumane.”

I am pleased that this issue of health disparities is already a major priority in many countries including the United States. Many organizations, including the American Heart Association, see addressing health disparities as a moral imperative and crucial to achieving our mission. Let me outline 4 areas where we all can confront the challenge and seize the opportunity to demonstrate leadership and make meaningful progress toward the goal of building healthier lives for all people.

Health disparities must remain a key health priority for all government agencies and voluntary health organizations. The American Heart Association’s recently adopted strategic driving force calls for measuring our progress toward eliminating health disparities in CVD. Measuring progress in eliminating health disparities will help us keep this as a priority. And this priority is also reflected in our recently adopted 2020 goal statement language to “improve the cardiovascular health of all Americans.” We must all make eliminating health disparities a key priority.

Secondly, we must expand research that will help us better understand both the fundamental causes of disparities and possible ways to eliminate those disparities. This will require continued investment in basic science, and translational, clinical, population, and quality and outcomes research. From genomics to environomics, all these areas of research have and can continue to contribute to our understanding. I remain hopeful that our continued investment in research will eventually lead to a fundamental understanding of disparities that will allow us to offer easy and safe ways for all people to prevent CVD.

Thirdly, we must increase our efforts in advocacy. This includes efforts at the federal level focused on more CVD research including that focused on disparities. We must advocate for better approaches to improve the quality of care for all patients. And it is clear that the in the United States, we cannot achieve good health for all until the issue of access to health care is addressed. As Ray Gibbons pointed out in last year’s presidential address, we must add the credible voice of the AHA to those of others calling for healthcare reform. Our You’re the Cure advocates and volunteers are responding.

And, finally, if we are to mount a strong response to the challenge of health care disparities, we must increase our efforts in prevention. If current trends in obesity rates continue, our next generation in this country may be the first to live a shorter lifespan than their parents. If this happens, it will be because we failed to mount enough effective prevention programs to curb the epidemic of obesity leading to hypertension and diabetes and early CVD. More of our prevention efforts should be focused on primordial prevention in very early life. The Alliance for a Healthier Generation—our partnership with the Clinton Foundation and California Governor Arnold Schwartzzenegger—and other programs are beginning to make a difference in early childhood obesity. We must prevent obesity from an early age, as present science suggests prevention is our only real hope in managing the obesity epidemic.

And we must increase our efforts at primary prevention—managing risk factors before the onset of vascular disease. Another major challenge for the AHA is progress toward meeting our goals related to reducing risk factors. Currently we are not on course to meet 2010 goals related to obesity, hypertension, or diabetes. Despite our success with the mortality goal timeline to date, failure to make progress in reducing risk factors now likely means failure to meet our long-term 2020 mortality and quality-of-life goals.

There is an especially critical opportunity in the area of hypertension, which is sweeping the world. The number of hypertensives worldwide in 2000 was estimated at 972 million. That number is predicted to be more than 1.5 billion by 2025. The World Health Organization estimates that around the world, hypertension accounts for 50% of all CHD and 75% of stroke. And a recent meta-analysis of 1 million patients in hypertension clinical trials estimates that a 3- to 4-mm Hg increase in systolic BP would translate to a 20% higher stroke mortality and a 12% higher CHD mortality. Now, we know that controlling body weight as people age can prevent hypertension and that treating hypertension with inexpensive, safe drugs reduces mortality risk. So how can it be that, around the world, we have allowed obesity rates to rise and the best national hypertension control rates anywhere to be only about 35%? What a great opportunity for prevention!

Table 2. Prevalence Rates for US Black and White Women

<table>
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<tr>
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<th>HBP</th>
<th>Diabetes</th>
<th>Obesity</th>
<th>Obesity/Overweight</th>
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</thead>
<tbody>
<tr>
<td>Black</td>
<td>46.6%</td>
<td>13.2%</td>
<td>51.1%</td>
<td>79.6%</td>
</tr>
<tr>
<td>White</td>
<td>31.9%</td>
<td>5.6%</td>
<td>30.7%</td>
<td>57.6%</td>
</tr>
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And this focus on primary prevention can be effective in eliminating health disparities. Efforts in Mississippi to address the racial disparities in CVD are demonstrating that good control rates for hypertension and diabetes are possible. In the Jackson Heart Study, an observational study similar to the Framingham Heart Study, hypertension control rates for the African American Cohort of more than 5000 are 51% compared to NHANES 1999 to 2004 rates of 37% for all races and much better than the NHANES rate of 34% for blacks (Figure 3). Treatment rates are higher than national rates, as well. We believe the community education programs and referral programs associated with the study and the preceding ARIC study have had a large impact.\textsuperscript{14}

And in the Mississippi Delta, investigators from the University of Mississippi Medical Center have demonstrated the ability to eliminate racial disparities in diabetes control, improving Hgb A1C levels in a biracial cohort using a multidisciplinary management model (Figure 4). At baseline, black patients had a mean Hgb A1c level a statistically significant near full unit above their white counterparts.\textsuperscript{15} This program reduced the difference to a nonsignificant level and has sustained that for 4 years. Primary prevention programs can be an important tool in eliminating health disparities.

In summary, to make progress toward eliminating health disparities, we must work together to keep this a key priority, continue to seek better understanding and solutions through research, advocate for more research funding and better access to health care, and focus more of our attention on the opportunities available through stronger programs of prevention.

I conclude with sincere appreciation to each of you here today who has contributed to the progress outlined early in this presentation. To each of you who has performed research, written a paper, taught a class, measured a blood pressure, written or filled a prescription, or strategically placed a stent, I say thank you and congratulations on much progress. But, more importantly, I ask you to rise to this medical and moral challenge, seize the opportunity before us, and commit to eliminating health disparities in cardiovascular diseases.

Disclosures

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Delivering the Promise: Progress, Challenges, Opportunities
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