It is with great pleasure that I welcome you to the 72nd Annual Scientific Sessions of the American Heart Association.

This year’s meeting provides an opportunity to look back with pride on the advances in science and medicine of the 20th century and an opportunity to look ahead with enthusiasm to the advances to come. But I want to talk to you today about another opportunity—a challenge, if you will—that is facing us right now, one that I believe we, as a worldwide medical community and as a global society, have not adequately met.

A century ago, a male born in America in the year 1900 had an average life expectancy of 47 years. Today, a male born in this country has a life expectancy of 73 years, and for females, the average is almost 80 years. And although the numbers are not as high in the less-developed regions of the world, the increase in life expectancy has been equally dramatic worldwide.

In the first half of this century, most of the factors that improved longevity, health, and well-being were related to advances in medicine, particularly in the isolation and eradication of infectious diseases, and the resulting decline in the infant death rate. We have witnessed, for example, the eradication of smallpox, the control of polio, and the discovery and application of antibiotics such as sulfadiazine and penicillin.

It is only in the second half of the 20th century—recent history, really—that we have seen tremendous scientific advances in the understanding of the mechanisms underlying coronary artery disease, including stroke, and significant technological advances in the treatment of acute illness due to cardiovascular diseases.

We have witnessed the essential eradication of rheumatic fever. We have identified the risk factors for atherosclerosis and enhanced our understanding of the role of risk factors in the development of atherosclerotic plaque. And we have developed technological advances such as coronary angiography, angioplasty, thrombolytic therapy, and coronary artery bypass grafting.

We, in the arena of cardiovascular stroke and medicine, are at a point in time, as we approach the new millennium, when we can be proud of what we have learned and achieved. Our celebration, however, must be short-lived, and our efforts must be realigned.

In spite of our gains, there is still today, in the United States and worldwide, an epidemic of cardiovascular diseases and stroke. It recognizes few boundaries, affecting men as well as women and all ethnic and racial groups. And this epidemic is growing, not abating. In this country, we have begun to see a flattening of the decline in age-adjusted death rates from cardiovascular disease and stroke, and the absolute number of deaths has begun to rise.1

This trend may be even more significant than we realize. The National Center for Health Statistics at the Centers for Disease Control and Prevention has recently adjusted its method for measuring cardiovascular mortality rates, and the results show that previous estimates may have been understated.

Not only do we have an epidemic of deaths, but these illnesses have an enormous economic impact on our patients and society as a whole. In this country, we now spend in excess of $280 billion per year in healthcare costs, lost wages, disability, and other costs related to cardiovascular diseases and stroke.

Importantly, the World Health Organization estimates that by the year 2020, cardiovascular diseases and stroke will be the leading causes of death and disability worldwide. Some predict that tobacco will be the leading causal contributor to this epidemic.

In an effort to raise awareness of this global crisis, the World Heart Federation has designated September 24, 2000, as World Heart Day, a day to promote heart-health issues on a global basis.

If, as we celebrate the achievements of the 20th century, we know so much about the diagnosis and treatment of cardiovascular disease, why then do we still have an epidemic on our hands?

To some extent, we have become the victims of our own success. The gains we have made in life expectancy in this...
century have given us longer exposure to the ravages of risk factors such as smoking, hypertension, hyperlipidemia, diabetes, and obesity. In addition, as nations have developed, populations have become more urbanized, and urban living has very often produced reduced physical activity, an unhealthy diet of fast food laden with saturated fat, and increased rates of obesity and tobacco use.

But I am convinced that we cannot blame the epidemic on life expectancy and lifestyle changes alone because we know the science. Science has uncovered the pathophysiology of atherosclerosis and demonstrated the role of tobacco, high blood pressure, abnormal lipid levels, and other risk factors in the etiology of this disease. Furthermore, controlled scientific studies (for example, the West of Scotland,2 CARE,3 and AFCAPS/TEXCAPS studies4) have clearly demonstrated that a reduction in total cholesterol and LDL produces a substantially favorable benefit to morbidity and mortality. Randomized studies have also demonstrated clearly the benefit of tobacco cessation and optimal blood pressure control in preventing and reducing coronary heart disease and stroke.

We know the science. The problem seems to lie in our failure to effectively apply the science we know, to bring it from the research bench to the bedside.

To address this need, in the past year, the American Heart Association has established an ambitious goal to reduce coronary heart disease, stroke, and risk by 25% over current levels within a 10-year time frame. As we look at our existing science and medicine and the degree to which we are currently applying it to our patients, we are convinced that we can achieve this goal.

There are 2 areas of concentration to our program: acute care and prevention.

In the area of acute care, our goals are to see 20% of acute myocardial infarctions treated within 1 hour and 90% treated within 6 hours, 20% of patients suffering acute stroke treated within 3 hours, and 10% of patients with sudden cardiac death being treated within 8 minutes.

The scientific evidence discovered to date has helped us understand many of the events occurring at the time of the acute myocardial infarction and stroke. We now know that timely treatment of a patient suffering an acute myocardial infarction may reduce hospital mortality rates to 4% or 5%, but these treatments must be applied completely, consistently, and in time.

To achieve this goal will require efforts on multiple fronts. We will need to improve our patients’ awareness of the signs and symptoms of heart attack and stroke, but beyond that, we must improve the timeliness of a patient’s decision to take action, because delay and denial are the enemies of effective treatment. Furthermore, we must ensure that patients either get to a proper care facility quickly or that appropriate care, such as thrombolytics, is taken to the patient in the field to reduce the time from onset of symptoms to the application of treatment.

In some cases, we are sending mixed messages and even discouraging patients from seeking acute care. The American Heart Association has spent a great deal of time and money to inform the public about the warning signs of a heart attack. But if a patient presents at the emergency room with what he believes might be a heart attack, the costs of his visit might not be reimbursed by his insurance company if he is found to be suffering from indigestion.

To address this inconsistency, the American Heart Association has supported legislation that will establish guidelines for prudent action on the part of a patient who seeks emergency care. Under the provisions of the bill, if a patient acts in a prudent manner, the emergency room visit must be reimbursed regardless of the outcome.

The second area of concentration needed to achieve our goal is prevention, both primary and secondary. We now believe that the epidemic of cardiovascular disease is substantially preventable, not only for those who have suffered ischemic events, but for those who are at risk to suffer events. But, we are not applying what has been proven effective to enough of these patients.

Our goal is ambitious, and we in this room cannot accomplish it alone. The good news, however, is that there is a tremendous opportunity for all of us to have a substantial impact as we go forward.

To do so, we need to look at all the links in the Chain of Care. We need a concerted effort on the part of the entire healthcare community, and all of us need to find better ways to work together for the welfare of our patients. A strong science foundation can and must continue to lead the way.

Clearly, we will continue to develop our understanding of atherosclerosis and our identification of optimal preventive therapies. Science can also help us expand our understanding and use of current therapies, like statins, antihypertensives, defibrillators, and surgical and invasive techniques, making it easier to use them, and perhaps less costly as well.

We need to know more about the genetic basis of cardiovascular disease. With such knowledge, we will be able to tailor specific therapies for genetically disadvantaged patients or manipulate genes to change the course of their disease.

We also need to know more about the role of age and ethnic and racial differences in the progression and prevention of cardiovascular disease and to learn more about the apparent cardioprotective benefits of some foods, diets, and lifestyles in certain populations.

Finally, we need to encourage and expand scientific research that looks at programs that achieve a change in behavior and an improvement in outcomes.

The second link in the Chain of Care, Systems, is clearly the most complex and poses the most formidable challenges. With the support of industry investments, as well as current reimbursement policies within the United States, we have had great success in the development and application of acute interventions. But we need to learn more about what success can really mean in properly treated patients. And we need to find ways to identify and treat patients who still are not receiving care in a timely fashion, or at all, because more than 50% of patients suffering an acute myocardial infarction now die before reaching the hospital.

We are all aware that the delivery and reimbursement of health care in this country has changed dramatically in recent years, but there are many more elements in the Systems link besides providers and payers. If we are to reach our goal of controlling the epidemic of cardiovascular disease, we need
to enhance the performance of all of our systems, including providers and payers, but we also need to address public policy initiatives and the inclusion in the team of additional delivery personnel, such as nurses, nurse practitioners, physician assistants, dieticians, pharmacists, and even patients.

The issue here, I believe, is not our ability to provide care. We have the tools and techniques. The problem is our ability to provide effective application of care. I propose that we need to find ways to improve application of preventive care in a continuous way. Improving access to care can have a significant impact on the epidemic of cardiovascular disease. But there is a much easier way to fight this epidemic, and it’s far less costly than acute care: we need to devote as much energy to prevention as we do to intervention.

Primary and secondary prevention must be carried out in various settings. In primary prevention, currently most office visits, whether they are to a family practitioner, internist, or cardiologist, are “problem focused.” These encounters are rarely geared to long-term health improvement or the effective prevention of cardiovascular disease and stroke risk factors.

Part of the reason for this omission is that we cannot be certain that we have developed truly effective long-term programs to modify tobacco abuse or to sustain reductions in blood pressure or in abnormal lipid levels. Witness the fact that although we know that 25% of adults have hypertension, we also know that almost 32% of this group are unaware of their high blood pressure, fewer than 28% are on medication, and fewer than 27% have their hypertension controlled.

Furthermore, even if we had already solved the problems of primary prevention and compliance, there is currently little time in our daily clinical lives to mount the effort needed to achieve sustained results.

Secondary prevention might seem to be an easier task, as it is obviously easier to identify those who have had an event. But even this goal is poorly accomplished in our sophisticated medical system. We have specific guidelines for care, such as those published jointly by the American Heart Association and the American College of Cardiology,5,6 that provide evidence-based recommendations for the treatment of patients with coronary heart disease. But in spite of these written guidelines, a recent review of compliance showed that discharged patients were receiving recommended treatments far less often than indicated. For example, of those patients who we know would benefit from them. 7

The core issue here is that although we have a lot of excellent science to guide our treatment, we are not applying what we know. And there are a myriad of system-related issues that must be addressed to facilitate application of our knowledge.

How should we address this complex problem of systems? There is no “quick fix.” The process-improvement approach that many have used both in the medical world and in industry would be an ideal model and approach. And we could apply process improvement right now, in 3 steps. First, we can identify each step in the chain of events that leads to proper care. Second, we can analyze each care step as a process on its own, to look for opportunities to improve each step. And third, we can measure our progress and success in terms of outcomes. If we were to do these 3 things, I believe we would go a long way toward improving our delivery of effective care.

Part of this process may require studies such as we have used for developing interventions and drug treatments, in order to assess, process, identify, and improve our performance. As we analyze each step, we can create guidelines, develop performance standards, and provide direct feedback to the appropriate healthcare providers or institutions to change practice and patient behavior and produce enhanced outcomes.

The time has come to put as much commitment and effort into the design and conduct of studies of treatment delivery as we have historically invested in large multicenter trials that have evaluated the efficacy of drugs, thrombolytics, and interventional technology.

As practitioners, for example, we all talk about the benefits of lipid therapy, but how many of us, I wonder, are actually prescribing effective doses of statins for our patients? As providers, we work with detailed reimbursement policies for medical care. Unfortunately, current reimbursement mechanisms do not enable or reward preventive care. Why not reward a healthy lifestyle, which reduces the need for treatment and lowers healthcare costs? Life insurance companies offer discounts for nonsmokers; what if there was no co-pay for a preventive medicine visit? Or a reduction in co-pay for a patient who quits smoking or lowers his weight to targeted goals?

If we are to encourage and reward preventive medicine, we need better standards for treatment and care. To develop these standards, we need to enhance our research agenda to monitor and measure not just the cost but also the effectiveness of prevention programs. And we need to conduct our research with specific patient populations.

The Reynolds Foundation has recently supported the development of research projects that look at large, multiethnic, diverse populations. These studies are designed to look at differences in risk factors within each group and the incidence of cardiovascular disease in each. The goal is to then determine what preventive programs will work best in practical, real-life applications to improve cardiovascular health. These are the kinds of programs we need to develop.

The last link in the Chain of Care is the practitioner.

In my day job, I get to wear a lot of hats, as a clinician, an administrator, and a teacher. And this gives me the opportunity to conduct some empirical research on the state of the medical profession.

When I ask my colleagues who have been in practice for 20 years to prioritize their concerns, they tell me that their number 1 concern is the welfare of their patients, number 2 is their lifestyle and families, and number 3 is their income. When I ask the same question of graduates who are just entering practice, they tell me that their number 1 concern is salary, number 2 is their lifestyle, and number 3 is their patients.
Too often, our fertile discussions do not even translate in our own lives to practicing what we preach. I would estimate that fewer than 40% of the people in this room actually have had a lipid profile done in the last 5 years, and some would not even know what their lipid profile was. I would estimate that there are still a significant number of smokers among us, in spite of our professional dedication to cardiovascular disease. There are among us those who do not follow proper diets, who do not engage in physical activity. And if we do not do it ourselves, how then can we translate effective techniques to our patients?

The good news, as we approach the millennium, is that we have a tremendous opportunity to improve morbidity and mortality from cardiovascular disease and stroke over the next 10 years. To do this, we must work together, but we must also take it on ourselves, each of us, to apply the science that we know to the patients whom we treat. Our patients deserve the benefit of that science, and they trust us as physicians and scientists to deliver it to them, from bench to bedside, at a patient at a time.

### References

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