Is Ideal Cardiovascular Health Attainable?

Clyde W. Yancy, MD

“But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.”

—Robert Frost, “Stopping By Woods on a Snowy Evening”

In 2000, the American Heart Association (AHA) embarked on an ambitious goal-setting process that ultimately targeted a 25% reduction in risk and death due to coronary heart disease by 2010. This was an audacious, perhaps even dream-like, goal when first conceived, but was vigorously adopted by the AHA and later harmonized with the Healthy People 2010 goal. Concerted attention was subsequently focused on goal attainment. A period of fortuitous discoveries ensued that dramatically impacted the care of patients with acute coronary syndromes. By 2008, the reduction in deaths due to coronary artery disease eclipsed 35%, and the reduction in deaths due to stroke exceeded 30%. Over a similar timeframe, reductions in deaths due to all forms of cancer (the number 2 cause of death in the United States) were 21% for men and 12.3% for women from 1990 to 2006, whereas for chronic obstructive lung disease, (the number 3 cause of death) death rates have actually increased. Thus, the reductions in deaths due to coronary heart disease and stroke were considerably greater than the other leading chronic diseases. This is an extraordinary statement on the indefatigable efforts of the basic and clinical research communities to fervently address the leading cause of death and disability in this country. Our success has been so remarkable that stroke, previously the third-leading cause of death, may now be fourth. We shouldn’t rest on our laurels, given that the combination of heart disease and stroke remains the leading cause of death, but kudos to the cardiovascular community on our progress to date. What further amplifies the extent of this goal accomplishment is the imperfect approach to acute coronary syndromes when the 2010 goal was conceived: Acute percutaneous coronary intervention was not the standard of care for acute myocardial infarction: statin use was not ubiquitous, nor was postmyocardial infarction β-blocker use a norm, and even aspirin had only a limited database on efficacy, yet the 2010 goal was set. What is even more provocative, however, is that at least 50% of the reduction in death due to coronary artery disease (and stroke) is attributable to a greater representation of preventive efforts, specifically control of blood pressure, treatment of dyslipidemias, and a reduction in smoking. Yet, and ironically, the metric of a 25% risk reduction was not consistently met for the 2010 goal. Thus, an opportunity emerged.

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Emboldened by the successful attainment of the 2010 goal but concerned that certain risk factors, especially obesity, were approaching epidemic levels, the AHA embarked on yet another goal-setting process and targeted a further 20% reduction in deaths due to all forms of heart disease and stroke and, for the first time, set as an objective an improvement in cardiovascular health as a necessary component of the new 2020 goal. The driver here was to highlight the potential of greater efforts in risk prevention and subsequently a greater reduction in the burden of all forms of heart disease and stroke. This aspirational goal was challenging in part because it necessarily required a refined definition of health, elucidation of the attributes of health, and then a critical determination of whether being healthy was a dynamic or static state of being, the former being amenable to improvement or modification, the latter, an inevitability of life. And as before, the goal would have to be set in the absence of a proven evidence base to suggest that attainment was a realistic possibility.

Lloyd-Jones et al published the results of an extensive deliberative process that set the new AHA 2020 goal and addressed several key elements: (a) the definition of cardiovascular health; (b) the attributes of cardiovascular health grouped into health behaviors and health factors; and (c) an algorithm that would not only define health status but would promote meaningful changes in cardiovascular health status. An aggregation of 7 health behaviors and factors, now referred to as “The Simple 7” was established and made available to the public (Table; see http://www.heart.org/mylifecheck). Since its inception in January 2010, hundreds of thousands have viewed the site and >100 000 have worked through the health score and made a commitment to change. However, though the underpinnings of the attainment of better health are evidence based in construct, in practice no database has yet tested the prevalence of this new health score.

In the current issue of Circulation, Bamb and colleagues have addressed the prevalence of the new AHA metrics that define cardiovascular health. Their analysis is sobering. The penetration of poor health is alarming; in a relatively small but contemporary cohort of volunteers participating in a health-screening survey, the Heart Strategies Concentrating on Risk Evaluation (Heart SCORE), ≤3 health factors were present in 81% of all participants, and blacks had an 82%-

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

From the Division of Cardiology, Feinberg School of Medicine, Northwestern University, Chicago, IL.

Correspondence to Clyde W. Yancy, MD, MSc, FACC, FAHA, MACP, Magerstadt Professor of Medicine, Chief, Division of Cardiology, Northwestern University, Feinberg School of Medicine, 676 N St. Clair, Ste 600, Chicago, IL 60611. E-mail cyancy@nmff.org

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lower likelihood of achieving >5 of the 7 ideal health factors. Only 1 of the nearly 2000 participants had all 7 factors intact. If one considers the recent 2010 AHA Scientific Sessions attended by ~20,000 science volunteers, only 10 of us attending had ideal health. That should give all of us pause.

Did the AHA overreach in its description of health and in the 2020 goal-setting process? To be fair, there are reasonable concerns about the Heart SCORE study and the analyses provided: (a) The study was not intended to be a survey of ideal health, a concept that was not defined before the initiation of this study; (b) certain approximations were required by the investigators, particularly relative to physical activity level and the diet score, and the actual attainment of the desired thresholds could have been higher; (c) the sample reflects largely a single community and thus may not be representative given that obesity, physical activity, and smoking thresholds are known to vary markedly between communities and states; and (d) the available data represent a snapshot only, and we are unaware of any longitudinal metrics of health in this population. But even as a snapshot of prevailing metrics of cardiovascular health, we should not dismiss the work of Bamb and colleagues. Recent predictions of life expectancy for babies born in the United States in 2010 alarmingly predict, for the first time, a shorter lifespan than the forbearers of these children. This should sit well with none of us. The suggestion is compelling: Even if only qualitatively, the cardiovascular health status of the greater US community is miserable. Any discussion of meaningful healthcare reform, either in its current iteration or some modified variant, is vapid without a meaningful focus on health reform. The number of persons at risk and the impending disease burden are simply too large for any global system to fully accommodate the estimated need. It is therefore most appropriate that the gravitas of the AHA is now sharply focused on addressing this core cardiovascular issue.

The Heart SCORE investigators have set forth a multipart strategy that initiates the appropriate discussions: enhanced research that better identifies the genomics and metabolomics associated with individual risk profiles, meaningful changes within the built environment to address the social determinants of health and promote better health, significant changes in public health policy (eg, sodium reduction initiatives), and increased access to care, especially to preventive services. I concur with these authors; we desperately need breakthrough research to both assign risk and refine risk, and we need new treatments to modify the natural history of those at highest risk. We need immediate attention focused on health at the community level, and we need bold, courageous policy initiatives that jumpstart changes in health. We need a more enlightened populace with a new prism focused on attaining better health. And we should add an enhanced sensitivity to the rapidly changing demographics of the United States, with the need for culturally competent and locally effective strategies in many underserved and poorly represented communities not previously addressed. In our quest to improve cardiovascular health, we must not allow disparate gaps in care to widen.

We should have poignant clarity here: The journey that awaits is uncertain and likely difficult, the strategies needed to effect change are not yet crystallized, and the breadth of those at risk, especially in the underrepresented minority populations, may be incalculable. To tackle the new 2020 goal, we will not only need new research and new public policy, but we will need a new kind of research: behavioral, community focused, and algorithmic. A traditional randomized trial, other than one addressing a major breakthrough in treatment or prevention, will do little to improve the overall state of health. Public policy that only sets thresholds but fails to define process or create resources will fail miserably. Unique public–private partnerships such as the Alliance for a Healthier Generation and the First Lady’s Let’s Move program are the prototype initiatives. We don’t need the burden of more programs; rather, we need the substance of best programs if we are to see meaningful change.

The Heart SCORE investigators are to be commended for performing these analyses. We should all digest this information in a forthright manner and recalibrate our efforts to include not only the expert care of those with heart disease and/or stroke, but also to focus on risk. But our attention to risk, especially at the public health level, ought not to only be on the reduction of body-mass index, systolic blood pressure, or fasting blood sugar, but should also be on the very prevention of risk itself (ie, primordial prevention). We may need a moonshot mentality to make this happen, but this 2020 goal is no less intimidating in 2010 than the 2010 goal was in 2000. Our 2020 goal statement is an implicit promise. Clearly, there is much work to be done, but we can and should address this goal with the ingenuity and fervor that previously spurred our success. We should all be about the business of getting started. Because, as the poet wrote, “... I have promises to keep and miles to go before I sleep.”

### Table. The Simple 7

<table>
<thead>
<tr>
<th>Metric</th>
<th>Target</th>
</tr>
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<tbody>
<tr>
<td>1. Never smoked or quit</td>
<td>&gt;1 year ago</td>
</tr>
<tr>
<td>2. Body mass index</td>
<td>&lt;25 kg/m²</td>
</tr>
<tr>
<td>3. Physical activity</td>
<td>150 mins (moderate intensity) or 75 mins (vigorous intensity) each week</td>
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<tr>
<td>4. Four to 5 key components of a healthy diet consistent with current AHA guidelines</td>
<td></td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>≥4.5 cups per day</td>
</tr>
<tr>
<td>Fish (preferably oily)</td>
<td>≥two 3.5-oz servings per week</td>
</tr>
<tr>
<td>Fiber-rich whole grains</td>
<td>≥three 1-oz-equivalent servings per day</td>
</tr>
<tr>
<td>Sodium</td>
<td>&lt;1500 mg per day</td>
</tr>
<tr>
<td>Sugar-sweetened beverages</td>
<td>≤450 kcal (36 oz) per week</td>
</tr>
<tr>
<td>Other dietary measures</td>
<td></td>
</tr>
<tr>
<td>Saturated fat</td>
<td>&lt;7% of total energy intake</td>
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<tr>
<td>Nuts, legumes, and seeds</td>
<td>≥4 servings per week</td>
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<tr>
<td>Processed meats</td>
<td>≤2 servings per week</td>
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<tr>
<td>5. Total cholesterol</td>
<td>&lt;200 mg/dL</td>
</tr>
<tr>
<td>6. Blood pressure</td>
<td>&lt;120/80 mm Hg</td>
</tr>
<tr>
<td>7. Fasting blood glucose</td>
<td>&lt;100 mg/dL</td>
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Disclosures
Dr. Yancy was president of the American Heart Association from 2009 to 2010.

References

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