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Darwin R. Labarthe

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Cardiovascular Perspective

From Cardiovascular Disease to Cardiovascular Health A Quiet Revolution?

Darwin R. Labarthe, MD, MPH, PhD

The thesis of this essay is that the longstanding emphasis on cardiovascular disease (CVD) has at last yielded to a mounting force behind cardiovascular health (CVH), manifest in adoption by the American Heart Association (AHA) of its 2020 Impact Goal: “By 2020, to improve the CVH of all Americans by 20% while reducing deaths from CVDs and stroke by 20%.¹ It is proposed that this shift in focus from CVD to CVH is nothing short of a revolution—whether only internal to AHA or much farther reaching—is a point to be pondered. Three questions are posed: (1) Seeds of the revolution—where did it come from? A focus on health, in priority over disease, can be traced over a long history. The recent quantum change can be attributed to several precipitating factors; (2) Signs of change—when did it happen? Increasingly broader concepts of health have gained currency over recent decades. It is argued that this progression culminated in 1 specific act, critical for CVH, on February 26, 2009; (3) Securing the gains—how can the revolution be sustained and its promise fulfilled? If the revolution is to have its full potential impact, multiple approaches must be intensified—primordial and remedial strategies, early in life and throughout the life course, reaching both populations and patients. It is suggested that the need is great, the opportunity immense, and the time is now.

Background

Two points may be helpful as background to this essay. One is to note that public health revolutions have occurred previously but never before with such clear implications for CVH. The second is to highlight several nodal points in development of concepts of health, which give this postulated revolution its meaning and significance. Some of the more notable signposts along the road to revolution are highlighted in this review (Table).^{2–22}

About Public Health Revolutions

Two public health revolutions, called epidemiologic revolutions by Terris,⁴ have been discussed extensively. The first began more than a century ago and addressed communicable diseases. The second public health revolution concerned noncommunicable diseases. It was heralded by the launch of Healthy People in 1979 in which the concept of health

promotion was juxtaposed with disease prevention.¹² Breslow in 2004 saw a third public health revolution in progress. This was in consequence of the Ottawa Charter of 1986, with its advanced notion of health “as a resource for everyday life... a positive health concept.”^{15,23} Kickbusch in 2003 had linked this development with what she called the “wellness revolution.”²⁴ Others, however, have continued to await the third revolution, as is evident in Scutchfield’s 2004 call for a third public health revolution to be marked by a paradigm shift to focus on “more distal determinants of disease and health” such as social capital, socioeconomic status, the built environment, and biophilia.²⁵ Thus, revolution in the arena of health has its precedents, and the next one may have come due.

About Health

The second point of background concerns health. Relevant in the present context is the seminal action of 235 years ago that led to the American Revolution, as the Declaration of Independence proclaimed: “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. — That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed...”² Less well known is Jefferson’s further statement that health is a prerequisite for happiness.³ If the pursuit of happiness is a right to be secured by government and health is a prerequisite for happiness, then governments could be said to be instituted in no small part, in the Jeffersonian view, to ensure health. Currency of this view is evident in the Institute of Medicine report of 1988, *The Future of Public Health*, in which the mission of public health—foremost a government function—is defined as “fulfilling society’s interest in assuring conditions in which people can be healthy.”¹⁶

If we fast-forward 170 years to a point between the first and second public health revolutions, we find concepts of health evolving (the word is used deliberately here) rapidly:

- Health is a state of complete physical, mental, and social well-being and not merely the absence of infirmity (World Health Organization [WHO], 1946).⁵

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

From the Department of Preventive Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL.

Correspondence to Darwin R. Labarthe, MD, MPH, PhD, FAHA, Northwestern University Feinberg School of Medicine, 680 N Lakeshore Dr, Ste 1400, Chicago, IL 60611. E-mail darwin.labarthe@northwestern.edu

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Table. Some Signposts on the Road to the CVH Revolution, 1776–2010

1776	Declaration of Independence: Governments are to secure “Life, Liberty, and the pursuit of Happiness.” ²
1787	Thomas Jefferson: Without health there can be no happiness. ³
1900	First public health revolution: By the late 1800s, early 1900s infectious diseases are the public health focus. ^{2,4}
1946	WHO Constitution: Health is defined as more than “the absence of infirmity”. ⁵
1957	WHO Study Group: Evidence is found inadequate to support policy development for CVD prevention. ⁶
1959	National Health Education Committee report: Doctors and patients can prevent heart attacks and strokes. ⁷
1961	Kannel et al: The Framingham Heart Study establishes factors of risk; their utility for prevention is unknown. ⁸
1973	Inter-Society Commission report: National policies are recommended to address risk factors and behaviors. ⁹
1978	Declaration of Alma-Ata: Health is characterized as a fundamental human right. ¹⁰
1978	Strasser: Primordial prevention is conceived as preserving whole societies free of risk factor epidemics. ¹¹
1979	Healthy People: The second public health revolution links health promotion and chronic disease prevention. ²⁻⁴
1981	Rose: Complementary strategies are proposed to reduce CVD risk, population-wide and in high-risk individuals. ¹³
1982	WHO Expert Committee: The Rose strategies and secondary prevention are advocated for all countries. ¹⁴
1986	The Ottawa Charter: Health extends “...beyond healthy life-styles to well-being”; trigger of a third revolution? ¹⁵
1988	The Future of Public Health: The mission of public health: “assuring conditions in which people can be healthy.” ¹⁶
1990	WHO Expert Committee: Prevention in Childhood and Youth of Adult Cardiovascular Diseases: Time for Action. ¹⁷
1994	NHLBI report: “...the greatest opportunity in preventing CVD, is to prevent CVD risk in the first place.” ¹⁸
1999	Stamler et al: Low cardiovascular risk at middle age predicts long-term disease-free survival. ¹⁹
2000	Healthy People 2010: The overall national goal is “...to improve cardiovascular health and quality of life....” ²⁰
2000	AHA 2010 goal: The target becomes a 25% reduction in CVD risk, as well as death from CHD and stroke. ¹
2003	Public Health Action Plan: CDC, NIH, AHA and public health organizations create a long-range strategic plan. ²¹
2006	CDC: The Division for Heart Disease and Stroke Prevention is established. ²²
2007	AHA Strategic Planning: A plan is called for to include “...improving the cardiovascular health of Americans....” ¹
2009	AHA Board of Directors (2/26/2009): The goal of 20% improvement in CVH of all Americans by 2020 is adopted. [†]
2010	AHA publication: The 2020 Impact Goal is published, with definitions, metrics, and criteria for 3 levels of CVH. ¹

AHA indicates American Heart Association; CDC, Centers for Disease Control and Prevention; CHD, coronary heart disease; CVD, cardiovascular disease; CVH, cardiovascular health; NHLBI, National Heart, Lung, and Blood Institute; NIH, National Institutes of Health; and WHO, World Health Organization.

†David W. Livingston, executive vice president, corporate secretary, and emeritus general counsel, American Heart Association, personal communication, July 2012.

- Health is a fundamental human right and that the attainment of the highest possible level of health is a most important worldwide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector (Declaration of Alma-Ata, 1978).¹⁰
- Health promotion is the process of enabling people to increase control over and to improve their health. To reach a state of complete physical, mental, and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is therefore seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources and physical capacities. Therefore, health promotion is not just the responsibility of the health sector but goes beyond healthy lifestyles to well-being (Ottawa Charter of the First International Conference on Health Promotion, 1986).¹⁵

This latter development was the defining action for Breslow that launched “the third revolution in health.”²³

Today, perhaps especially in the United States, it is clear that society values health but misunderstands it. We spend \$1.7 trillion to purchase it, as though it were a commodity—wellness as a commercial enterprise being one such form of marketing.²⁶ Although we build monuments for the treatment of sick individuals, eg, a \$7 billion 5-year construction in 1 medical center alone, the infrastructure for population health crumbles, eg, with loss of 23 000 jobs or 15% of the local public health workforce from 2008 to 2010.^{27,28}

Although public health accepts accountability for its mission of “assuring conditions in which people can be healthy,” the imbalance between resources for health and those for disease has chronically crippled public health agencies’ capacity to deliver this assurance.¹⁶

In stark contrast, Trust for America’s Health noted that:²⁸

Investing in disease prevention is the most effective, common-sense way to improve health. It can help spare millions of Americans from developing preventable illnesses, reduce health care costs, and improve the productivity of the American workforce, so we can be competitive with the rest of the world.

Among other influences, the demand for proof of a favorable, short-term bottom line in advance of such investment has deterred effective allocation of resources. One counter to this demand is Rose’s statement on the economics of prevention. He set aside the argument for the bottom line, declaring simply,²⁹ “It is better to be healthy than ill or dead. That is the beginning and end of the only real argument for preventive medicine. It is sufficient.” More concrete argument is provided by Trust for America’s Health and others.

Trust for America’s Health reported that:

“an investment of \$10 per person per year in proven community-based programs to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than \$16 billion annually within 5 years. This is a return of \$5.60 for every \$1 invested.” The report presents state-by-state potential annual net savings and return on

investment resulting from what they called “Strategic Disease Prevention Programs in Communities.”³⁰

The Prevention Institute has advocated a national policy of indexing prevention investment to healthcare spending, reinvesting these savings. The institute estimated that the impact of investing \$5 for prevention for every \$100 of personal healthcare spending would reach a break-even point at 20 years. At 30 years, \$1.28 trillion would have been spent for prevention, \$2.75 trillion would have been saved in reduced healthcare spending, with a national saving of \$1.46 trillion. The effect would be to establish a virtuous cycle, with prevention producing savings to reinvest in further prevention activities.³¹

How much do we invest in prevention? A standard reference for the answer is a report by Brown and others in Centers for Disease Control and Prevention’s (CDC) *Morbidity and Mortality Weekly Report* from 1992. They defined prevention broadly as “activities that reduce the incidence, prevalence, and burden of disease and injury and enhance health by improving physical, social, and mental well-being”. Prevention included health promotion, health protection, and preventive health services. Their answer: 3%.³² Lambrew,²⁶ from the Hamilton Project of the Brookings Institution, estimated for 2007 that only 4% of the \$1.7 trillion in national health expenditures was spent on prevention.

Despite these recent demonstrations, it has been difficult to excite the interest of many among the public, policy makers, or media in prevention. Is this because the term prevention is inherently negative or because the benefits of prevention are in a sense unseen? Or is it because of conflicting special interests whose stake in disease has been more powerful than the case for health? Perhaps the language of health and well-being, or the balance of power, is changing. This brings us to the Quiet Revolution from CVD to CVH.

Seeds of Revolution: Where Did It Come From?

Certain antecedents can be seen as having prepared the way for the revolution, 3 prevailing themes that had developed and reached a certain maturity, arguably establishing a new situation, by the end of the past decade. They concerned ideas of health, generally the framework for improving health represented by Healthy People and concepts of CVD prevention.

Post-Ottawa, the Declaration’s positive view of health, with its meaning as a “resource for life going beyond lifestyles,” has been reflected increasingly, it seems, in discussions of well-being and wellness.¹⁵ From work by Rath and Harter with Gallup’s worldwide assessment of the 5 essential elements of well-being to Seligman’s “visionary new understanding of happiness and well-being” and investment by the Robert Wood Johnson Foundation’s Pioneer Portfolio in exploring the concept of positive health, we see evidence of growing positivity in this arena.^{33–35} This stream of development provides fertile ground for our revolution.

Healthy People has continued to develop as a comprehensive framework for national health improvement priorities from its establishment in 1979, noted above in connection with the second public health revolution.¹² Healthy People 1990 and 2000

addressed heart disease and stroke within the category of adult health, not as a disease-specific focus.^{12,36} Significant change in Healthy People 2010, released in January 2000, represented a major advance for CVH.²⁰ Heart disease and stroke became a topic in itself, introduced with this overall goal: “*Improve cardiovascular health and quality of life* through prevention, detection and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events” [emphasis added].

The unique significance of prevention of risk factors led the CDC to adopt this as the first of 4 goals, or strategic imperatives, distinct from detection and treatment of risk factors.²¹ This goal, in addition to the overall commitment to improving CVH and quality of life, took Healthy People 2010 beyond CVD prevention to CVH promotion. The 2010 goals for heart disease and stroke thus spanned the full spectrum from prevention of risk factors to prevention of recurrent events among those who survive a first one. The CDC, with its first-time Congressional mandate to assist states in heart disease and stroke prevention beginning in 1998, became the Department’s colead agency for these goals with the National Institutes of Health.

Consequences of the new level of recognition of heart disease and stroke in Healthy People included establishment in 2000 of a formal partnership between AHA and multiple agencies of the Department of Health and Human Services to monitor and to advance progress toward the goals. Explicitly on the basis of the 4 strategic goals, a national blueprint for action was created, *A Public Health Action Plan for Heart Disease and Stroke Prevention*, released by the Department of Health and Human Services Secretary in April 2003.²¹ With the same goals, CDC’s Division for Heart Disease and Stroke Prevention was founded in January 2006.²² Each of these developments contributed to preparing the soil.

Over the past half-century, concepts of CVD prevention have evolved from a virtually null state to the full spectrum of prevention opportunities expressed in Healthy People 2000. A WHO Study Group reported in 1957 that⁶ “[v]arious preventive measures for the avoidance of ischemic heart disease have been suggested but...adequate evidence does not yet exist to give scientific support to the premise that application of specific measures will prevent or delay the onset of manifest ischemic heart disease.” Six years later, in 1961, the landmark article from Framingham by Kannel et al introduced the term risk factor to our lexicon; their interpretation was cautious:⁸

Combinations of the 3 risk factors under consideration appear to augment further the risk of subsequent development of coronary heart disease (CHD). It has been demonstrated that the incidence of CHD rises progressively as these factors are combined. Whether or not the correction of these abnormalities once they are discovered will favorably alter the risk of development of disease, while reasonable to contemplate and perhaps attempt, remains to be demonstrated. As additional longitudinal observations are made, it is hoped that additional risk factors will be determined. This will allow further identification of susceptible individuals and hopefully suggest methods of control.

However, philanthropist and advocate Mary Lasker had already in 1959 commissioned a report from a blue-ribbon committee headed by 5 past presidents of the AHA, and White, then president of the International Society of Cardiology, declared in contemporary terms what doctors and patients could do to prevent “heart attacks” and “strokes” (both terms in quotes):⁷ address overweight, elevated blood cholesterol level, elevated blood pressure, excessive cigarette smoking, and heredity. In 1973, 2 committees under the Inter-Society Commission on Heart Disease Resources, one chaired by Stamler and the other by Lilienfeld, recommended long-term national policy on primary prevention of CHD and other atherosclerotic diseases, reflecting current thought:⁹

“changes in diet to prevent or control hyperlipidemia, obesity, hypertension, and diabetes ... Elimination of cigarette smoking ... Pharmacologic control of elevated blood pressure.”

The CVD Unit at WHO convened an Expert Committee to address prevention of CHD in 1981. The resulting 1982 report reviewed 3 strategies of prevention as basic components of a comprehensive plan:¹⁴

(1) a population strategy – for altering the life-style and environmental characteristics, and their social and economic determinants, that are the underlying causes of mass CHD; (2) a high-risk strategy – for bringing preventive care to individuals at special risk; and (3) secondary prevention – for averting recurrences and the progression of disease in those already afflicted.

This was perhaps the first exposition by Rose, a member of the committee, of the dual strategy of prevention famously associated with him. It was illustrated with his classic graphic presentation of sharply increasing rates of CHD death by successively higher strata of the population distribution of serum cholesterol concentration. Although risks at the upper extreme were high, extreme levels were uncommon, and most cholesterol-related deaths occurred at the lower, more prevalent, levels. Population-wide interventions could reverse the greatest part of the disease burden of the population, whereas high-risk interventions could reduce extreme risk alone; there was a complementary relationship between the 2 strategies. The more frequent citation for Rose’s strategy of prevention is his 1981 publication in the *British Medical Journal*, which was roughly concurrent with the Expert Committee meeting (but not cited in its report).¹³

Of even greater significance in terms of CVH, and therefore roots of the recent revolution, is another strategy presented in this WHO report of 1982. The origin of this strategy is an article by Strasser of the Medical Faculty of Belgrade and the WHO CVD Unit in Geneva. The article, “Reflections on Cardiovascular Diseases”, appeared in *Interdisciplinary Science Reviews* in 1978 under the heading of “World Health for Tomorrow.”¹¹ Strasser participated in the Expert Committee deliberations as a staff member. His 1978 publication contributed to the proceedings mainly in discussion of developing countries, where CHD was considered not yet to have reached an epidemic scale.

Strasser’s own article best puts the proposed strategy in perspective. Speculating on the future of CVD prevention, he noted first the sequential development over 2 decades of the terms tertiary prevention, by which he referred to rehabilitation after myocardial infarction; secondary prevention, or treatment to avert recurrent coronary events; and primary prevention, to prevent the occurrence of first clinical events such as myocardial infarction or stroke. He found the boundaries between these categories of prevention to be ill-defined and suggested that “it may be safer to discard the present terminology and simply specify at which level the preventive intervention is taking place.” He continued:¹¹

From the viewpoint of world health for tomorrow, however, one has to go 1 step further. Although the epidemic of risk factors has pervaded the consumer societies, it still has not reached the majority of the developing world. Real grassroot prevention should start by preserving entire risk-factor-free societies from the penetration of risk factor epidemics. Here lies the possibility of averting 1 of tomorrow’s world health problems. For expressing this important concept, I wish to propose the term of proto-prophylaxis or primordial prevention.

The essential idea of the strategy is that prevention of risk factors themselves, especially their progression to epidemic prevalence in the population, is a rational approach to CVD prevention with immense potential for societal benefit and public health impact. Its discussion in the 1982 WHO report is almost entirely in the context of developing countries as a population-wide strategy. But, in recognition that atherosclerotic and hypertensive diseases begin in early life, the concept of primordial prevention was applied to all countries in a 1990 report, *Prevention in Childhood and Youth of Adult Cardiovascular Diseases: Time for Action*.¹⁷ Moreover, in the context of a comprehensive population strategy based on primordial prevention, “systematic programmes should be carried out throughout childhood and youth—both in community health care facilities serving young people and in schools—to identify higher-risk children at an early stage.”¹⁷

With this report, primordial prevention took on meaning at both population-wide and individual, high-risk levels, in parallel with those of the Rose strategies. What, then, distinguishes the Rose strategy from the Strasser strategy? Strasser’s point was that timely intervention could avert development of the risk factors themselves, especially in their epidemic occurrence, hence primordial, as before primary, prevention. Rose’s strategies, in contrast, would reduce risk already present as an adverse population distribution or extreme individual levels. Strasser would avert risk from the beginning. His approach is primordial, whereas Rose’s approach is remedial, distinguished by the stages of risk development to which each applies.

Returning to the US context, the 1994 report of the National Heart, Lung, and Blood Institute Task Force on Research in Epidemiology and Prevention of Cardiovascular Diseases offered this recommendation for primordial prevention, in other terms:¹⁸

[T]here are now unequaled opportunities for further reducing CVD within all segments of American society. The strategic key, and the greatest opportunity in preventing CVD, is to prevent the development of CVD risk in the first place... The task force thus emphasizes a population-wide strategy aimed at modifying lifestyles and major CVD risk factors beginning in early childhood and continuing throughout the lifespan [emphasis added].

Prevention of risk factors themselves was viewed in a new light when the favorable consequences of low risk at middle age were reported from the Chicago cohorts by Stamler and others in 1999 and after and from the Framingham Heart Study, among others.^{19,37} This was not merely an arithmetic inversion of the risk scale to examine it upside down; it demonstrated the concept that good CVH, manifest at 50 years of age, is a positive health asset that predicts a relative increase in longevity, greater functional well-being, a decrease in health-care use, and reduced medical care costs, even in the last year of life. In parallel, Stampfer and others reported in 2000 on the aggregate impact of favorable components lifestyle in association with greatly reduced risk of CHD among women in the Nurses' Health Study.³⁸ (Notably, in these studies of low risk, a common finding was the relative scarcity of people in the optimum risk categories.)

In concept, these developments set the stage at the end of the 1990s for AHA to take a new approach to strategic planning; for 2010, not only would CHD and stroke be selected for reduction over the decade, but also risk was to be reduced.¹ A critical question was, by how much? As recounted by Lloyd-Jones and others, the AHA Statistics Committee considered alternative levels and settled on 25% as the target for reduction of both risk and death rates for CHD and stroke. There was now, as of 2000, a quantitative goal against which gains could be measured. By 2008, this 25% target had already been reached or exceeded for CHD death rate (30.7% decrease) and stroke death rate (29.2% decrease), prevalence of uncontrolled high blood pressure had declined by 29.4%, and high blood cholesterol had declined by 24.5%. However, reductions in smoking and physical inactivity remained short of the goal, and prevalence of obesity and diabetes mellitus had increased.¹

A significant step had been taken by focusing on risk factors themselves, not just on major cardiovascular events. This experience demonstrated that quantitative targets could be defined; progress could be monitored over the course of the decade; and in some important respects, success could be achieved. As 2010 approached, the ground was ever more fertile, and the seeds of change were in hand.

Signs of the Change: What Was It, and When Did it Happen?

Premonitory signs of change are traceable to 2007, when AHA leadership undertook creation of a new strategic plan and mission statement for the Association (Donna Arnett, PhD, president, AHA, personal communication, July 2012). Discussions about the future strategic direction of the AHA centered on potential change from a high-risk to a population approach, corresponding to the concepts of Rose, as noted

above. Reflecting the duality of these approaches, the concept of AHA's 2020 goal would continue to focus on deaths but add a goal expressed in terms of health. By June 2007, the idea had gained sufficient acceptance that the AHA National Board of Directors commissioned the AHA Strategic Planning Task Force "to oversee drafting and implementation of the 2020 Impact Goal, with a directive to incorporate the novel aim of improving the CVH of Americans by __% while reducing death due to CVD and stroke by __%."¹

To carry out this commission, the Statistics Committee was called into action a decade before. Its Goals and Metrics Committee was charged to design the new metric for CVH. As later described,

"Success in this task would enable the AHA to undertake a new and more proactive organizational mission, not only continuing the tremendous success in improved treatment but also addressing the need for a new and expanded emphasis on prevention, control of risk, improving quality of life, and promoting health rather than solely treating disease."¹

A major task was then to fill in the blanks. But there was also work to do between the lines. To bring about this change would require a definition of CVH, specification of metrics by which to monitor it in the population over time, and criteria to stratify levels of CVD by which to evaluate progress. As the culmination of this process, the AHA 2020 Impact Goal, as noted above, is as follows:¹ "By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%." CVH is categorized as ideal, intermediate, or poor, each stratum being defined in terms of 4 health behaviors and 4 health factors (smoking appearing in both lists) that reduce to 7 primary metrics: current smoking, body mass index, physical activity, healthy diet score, total cholesterol, blood pressure, and fasting plasma glucose. The AHA program "Life's Simple 7 Action Plan" translates these metrics into a new online package of selfdirected CVH promotion activities (www.mylifecheck.heart.org).

When did this revolution take place? Work conducted over a 2-year period reached its climax with approval by the Board of Directors on February 26, 2009 (David W. Livingston, executive vice president, corporate secretary, and emeritus general counsel, American Heart Association, personal communication, July 2012). Eleven months later, on February 2, 2010, the new goal was published in *Circulation*.¹

Who took this action? From earliest conception to final adoption of the 2020 Impact Goal statement, AHA leadership, science volunteers, and staff contributed to this development. Several individuals could be credited, as well as the AHA Strategic Planning Task Force and Statistics Committee. The broad base of engagement and support within the organization testify to the readiness for change brought about by the background developments reviewed above.

The view is proposed that this development represents a change of major import, "a great alteration in affairs, produced by a specific act," that is, a revolution.

Securing the Gains: How Do We Move Forward?

Not every revolution succeeds in being sustained and fulfilling its potential. In thinking about how to move forward given this singular opportunity, we need first to assess the status quo. The first graphic presentation of the distribution of ideal CVH in the US population appeared in "Heart Disease and Stroke Statistics—2011 Update"³⁹. Overall ideal CVH, in terms of a composite score, was virtually absent among US adults, and even among adolescents 12 to 19 years of age. Dietary patterns were the chief disqualifier of every age group from ideal CVH. For each of the other health behaviors and health factors, the proportion of adults ranked as having ideal status ranged from 33% for BMI to 72% for current smoking. Importantly, across age categories from 20 to 39 years to ≥60 years, the proportions meeting these criteria for ideal CVH decreased: We are losing CVH as we age. In the face of evidence for increased longevity and quality of life, as well as decreased costs of health care, for persons with low risk (now, high on health behaviors and health factors) at 50 years of age, the loss of CVH across adulthood must be a serious concern.³⁹

But this concern is overshadowed by 1 crucial further observation: At 12 to 19 years of age (adequate data for the youngest ages are to date unavailable), the proportion of youths ranked as having ideal CVH metrics ranged from 44% to 83% (excepting diet), greater than the corresponding proportions of all adults. For every metric except diet and physical activity, which were mainly static, prevalence of ideal status declined sharply from adolescence to adulthood.³⁹

The root of epidemic CVD is the loss of CVH from childhood and adolescence onward, accompanied by predominantly poor diet. CVH will continue to slip away unless deliberate and sustained measures are taken to preserve it. This, it could be argued, is the most fundamental challenge, and the greatest opportunity, created by this revolution, and inadequate diet is the foremost issue.

Already, signs of consolidation of the revolution are appearing. Multiple new reports characterize trends and distributions of CVH in the US population (see Status of CV Health in the US at: www.myamericanheart.org). Importantly, the additive contribution of each metric to prediction of CVD outcomes further reflects the new perspective on health behaviors and health factors in consequence of the revolution. This approach illuminates the independent effects of both multiple health behaviors and multiple health factors in CVD incidence and strengthens the case for primordial prevention.⁴⁰ In addition, action is advocated from the individual level (eg, Life's Simple 7) to the global level (eg, the Institute of Medicine report *Promoting Cardiovascular Health in the Developing World*).⁴¹

Conclusions

Three lines of development contributed to preparing the ground for this revolution: emerging new ideas about health, establishment and refinement of Healthy People, and widely discussed concepts of CVD prevention. Securing the revolution will be aided by sustaining these supporting developments, nourishing the soil.

First, positive health, specifically positive CVH, has a fundamental contribution to make in identifying, implementing, and evaluating interventions in terms of both public policy and clinical practice that will preserve and promote CVH from childhood to middle age and beyond.

Second, Healthy People 2020 has been crafted to include as its first objective HDS-1: "Increase overall CVH in the US population."⁴² The underlying motivation to introduce this new objective was specifically to support, through Healthy People, implementation of surveillance and interventions for CVH as conceptualized by the AHA. However, this is a so-called developmental, or yet-to-be-specified, objective with metrics, data sources, and targets still to be determined early in the decade. A high priority for action, through partnership among AHA, CDC, the National Institutes of Health, and others, is to operationalize this objective, closely coherent with the specifications of AHA's 2020 Impact Goal and metrics.

Third, the concept of primordial prevention as key to preservation of CVH, from the beginning of life, must be fostered and advocated if the long-promised benefits of this strategy are to be realized. The remedial high-risk and population-wide strategies can serve to move strata of the population from high to intermediate and from intermediate to ideal CVH, but only primordial strategies can preserve and promote CVH, beginning in childhood and continuing throughout life.

This can be seen as a 2-stage revolution in which the first major step was Strasser's articulation of a radical new idea, preventing risk in the first place. The second was commitment to the goal of improving CVH, articulated in Healthy People 2010 and decisively adopted by AHA as its 2020 Impact Goal. What may have constituted only a quiet revolution within AHA can have, as some revolutions do, repercussions throughout the nation and the world. Success will depend on effectively addressing countervailing influences, so long as these persist. Through effective commitment to this strategy, the United States and countries throughout the world, at every stage of development of epidemic CVD, can potentially secure lifelong CVH for future generations.

Disclosures

None.

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KEY WORDS: cardiovascular health promotion ■ cardiovascular disease prevention ■ primordial prevention ■ public health revolution

Correction

In the article by Labarthe, “From Cardiovascular Disease to Cardiovascular Health: A Quiet Revolution?”, which appeared in the November 2012 issue of the journal (*Circulation: Cardiovascular Quality and Outcomes*. 2012;5:e86–e92), there were two errors with reference 26, both in the text and in the references section. The California Endowment should have been cited instead of the Hamilton Project of the Brookings Institute.

On page 3, left column, paragraph 2, the last sentence should read, “The Prevention Institute, with The California Endowment and the Urban Institute,²⁶ estimated for 2007 that only 4% of the \$1.7 trillion in national health expenditures was spent on prevention.”

The corrected reference should be:

26.Urban Institute, California Endowment, Prevention Institute. *Reducing Health Care Costs Through Prevention*. Working Document. April 2007. <http://www.preventioninstitute.org/component/jlibrary/article/id-79/127.html>. Accessed March 15, 2011.”

The errors have been corrected in the online version of the article. The authors regret these errors.