Editor’s Perspective

Population Health, Outcomes Research, and Prevention

Example of the American Heart Association 2020 Goals

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In September 2008, Circulation: Cardiovascular Quality and Outcomes was launched to “improve clinical decision making, population health and healthcare policy.” This statement affirmed unambiguously that health and clinical care, medicine, and policy were tightly interwoven. Three years later, during times marked by unprecedented healthcare challenges and a global epidemic of obesity and diabetes, the need for the synergy between outcomes research and population health has never been greater.

The new American Heart Association (AHA) goals are a powerful example of why such synergy is critical because the effective deployment of the goals requires an effective interaction between outcomes research and population health. This Editor’s Perspective discusses this specific example to illustrate how such an interaction is vital to fighting the epidemic of cardiovascular disease and stroke and can be optimized under the auspices of Circulation: Cardiovascular Quality and Outcomes.

The AHA 2020 Goals

In 2010, the AHA defined the following Strategic Impact Goals for the next decade and beyond: “By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%.” This statement introduces the novel concept of cardiovascular health rather than disease and of wellness rather than illness. Shining a spotlight on health created the interesting challenge of actually defining and implementing a definition of health behaviors and health factors and aggregated as the Simple 7 (http://mylifecheck.heart.org). The Simple 7 include absent or remote smoking, body mass index <25 kg/m², regular physical activity, healthy diet, total cholesterol <200 mg/dL, blood pressure <120/80 mm Hg, and fasting blood glucose <100 mg/dL %. The wake-up call came when the Simple 7 were deployed in several available data sources. In the National Health and Nutrition Examination Survey (NHANES) 2005–2006, the prevalence of an ideal value for each of the 7 metrics and for the composite score of ideal cardiovascular health was soberingly low among adults as well as among children. A report from 14,515 adults in NHANES 2003–2008 by age, sex, and race/ethnicity documented the low prevalence of ideal, intermediate, and poor levels of each of the 7 metrics. Less than 1% of all adults showed ideal levels for all 7 metrics mostly because of the very low prevalence of an ideal healthy diet score; of concern, even lower levels of ideal health were noted for the minority populations studied. Similarly, in the ARIC (Atherosclerosis Risk in Communities) study, within a community-based sample of 12,744 adults free of cardiovascular disease, the prevalence of ideal, intermediate, and poor cardiovascular health was 0.1%, 17.4%, and 82.5%, respectively. Equally worrisome findings also were reported in the community-based Heart SCORE (Heart Strategies Concentrating on Risk Evaluation). In addition to underscoring the dismal overall prevalence of cardiovascular health, the Heart SCORE study highlighted major disparities, as black race was an important determinant of poor cardiovascular health.

Taken collectively, these reports emphasized the formidable magnitude of the task at hand to achieve the AHA goals in the next decade. So, how and where do we get started?

Changing Health Behaviors: Primordial Prevention and Public Policy

Four of the 7 metrics are health behaviors, and to improve cardiovascular health, behaviors must be modified, which calls for robust and novel individual and societal strategies. Individual responsibility is essential, and tools such as those offered by the AHA (http://mylifecheck.heart.org) are important to enabling individuals to evaluate their health and determine their personal strategies. Access to information and health literacy will have an impact on the effectiveness of these tools that call for increasing personal responsibility in health and wellness. Societal factors play a key role as an enabler or barrier to exerting personal responsibility such that health is created by both individuals and communities. As care providers and public health professionals, we cannot in good conscience expect that our patients and all individuals will make personal choices that go against powerful societal trends, and we must recognize that the individual and society cannot be dissociated. Examples of such interactions include...
smoke-free workplaces, laws, and smoking behavior; provision of caloric information and purchasing behavior; urban sprawl and increased sedentariness; and elimination of transfats from restaurants. A particularly concerning example of individual health and societal interactions is the dismal state of cardiovascular health among US children as assessed by NHANES, in part related to the meals served in their schools that do not meet national dietary recommendations for good health. The juxtaposition of these 2 measurable health observations identifies a national tragedy that will fuel the epidemic of obesity and diabetes unless major changes occur urgently. Robust public policy agendas must then be designed and swiftly implemented.

**From Behaviors to Health Factors: Primary Prevention, Chronic Disease Management, and Outcomes**

What about the vast number of individuals in poor cardiovascular health: How should they be approached? A large number of persons have uncontrolled or poorly controlled blood pressure, lipid profile, and blood glucose. Among such individuals, pharmacological interventions often are the most efficient way to approach the prevention of overt cardiovascular disease. These interventions are aimed at the primary prevention of cardiovascular disease and often are delivered through medical providers within the context of chronic disease management. In addition, the challenges may be even greater than for implementing population-level changes for primordial prevention. For example, guidelines developed by professional societies codify the treatment of many cardiovascular disease risk factors and have shaped the performance measures used by payers and accreditation agencies. However, the guidelines themselves rely on evidence of variable strength and often are generated by expert consensus opinion. Even when based on randomized clinical trials, which provide the most robust evidence, the strongest guideline evidence may not be applicable to the large proportion of elderly patients seen in everyday practice because elderly patients continue to be excluded from trials. This is quite problematic for cardiovascular disease risk factors as the population ages. Further, practice guidelines often focus on single risk factors (eg, hyperlipidemia) or diseases (eg, myocardial infarction), and such approaches are limited in the setting of multiple conditions whereby the benefit-to-harm ratio of treatment recommendations may be altered by the coexistence of several diseases and ensuing polypharmacy. Indeed, guidelines do not typically address how to treat an elderly individual with hypertension and hyperlipidemia who also has osteoporosis and chronic kidney disease, yet we know that such patients embody the daily experience of practicing physicians. Fortunately, guideline updates are under development by the National Heart, Lung, and Blood Institute (www.nhlbi.nih.gov/guidelines) to address cardiovascular risk reduction using many of the Simple 7 factors and behaviors. These guidelines will be based on highly rigorous levels of evidence and will integrate all of the individual risk factors and guidelines to generate recommendations to implement in clinical practice.

**Measuring Progress: Prevention, Outcomes, and Epidemiology**

Discussing the practical deployment of the AHA 2020 goals underscores the urgent need for new models of care designed to optimize the effectiveness of care by providing patient-centric, coordinated, holistic care to communities and populations. The patient-centered medical home, for example, is a new care model designed to optimize care coordination. It was conceptualized around 4 cornerstones—primary care, patient-centered care, new-model practice, and payment reform—and if successful, will likely be a key vehicle to optimize community and population health and, thus, will become de facto an important enabler to execute population-wide prevention goals.

How will we determine the effectiveness of these new models of care? High-quality observational epidemiology research and outcomes research will be essential to determine whether our practice guidelines and care models accomplish their ultimate goal of improving health and healthcare delivery and to inform policies. Specifically, large-scale epidemiology cohorts and population studies offer unparalleled opportunities to garner robust outcomes data of optimal clinical relevance and with direct application to clinical practice. *Circulation: Cardiovascular Quality and Outcomes* enthusiastically welcomes the submission of articles that link epidemiology studies to clinical practice and population sciences to healthcare delivery. Such articles published in the journal over the past 3 years are too numerous to all be quoted. Selected examples include the report of the protective, but insufficient use of aspirin among postmenopausal women with stable cardiovascular disease in the Women’s Health Initiative Observational Study; the study on the cost of heart failure in the community; and the publication of the recent trends in mortality of myocardial infarction after hospital discharge, documenting a shift in long-term outcomes after myocardial infarction, all data of high relevance to clinical practice. Additional reports of clinically important outcomes in population studies include the documentation that adverse outcomes after pulmonary embolism in the community were higher than those reported in clinical studies and that measuring coronary artery calcium scores leads to changes in cardiovascular risk management in the population. The opportunity has never been greater for these types of studies to continue, expanding greatly on the same theme of the critical importance to clinical practice of outcomes studies conducted within well-characterized epidemiology cohorts.

In the first issue *Circulation: Cardiovascular Quality and Outcomes*, we stated that the journal “aspires to play a leading role in strengthening the global community dedicated to eliminating the epidemic of cardiovascular disease and stroke.” Then and today, the journal is unconditionally committed to fulfill that goal and to be a home for epidemiology studies that inform practice and policy.

**Sources of Funding**

Dr Roger is supported by grants from the National Institutes of Health (R01 HL59205 and R01 HL72435). Dr O’Donnell is supported by the Division of Intramural Research, National Heart, Lung, and Blood Institute.
Disclosures

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References


Key Words: prevention ■ delivery of health care ■ outcomes assessment
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Circ Cardiovasc Qual Outcomes. 2012;5:6-8
doi: 10.1161/CIRCOUTCOMES.111.964734
Circulation: Cardiovascular Quality and Outcomes is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2012 American Heart Association, Inc. All rights reserved.
Print ISSN: 1941-7705. Online ISSN: 1941-7713

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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