

# An Opportunity Map for Societal Investment in Health

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**M**EDICAL CARE REFORM IS A CRITICAL PIECE IN achieving a healthy society but needs to be complemented by changes in community programs and policies. While the body of evidence-based clinical and population interventions is increasing, the challenge is to identify and implement those interventions that provide the greatest health benefits and value. A critical first step is to construct a sound, common framework for identifying and organizing the universe of evidence-based interventions. That framework can then be used to assess society's investments in health. In this Commentary, we describe how 3 concepts—the ecologic model, the life course perspective, and evidence-based intervention strategies—contribute to a common goal and how they need to be viewed as integrated and complementary. A brief synopsis of each concept is provided, followed by a description of its fit within a broader conceptual framework.

## Ecologic Model

The ecologic model recognizes health as the product of a person's underlying biology; his or her family and community and social, cultural, economic, and physical environments; and the policy environment in which that persons lives, learns, works, and plays.<sup>1,2</sup> This model expands White's clinically oriented ecologic model<sup>3</sup> to include the broader social and environmental determinants of public health.

## Life Course

Health is the product of a person's behaviors and the exposures superimposed on his or her underlying biology. The environment and events in utero and early childhood affect lifelong health.<sup>4,5</sup> Early exposures and stresses not only affect individuals but their progeny as well.

## Evidence-Based Interventions

Evidence-based interventions are those with a sufficient amount of scientific evidence documenting their effectiveness (benefits exceed harms) for all or an identifiable part of the population. Clinical interventions are the predictive, preventive, diagnostic, therapeutic, or palliative interactions between clinicians and patients. Clinical preventive services represent primary

and secondary prevention interventions.<sup>6</sup> Most of clinical medicine is devoted to tertiary prevention (delay or prevention of disease complications), patient support, and palliation. Clinical care system interventions are population-based measures implemented within the clinical care system and concern how clinical care, rather than specific services, is delivered. Examples include incentives, quality improvement systems, clinician information prompts, and clinical decision support services. In contrast, population-based interventions are delivered to entire groups of individuals outside the health care system. These interventions may target social structures in communities, policies and laws, or the physical environment. Their effects may be direct (eg, reducing air pollution decreases asthma complications) or indirect (eg, agricultural subsidies lead to overconsumption of subsidized food products).

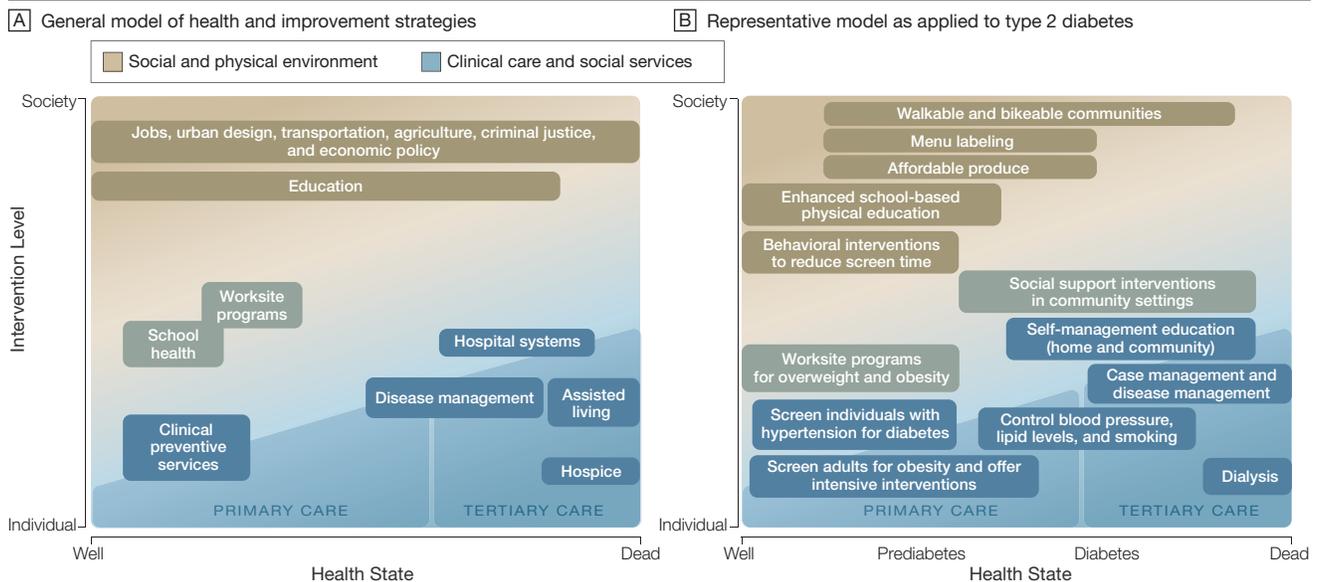
## Toward a Unifying Concept

In developing a unifying conceptual framework, 2 axes can be envisioned. The horizontal axis traces the life course, from wellness through illness and ultimately death (FIGURE, A). The wellness-to-death continuum is used to emphasize possible interventions over the spectrum of health and well-being. The vertical axis arrays intervention strategies from the society to the individual level. The top half incorporates factors shaping the physical and social environments, eg, education, social welfare programs, and transportation systems, whereas the bottom half includes interventions at the individual, family, and community levels or those that affect working and living conditions.

A wide range of potential interventions can be situated on these axes. Panel A represents opportunities for disease prevention and health promotion. In general, strategies closer to the upper left corner take longer to achieve measurable health benefits, although the population-wide health benefits can be very large. Interventions closer to the lower right corner (tertiary care) generally have more immediate effects, because they address established illness or injury. Despite large effect sizes for some individuals, the total population benefit will be small. Primary clinical care interventions delivered to healthy patients cluster at the lower left. Clinical care system interven-

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**Figure.** The Spectrum of Health and Strategies to Improve It

tions extend across the middle of the figure, because they have sustainable effects on large groups of patients.

An example of evidence-based interventions for type 2 diabetes is shown in panel B. At the top are interventions tied to overall health, such as education and income, as well as interventions to control overweight and obesity, the modifiable antecedent to type 2 diabetes. Interventions related to urban design, school physical education, diminishing screen time, and workplace programs all stimulate physical activity. Interventions such as menu labeling and increasing the availability of affordable, fresh produce stimulate healthy diets. The bottom of panel B depicts clinically oriented interventions, such as screening patients with hypertension for diabetes and recommending intensive lifestyle programs. Interventions oriented toward improving management of diabetes include clinical management of diabetes and its complications and also community interventions (eg, social supports). A constellation of tertiary interventions aims to retain function and quality of life, including dialysis and transplantation, management of advanced coronary artery disease, and hospice care.

The Figure prompts several observations. First, separating clinical and clinical care system interventions from population-based interventions is a false dichotomy. Interventions are all part of a continuum of prevention and clinical management across the life course. Population-based interventions as basic as ensuring health literacy and adequate income affect the risk factors for disease and the ability to manage disease successfully. Second, inadequate attention to effective population-based policies and programs in the upper left quadrant of each panel in the Figure requires more investment in costly clinical care in the lower right quadrant. This de facto choice made as a nation takes an enor-

mous toll in ill health and cost—\$174 billion in 2007 for diabetes alone.<sup>7</sup>

Situating the range of potential health interventions from the individual to the societal level and from wellness to terminal illness provides an opportunity map for societal investment. When private and individual interests and needs predominate, there is a slide toward the lower right quadrant, where costs of medical care are high and health status is poorest. If the goal is to keep individuals healthy and maximize their productivity and the nation's global competitiveness, increasing attention to interventions in the upper left quadrant most likely may yield greater health and economic efficiency.

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