

## Transforming Health Care Through Prospective Medicine: The First Step

*Editor's Note: This is a commentary on Snyderman R, Yoediono Z. Perspective: Prospective health care and the role of academic medicine: Lead, follow or get out of the way. Acad Med. 2008;83:707–714. [in this issue].*

The case is well made that the polyplot of often-competing approaches to disease care in the United States is not equitable, does not value safety or outcomes, and results in costs that outstrip benefits (mostly disease care, not health care). Staying this course will mean excluding more people from access, limiting the range of services, or stifling discoveries that hold real potential for keeping U.S. citizens healthy. Changing the course of medicine's social and economic juggernaut is a daunting challenge. The complexity of that challenge is reflected in the myriad commercial, nonprofit, and academic efforts to leverage new and emerging science, the social and political atmosphere, and current economic realities toward a transformation, one just beginning to take shape.

If we reward scientific curiosity and biologic discovery, the pipeline of new knowledge and technology will continue to flood medicine with potential. But potential alone will not drive application. The initial transformation of the system, articulated most clearly by Snyderman and Williams,<sup>1</sup> must be toward managing disease risk and providing personalized care for chronic and acute disease. We have the tools and the evidence that it works.<sup>1,2</sup> Appropriate management of chronic diseases decreases complications and hospitalizations, improves health, and enhances quality of life. But, hospitalizations are what get paid for. The system rewards disease care, not health care.

So, the “next transformation” must be a migration of energy, imagination, and resources from a focus on disease toward modifying the individual risk of developing specific diseases and implementing early, persistent interventions; that is, toward keeping people as healthy as possible for as long as possible. Snyderman and associates have called this transformation “prospective medicine,” a term that includes other alliterative descriptors: personalized, predictive, preventive, participatory.

Accomplishing this next transformation is a nondisciplinary undertaking. The challenge needs formulating unfettered by traditional disciplinary labels and free of territorial imperatives. The transformation cannot be realized exclusively by efforts made within the boundaries of the traditional health sciences. Social sciences, economics, ethics, law, political science, and business are just some of the fields that must be involved. Academic health centers are in a special position to lead this transformation since they are repositories of much of the needed expertise.<sup>2</sup>

But the “next transformation” still heeds the traditional paradigm—risk of developing disease, early detection of disease.<sup>1</sup> The “next *next* transformation” will change the paradigm to focus on health—positively defined and measured as something other than the “absence of disease”; conceived as an integrated function of biology, environment, and behavior; and measured as a product of physical, mental, social, and spiritual variables.

Understanding health in this broader context, as something other than the default condition, will identify new opportunities for novel health-directed interventions. Two recent examples illustrate this approach. Researchers at Southwestern Medical School defined a genetic basis for decreased susceptibility to atherosclerosis, they are developing interventions aimed at the mechanism of this protection.<sup>3</sup> Investigators at Emory University identified a genetic basis for protection from developing posttraumatic stress disorder (PTSD) in individuals exposed to the traumas that cause PTSD in people with different genetic makeup.<sup>4</sup> Much could be learned from people who are “at risk” for disease by epidemiologically determined factors but who remain healthy—the equivalent of Sherlock Holmes’ dog that didn’t bark (from A. Conan Doyle’s story, “Silver Blaze”).

This “next *next* transformation” will identify “healthy” biologic processes (i.e., homeostatic) and provide tools for measuring early deviations from health (“unhealth”) that are not necessarily disease specific but that predict dire outcomes and warrant health-focused

interventions. For example, many chronic diseases (diabetes, atherosclerosis, autoimmune diseases) share inflammation as a common mechanism. Characterizing an individual inflammatory phenotype may be a potent health predictor. And inflammatory responses to stress can be modified by behavior. Such health-focused treatment is the logical step beyond the “next transformation” that Snyderman and Yoediono<sup>2</sup> advocate.

There is a special opportunity to transform health care in the United States, drawn by the carrot of scientific and social potential and driven by the stick of the unsustainable cost and ineffectiveness of the current system. The knowledge and experience to accomplish the “next transformation” exist; the challenge is to transcend vested interests and integrate the essential expertise. The result needs to be a flexible care system that can adapt to rapidly evolving possibilities to enhance both efficiency and effectiveness. In parallel with this “next transformation,” there is opportunity and space for defining a health-focused paradigm that spans biomedicine and encompasses the broader human experience—the “next *next* transformation” in health care.

### Michael M.E. Johns, MD, and Kenneth L. Brigham, MD

**Dr. Johns** is chancellor, Emory University, and executive vice president for health affairs emeritus, Emory University, Atlanta, Georgia; e-mail: (mmejohns@emory.edu).

**Dr. Brigham** is professor of medicine and associate vice president, Predictive Health, Woodruff Health Sciences Center, Emory University, Atlanta, Georgia; e-mail: (kbrigha@emory.edu).

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