

SPECIAL ARTICLE

SHATTUCK LECTURE

A Successful and Sustainable Health System — How to Get There from Here

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A new type of thinking is essential if mankind is to survive and move toward higher levels.

Albert Einstein¹

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AMERICA'S HEALTH SYSTEM IS NEITHER AS SUCCESSFUL AS IT SHOULD BE nor as sustainable as it must be. The Patient Protection and Affordable Care Act of 2010 (ACA) introduces the prospects for major reforms in payment for and organization of care, in prevention and population health, and in approaches to continuous improvement. Yet it remains under legal assault and a cloud of controversy. Even if it is fully implemented, the ACA will not represent a complete solution to the core dilemma of affordability and performance. The country's political appetite for further reform may be sated, but unless we attend to the major sources of waste and impediments to performance, the United States will remain vulnerable to an excessively costly health system that delivers incommensurate health benefit.

I purposely refer to a "health system" rather than a "health care system" because the solutions need to focus on the ultimate outcome of interest — that is, the population's health and each individual's health — and not only on the formal system of care designed primarily to treat illness.

A successful health system has three attributes: healthy people, meaning a population that attains the highest level of health possible; superior care, meaning care that is effective, safe, timely, patient-centered, equitable, and efficient²; and fairness, meaning that treatment is applied without discrimination or disparities to all individuals and families, regardless of age, group identity, or place, and that the system is fair to the health professionals, institutions, and businesses supporting and delivering care.

A sustainable health system also has three key attributes: affordability, for patients and families, employers, and the government (recognizing that employers and the government ultimately rely on individuals as consumers, employees, and taxpayers for their resources); acceptability to key constituents, including patients and health professionals; and adaptability, because health and health care needs are not static (i.e., a health system must respond adaptively to new diseases, changing demographics, scientific discoveries, and dynamic technologies in order to remain viable).

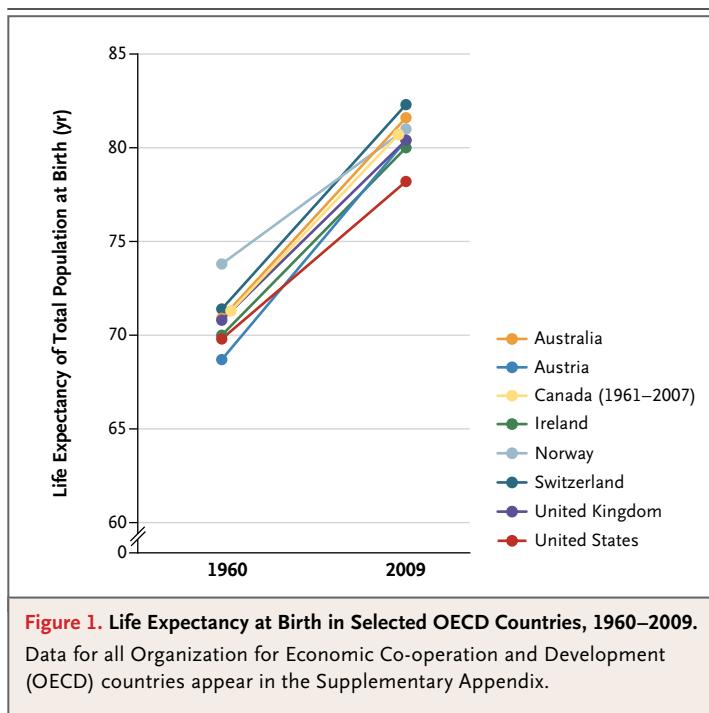
THE PROBLEM

In 1960, life expectancy at birth in the United States was 69.8 years — putting us in the middle of the pack of countries in the Organisation for Economic Co-operation and Development (OECD), 12 of which had a longer life expectancy and 13 of which had the same life expectancy or a shorter one (Fig. 1, and the Supplementary Ap-

pendix, available with the full text of this article at NEJM.org).³ By 2009, U.S. life expectancy had increased by more than 8 years, to 78.2 — an increase of approximately 2 months per year over five decades. Yet this progress left us in the lowest quartile of the OECD countries: by 2009, 26 countries had longer life expectancies and 7 had shorter ones. Some European countries (including Austria, France, Germany, Switzerland, and Finland) had boosted life expectancy by 10 years or more. In Australia, life expectancy was slightly more than 1 year longer than in the United States in 1960 but was 3.4 years longer by 2009. Mexico and Turkey, though still trailing the United States, had managed to achieve increases in life expectancy of 17.8 years and 25.5 years, respectively. In 9 of the 13 countries that were tied with or behind the United States in 1960, life expectancy surpassed ours by 2009; among these countries, Japan and Korea had lengthened their respective life expectancies by 15.2 and 27.9 years.³

Life expectancy is not the only measure of health system performance according to which the United States falls short. The Commonwealth Fund periodically conducts a systematic comparison of health system performance in Australia, Canada, Germany, the Netherlands, New Zealand, Britain, and the United States. When assessed on the basis of various aspects of performance, including quality, access, efficiency, and equity, the United States came in last overall in 2010; in no category did we excel.⁴ Our overall poor showing masks substantial variation among the 50 states. For example, rates of hospital readmission within 30 days after discharge among Medicare patients in the period from 2006 through 2007 ranged from about 13% to more than 23%. The average costs per Medicare beneficiary varied among states by more than 50%. Not surprisingly, high readmission rates are correlated with high costs per beneficiary.⁵

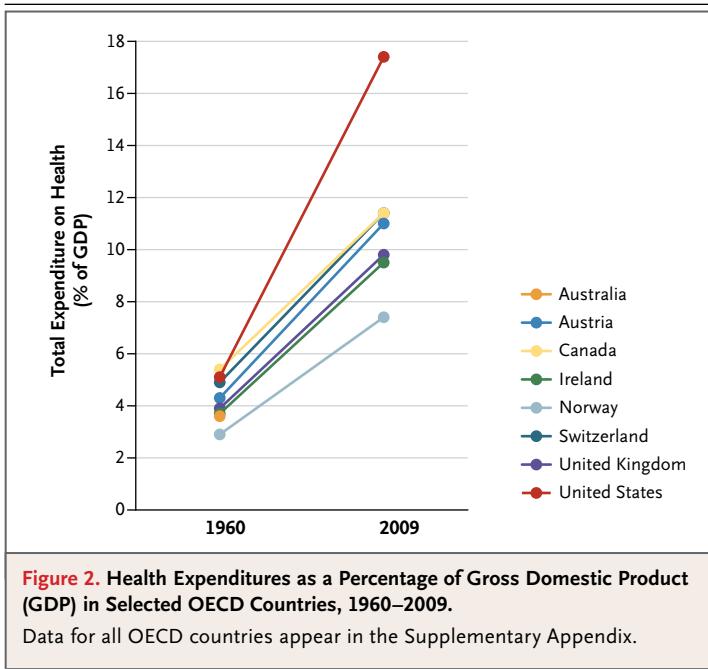
One health system measure on which we far exceed all other countries is health expenditures. Back in 1960, when the United States spent 5.1% of its gross domestic product (GDP) on health, Canada spent 5.4% of its GDP (Fig. 2). By 2009, however, Canada's spending as a fraction of GDP had more than doubled, to 11.4%, while ours had more than tripled, to 17.4%.³ In 1960, the per capita health expenditure, as measured in dollars adjusted for purchasing-power parity (PPP), was higher in Switzerland (\$166) than in the United



States (\$148).³ Today, however, no one rivals the United States in per capita health expenditures (see the Supplementary Appendix); Norway came closest in 2009, at \$5,352 (PPP-adjusted), which was about two thirds the U.S. figure of \$7,960.³ On a more positive note, the pace of growth in U.S. per capita health expenditures declined steadily over the past decade, from a rise of 8.4% between 2001 and 2002 to a rise of 3.1% between 2008 and 2009.⁶

The joint problem of relatively low performance and high cost stands in the way of a successful, sustainable health system. These concerns are intensified by the federal debt crisis, which has exacerbated worries about the capacity of individuals, families, and the nation to afford health care yet also meet other essential needs over time. The federal debt, which surged past \$15 trillion in 2011, now exceeds our entire annual GDP.⁷

Political discourse on deficit reduction must consider the two primary drivers of cost: defense expenditures and entitlement programs. Social Security, Medicare, and Medicaid are the three principal entitlements, and federal expenditures for the two latter programs now exceed those for Social Security.⁸ In 2009, the Office of the Actuary at the Centers for Medicare and Medicaid Services (CMS) projected that by 2030, given current trends,



national health expenditures will exceed 30% of the GDP.⁹ There is no way to contend with entitlements without dealing with Medicare. And there is no way to deal with Medicare without restraining the total cost of care: cost shifting (from government to individuals or employers, or vice versa) will not save money overall, and none of these parties can afford to bear any more of the load. The only morally and politically acceptable way to curtail costs is to take steps to preserve or enhance the performance of the health system, thus getting more value for dollars spent.

The combination of high cost and relatively poor performance reflects inefficiency in the health system. High cost and low quality have many causes in common (see the box on sources of inefficiency). These failings are especially notable with respect to chronically ill patients, who account for a large fraction of health expenses: in 2001, 5% of Medicare beneficiaries accounted for 43% of expenditures, and 25% accounted for 85% of spending.¹⁰ Three fourths of these patients had one or more chronic illnesses, such as heart disease, chronic lung disease, and diabetes; a key driver of health system inefficiency is a lack of coordinated care that could keep such patients out of the hospital. The burden of chronic disease and its resultant cost could be mitigated through a more widespread effort to limit risk factors, including measures to help patients reduce excess body

weight, increase physical activity, quit smoking, control hypertension, and lower cholesterol levels.

Potential savings from increased efficiencies in the health care system are no small matter. An Institute of Medicine (IOM) panel recently estimated annual excess cost from systemic waste at \$765 billion — including \$210 billion in unnecessary services, \$130 billion in inefficiently delivered services, \$190 billion in excess administrative costs, \$105 billion in excessively high prices, \$55 billion in missed opportunities for disease prevention, and \$75 billion in fraud.¹¹ In all, these costs amount to approximately 30% of total health expenditures. Fresh from a stint as CMS administrator, Donald Berwick estimated that problems such as poor quality of care, overtreatment, and administrative waste could account for as much as \$1 trillion annually in costs that do not contribute to improving the health of the population.¹² If these figures seem excessively high, remember that even if annual health costs were reduced by as much as \$850 billion, the United States would remain in the top tier of OECD countries in terms of per capita health expenditures.

THE SOLUTION

In the half century since the debates that led to the enactment of Medicare and Medicaid in the mid-1960s, an ocean of ink has been spilled on the subject of reforming the health system: on the availability of health insurance, access to care, the supply and education of doctors and nurses, the safety and quality of health care, the evaluation of new medical technology, the payment system for doctors and hospitals, shortcomings in regulation of drugs and devices, the fragmented organization of care, the rising cost and diminishing affordability of care, and other dimensions of our remarkably durable health crisis. Sometimes analysts and reformers would stress a particular idea as the key to reform; the numerous examples include a single-payer system, an all-payer system, increased competition, reduced fragmentation, a change in physician payments, technology assessment, information technology (IT), increased oversight, decreased regulation, malpractice reform, consumer choice, patient-centered care, systems to ensure safety and increase quality, lean design principles of production, systems engineering, managed care, educational reform, and a new professionalism.

Sources of Inefficiency in U.S. Health Care

- Payment for wrong outputs (units of service rather than episode of illness, health outcomes, or covered lives)
- Financial incentives that reward inefficiency (complications or readmissions)
- Lack of price information and incentives for patients
- Indifference of providers to induced costs
- Dysfunctional competition rather than performance-based competition
- Lack of personal or professional ethos to care about societal costs of health care
- Failure to take full advantage of professional skills of nurses
- Lack of uniform systems and processes to ensure safe and high-quality care
- Uneven patient flows, resulting in overcrowding, suboptimal care, and waste
- Insufficient involvement of patients in decision making (as in end-of-life care)
- Insufficient attention to prevention, disparities, primary care, health literacy, population health, and long-term results
- Fragmented and uncoordinated delivery, without continuity of care
- Lack of information on resource costs, performance, comparative effectiveness, quality of care, and health outcomes
- Scientific uncertainty about effectiveness and cost, especially of newer tests and treatments
- Cultural predisposition to believe that more care is better
- Administrative complexity of coping with multiple forms, regimens, and requirements of different insurers
- Rewarding of inventors and entrepreneurs for possible performance advantage more than for significant savings in overall system cost
- Regulatory regime that can only retard and not accelerate innovation
- Insufficient reliance on competitive bidding for drugs and devices
- Distortions resulting from fraud, conflict of interest, and a dysfunctional malpractice system

Several previous efforts have promoted integrative strategies, emphasizing the need to accomplish many things simultaneously in order to achieve a successful and sustainable health system. In 2005, for example, the Commonwealth Fund inaugurated an ongoing Commission on a High Performance Health System; its 2007 report identified 15 changes in federal policy related to information, prevention, pricing, and payment that, when combined, were projected to save an estimated \$1.5 trillion over a period of 10 years.¹³ In 2009, with the support of the Robert Wood Johnson Foundation, the Engelberg Center for Health Care Reform of the Brookings Institution issued another comprehensive prescription, describing a dozen key reforms and many specific actions in four main categories: foundational changes in information, evaluation, and human resources; reforms in the provider-payment system to encourage accountability in order to achieve better outcomes and lower cost; improvements in insurance markets so that insurers would compete to add value rather than to enroll lower-risk beneficiaries; and changes that would enable individual patients to make better choices.¹⁴ The IOM Round-

table on Value and Science-Driven Health Care, with support from the Peter G. Peterson Foundation, conducted a series of workshops in 2009 aimed at identifying ways to reduce projected health expenditures by 10% over the next decade without compromising innovation, quality of care, or health outcomes. A 600-page report summarizing these discussions covered policy levers in such areas as evidence development and use; administrative simplification; streamlined insurance regulation; payment that provides incentives for desired results; and consistent, high-quality treatment for patients with complex conditions.¹¹ In addition, the report identifies 10 approaches to reducing care-related costs, administrative costs, and waste that could potentially achieve the desired savings.¹¹ The roundtable has launched a series of Innovation Collaboratives on best practices, evidence communication, clinical effectiveness research, digital learning, and value incentives — each designed to engage key stakeholders and speed the design and adoption of constructive reforms.

The central idea underlying all these efforts is this: to accelerate the pace of change, we must

take different, reinforcing actions simultaneously in a concerted effort to turn a behemoth health care complex into a more streamlined health system that delivers greater value for the money. In other words, we must tackle the problem in its entirety and on all fronts. No matter how comprehensive the proposed solution, however, it will be of no consequence without sufficient incentive to take action, nor will it matter how well incentives are aligned with desired outcomes if core processes of care do not consistently ensure high quality. A process that works well today but does not accommodate new discoveries and superior technology is destined to become outmoded. Improvements in each area are mutually reinforcing.

Over the longer term, IT can play a key role in building a superior health system. The Health Information Technology for Economic and Clinical Health (HITECH) Act was enacted as part of the American Recovery and Reinvestment Act of 2009.¹⁵ The Office of the National Coordinator for Health Information Technology in the Department of Health and Human Services (DHHS) is responsible for overseeing the development and promulgation of standards for a nationwide health information infrastructure, as well as the standards for meaningful use that will permit payment incentives for physician practices that adopt electronic health records. Unheralded in law, but a potentially powerful promoter of the use of health IT, is the first-ever appointment of a chief technology officer at the DHHS. The Health Data Initiative launched by that executive in association with the IOM is making available to technology companies and designers of smartphone applications a torrent of government-held, health-related data.¹⁶ Initiatives by private insurers, such as the recently announced Health Care Cost Institute, promise to open deidentified data for research purposes.¹⁷

More widespread adoption of IT in health care settings, emerging standards for interoperability, and the burgeoning availability of data provide a foundation for new functionality in health IT, which is already beginning to show promise as a way of improving the efficiency and effectiveness of care. When this functionality is combined with other advances in such areas as high-speed network connectivity, geospatial positioning capacity, wireless communication, robotics and artificial intelligence, biosensor technology, bioinformatics, and ingenious applications, one can envision an array of interrelated and interconnected uses of health IT (see the box on potential IT uses). As

with human genomics and individualized medical care, we can already see elements of such uses today, but it will take years for them to be fully realized. In the meantime, we will need to make many other changes during the next decade to avoid an unsustainable increase in the cost of health care.

Because the ACA expands insurance coverage, it has an intrinsic tendency to increase overall health costs in the near term, even as it helps to fulfill the fundamental goal of universal access to care. Assuming that the law — or at least the provisions other than mandatory purchase of insurance — survives scrutiny by the Supreme Court, it does lay a foundation for some potential efficiencies and other needed improvements through several salient provisions.

One such provision is that state-based insurance exchanges will have the potential to introduce and oversee clearer consumer information and more appropriate competition among insurers. In accordance with recently announced standards, states will have some latitude in determining the essential health benefits package for insurance policies.¹⁸

In addition, accountable care organizations (ACOs), as defined in the law, will provide an impetus to integrate professionals and institutions, with incentives to coordinate the care of Medicare patients more efficiently. ACOs may be particularly useful in managing the care of patients with chronic disease who tend to require high-cost care. The final regulations open the way to wider participation and facilitate the start-up phase.¹⁹

Another ACA provision establishes the Patient-Centered Outcomes Research Institute (PCORI), which over time will provide a much sounder evidence base for doctors and patients to use in comparing the effectiveness of clinical strategies. After a start-up period that runs through 2012, the PCORI Trust Fund, supported by assessments on public and private insurance payments, should generate approximately \$650 million annually for such research.²⁰

The Center for Medicare and Medicaid Innovation has a mandate in the law to support innovation with the aims of improving health and health care and saving money. This ACA provision completes a reformulation of the CMS — from its origins as part of the Social Security Administration responsible mainly for issuing payments on time to a prominent force for health intended to obtain value from health care payments.

The DHHS announced the Partnership for Patients in April 2011. Using \$1 billion authorized in the ACA and building on existing programs, this partnership between the public sector and the private sector aims to reduce rates of hospital-acquired infection and avert complications when patients transition between care settings. Accomplishing these goals would save lives, shorten hospital stays, reduce readmissions, and save billions of dollars.

Finally, newly mandated insurance coverage for preventive services prohibits the charging of co-payments and thus may encourage wider delivery of clinical measures for preventing disease. A new public health fund will provide \$15 billion over 10 years to support state and community efforts to prevent illness and promote health.

In each instance, one can readily imagine ways to build on these provisions and extend these new capacities. State-based exchanges in themselves will not optimize national markets for insurance, simplify and harmonize administrative requirements, or eliminate price discrimination in provider payments. ACOs will not achieve their full potential if they only combine existing providers without adopting new delivery capacities and payment strategies to meet patient needs more effectively and efficiently. The PCORI will be even more valuable if it is permitted to support research that measures resource costs as well as health outcomes. The CMS Innovation Center will be a more potent agent for change if it can find ways to rapidly move successful innovation into the mainstream, as illustrated by the Partnership for Patients. Even though coverage for preventive services is helpful, it falls short of providing incentives for patients to make dietary and behavioral changes that will reduce the risks of disease and injury (although such incentives can be worked into insurance premiums and employer-based incentive programs). And needed improvements in such areas as malpractice law, limits on the tax deductibility of employer-based insurance, and value-based purchasing of drugs and devices remain beyond the purview of even this far-reaching legislation.

Some desirable reforms that are beyond current law, such as the full realization of the capabilities of IT, will take years. Other actions can have more immediate benefits. Any single step toward reform is insufficient, yet a series of steps can bring us closer to the desired destination. Although some changes can be accomplished only through new

Potential Uses of Health IT
<ul style="list-style-type: none"> • Personal medical records • Personalized health reminders and follow-up • Personal health, diet, and activity monitoring and motivation • Pre-degree and continuing medical education • Real-time clinical decision support • Remote professional consultation and care • Monitoring and advising of patients with chronic disease • Quality assurance • Performance assessment of providers and institutions • Comparative outcomes research • Matching of potential participants to clinical trials • Monitoring for safety (or unanticipated benefits) of drugs, devices, diagnostic tests, surgery, and other treatments • Enhanced peer-to-peer and professional–patient support • Comparative health assessments across populations, communities, cities, and states • Public health surveillance for disease outbreaks, environmental risks, and potential bioterrorism

national or state legislation, others can be achieved by every practicing health professional. Many of the changes needed at the level of practice have already been accomplished somewhere in the United States; they just need to be replicated elsewhere.

When setting priorities, I would be guided by the extent to which a reform counters the drivers of inefficiency and fulfills the six attributes of a successful and sustainable health system that I articulated above. The following six steps are within the purview of health professionals and administrators.

First, redouble efforts to enhance the quality and safety of medical care. Stress professional responsibility and support both payers' use of financial inducements for superior results and penalties for avoidable complications. Motivated by the simple desire to provide superior care, many health institutions are showing that they can attain higher quality. For example, between 2001 and 2009, the number of blood infections associated with the introduction of central lines decreased by 58% — from 43,000 to 18,000.²¹ Organizations such as the Institute for Healthcare Improvement are leading the charge, and business groups, government, and private payers can all reinforce this core aim.

Second, meet the health needs of patients who require high-cost care in a more humane way that

will save money over time. The goal is to enable patients to function at as high a level as possible at home so that they do not need to be admitted to the hospital. Although innovative care models have improved health status and reduced costs, Arnold Milstein argues that scaling up these efforts will require greater performance-based incentives for providers, incentives for patients to rely on providers who deliver better results, and technical assistance to spread best practices.²²

Third, elicit and honor patients' preferences, including those regarding late-stage illness. With the political furor over "death panels," it is easy to forget that physicians have the opportunity and obligation to do what patients desire and is in their best interests, including those who face imminent death. Often, consultation with patients and families will allay anxiety and guilt and enable patients to spend precious time with loved ones in more familiar and comfortable surroundings. It will also save money.

Fourth, rely on systems engineering and operations research to smooth the flow of patients through the health care system. Backups in emergency rooms, periodic crowding in hospitals, and the lack of specialty postoperative beds are often symptoms of uneven scheduling of admissions, suboptimal scheduling of operating rooms, and inadequate discharge planning. Hospitals that apply systems engineering to scheduling and resource use can save many millions of dollars individually and billions in the aggregate, reduce overcrowding, and improve staff satisfaction and performance. Organizations such as the Institute for Healthcare Optimization are showing the way.²³

Fifth, learn from peers and from the evidence. Participate willingly in data gathering and performance comparisons regarding pertinent aspects of patient care. The widespread adoption of simple, demonstrably advantageous advances in care,

such as the use of beta-blockers after myocardial infarction, can take too many years.²⁴ Small improvements in practice patterns multiplied by thousands of patients can add up to substantial improvements in patients' experience and economic savings.

Finally, champion a new ethos of medical professionalism that values accountability above autonomy; supports team-based care and interprofessional education; and accepts responsibility for a system to serve all patients, not only one's own patients.

In his famous essay on Tolstoy entitled "The Hedgehog and the Fox," Isaiah Berlin compared a number of historical figures to one or the other animal.²⁵ Foxes know many things, whereas the hedgehog knows one big thing. Tolstoy, concluded Berlin, was a fox masquerading as a hedgehog; although he believed that history demanded a unifying theme, he could not resist his tendency to see many threads rather than one big cord.

To achieve a successful and sustainable health system, we must be able and willing to try many different things. But therein lies a unifying idea: do many things. No single stroke will solve this problem. A successful and sustainable health system will not be achieved by supporting prevention, it will not be achieved by championing competition, it will not be achieved by comparing the effectiveness of different practices, it will not be achieved by striking commercial influence from professional decision making, it will not be achieved by changing the way we pay doctors, and it will not be achieved by just reengineering the system. It requires all these changes and more. We need the cleverness of the fox and the persistence of the hedgehog. We must be willing to adopt many strategies and use them to reach one big goal.

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

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