US Health Care Reform and the Economy of Prevention

George A. Gellert, MD, MPH, MPA

The current dialogue on reform of the US health care system is conspicuous for the absence of an epidemiologically driven framework that focuses on the prevention of disease. Review of epidemiologic and demographic trends in the American population illustrates that if reform fails to advance the point of intervention to earlier in the course of disease, a restructured health care system is unlikely to provide comprehensive services with universal access. Sustainable reform warrants a preventive orientation and greater balance between primary, secondary, and tertiary levels of intervention. This report considers trends that may render economically driven reform rapidly obsolete, as well as cultural obstacles to the development of a prevention ethos in US health care and culture. The economy of prevention is described in the context of leading causes of US morbidity and mortality. Elements of a national disease prevention strategy are considered that include changes in mechanisms of physician/provider reimbursement, the orientation of private-sector biotechnology/health care research, tertiary medical centers and academia, and improved abilities to reduce the concentration of preventable morbidity and mortality in high-risk communities and to use epidemiology in formulating health policy.

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The need for US health care reform is being focused by trends that are becoming very familiar to Americans: 31 to 36 million individuals (one in seven) lack any health insurance,[1-4] millions more are underinsured, and catastrophic illness can destroy the finances of many others. Unrestrained growth in health care expenditures is cause for concern. From 9% of the gross domestic product for health care in 1980, US spending is approaching 13% and may reach 15% by 2000 (costs are doubling every 6 years).[5-7] However, there has been a 40% increase in the number of uninsured American children in the 1980s, a situation aptly termed a *paradox of excess and deprivation*.[8]

Increasing health care expenditures are not necessarily a negative phenomenon per se and may reflect the emergence of new areas of economic expansion as our postindustrial economy evolves to provide human and other services rather than to manufacture goods. Projected growth in the number of new jobs from 1988 to 2000 is dominated by the health care services sector, with the most rapid growth occurring among medical assistants, home health aides, radiologic technologists, and medical secretaries.[9] The federal budget deficit offers reason for concern, since it will be difficult to reduce the deficit without reducing the rate of increase in health care expenditures.

Cost containment has emerged, along with the issue of access, as a major impetus toward US health care reform. Americans perceive that, in view of the coverage and access crisis, the nation is getting less in health as it expends ever-increasing

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resources. The United States spends more on health care per capita than any other industrialized nation.[6] Inevitable comparisons with Canada and western Europe are made, where less health care spending coexists with better major health indicators, such as lower infant mortality rates (the United States ranges around 20th worldwide).[10] There is general agreement that morbidity and mortality figures for the United States are unenviable compared with those of most other industrialized nations.

Numerous plans for health care reform have been proposed.[8,11-23] Some focus on reforms to reduce administrative costs in the private health insurance industry or on the provision of income tax credits for private purchase of insurance. Others seek mandated employer- or government-based insurance, Medicaid and Medicare reform, risk pools, prospective pricing and payment, or managed care to ensure and improve coverage and access to health care. Thus far, however, the various proposals do not address a critical issue underlying health care reform: the need to fundamentally reorient the US health care system toward disease prevention and health promotion. This ill-understood issue penetrates to the core of the need for reform, and without its consideration reform is not likely to be comprehensive and ensure universal access.

Propelling health care costs and the need for reform is the lack of a prevention ethos in the current health care system. A diminishing impact of health care and excess preventable morbidity and mortality among racial minorities can be observed. The US health care system has fixed a point of intervention too late in the course of many major diseases to allow for cost-effective provision of care to all Americans. An aging population with an increasingly heavy burden of chronic disease has driven a costly, technologically centered, and largely therapeutic approach to health care provision. Higher immigration from nations in the developing world has expanded the population lacking access to routine primary medical care, creating additional demand for late treatment of preventable disease and transforming many emergency departments into ambulatory clinics. By reducing these inappropriate and often unnecessary health care expenditures through improved preventive and primary care services, care can be provided to a greater number of individuals without dramatically increasing total health care expenditures.

THE PREVENTION IMPERATIVE

The US health care system is driven by incentives for costly and often excessive treatment of mostly preventable morbidity. The system is financially and philosophically treatment- and procedure-centered and has few mechanisms for recognizing that resources are finite. The distribution of physicians by specialty and of health care facilities is skewed toward high-technology intervention late in the disease process. Only recently have cost containment and managed care become a major public policy issue.

As a nation, the United States must shift the framework for intervention to earlier in the causal chain of the disease process. This should occur in each stage of the development and application of health care knowledge and intervention, including basic science and laboratory research, clinical research and practice, training of health professionals, and the practice of public health. A health care system structured by the objective of achieving therapeutic cure through application of sophisticated technology late in the disease process is not designed or well suited to providing health care for all Americans at a price US society can (or is willing) to afford.

The need for prevention as the centerpiece of health care reform originates not only in a national history and culture of indifference to prevention but in emerging demographic and epidemiologic trends. The aging of the American population is one important trend. By 2000, 13% of the US population will be aged 65 years or older; 21.2% will be aged 65 years by 2030.[24] The incidence and prevalence of chronic diseases, such as cardiovascular disease and cancer, will increase accordingly unless both clinical (individual) and societal (populational) prevention activities become norms in the provision of health care.

American society is also becoming more multiracial. Immigration and high birth rates have made Hispanics and Asians the most rapidly growing population groups in the nation. Hispanics will soon constitute 25% to 35% of the US population and may have the demographic momentum to become an "emergent majority" by 2030.[25] People of color have emerged as the greatest focus of preventable morbidity and mortality in the United States. Augmenting humanistic arguments about distributive justice in resource allocation is economic reality; US health care expenditures will be difficult to control until reasonable access to and equity in preventive health services are achieved across all (including lower) socioeconomic strata. The concentration of preventable endemic and epidemic problems in low-socioeconomic communities of color needs recognition in reform if access and cost issues are to be managed.

Compelling epidemiologic data support prevention as the center of a reformed health care system, most notably a shift in disease patterns associated with industrialization. In comparing the leading causes of death in the United States in 1900 and in 1992, the epidemiologic shift from communicable to chronic diseases and injuries is striking. With the exception of the acquired immunodeficiency syndrome, these diseases are the leading causes of years of potential life lost and a sink for late-disease-stage health care expenditures. The burden of cardiovascular disease and cancer is enormous and these diseases rank in the top five causes of death for most adult age strata. Each year, more than 140 000 Americans die of injuries, and one in three suffers a nonfatal injury.[26] Injuries kill more Americans aged 1 to 34 years than all diseases combined, are the leading cause of death up to the age of 44 years,[27] and cause the loss of more working years of life than all forms of can-

cer and heart disease combined. Injuries are one of the United State's most expensive health problems, costing $133 billion in 1987 alone.[28] Yet research on injury receives less than 2 cents of every federal health research dollar.[28]

Few in public health or medicine would argue for treatment over prevention of injuries or chronic diseases. Societal and public-sector prevention activities, however, are centered in a 19th century pattern of disease. The US health sector must move to a 21st century epidemiologic understanding of how to reconstitute the health care system by reducing the incidence of injuries and chronic diseases and delaying the onset of the latter by additional decades of life. With the system's current cure and rehabilitation focus, the rate of consumption of health resources is not likely to be maintainable if increasing late-stage morbidity is to be adequately managed. The result will be diminishing impact despite increasing national effort. Prevention of disease through earlier intervention offers a response to these problems. An adequate national preventive health care system and strategy, based on the epidemiology and demography of disease, do not exist in the United States. The current crisis invites a strategic integration of prevention activities.

THE ECONOMY OF PREVENTION

In the economy of intervention, the data in support of prevention over treatment are impressive. For example, prenatal care costs $600 over 9 months while medical care for a premature baby costs $2500 per day[29]; the Institute of Medicine[30] estimated that for every additional dollar spent on prenatal care for high-risk women, $3.38 would be saved in the first year of life. A measles vaccine costs $8 while hospitalization for a child with measles averages $5000.[29] School-based sex education per pupil for 1 year costs $135 while public assistance for a teenage parent's unwanted child for 20 years costs $50 000.[29] It is conceivable that spending on prevention programs could sometimes exceed the cost of treatment. In morbidity that is behaviorally preventable, however, this is hardly the case.

For example, it has been estimated that 361 911 deaths are attributable annually to current or former smoking status, 261 988 deaths are due to obesity, and 256 686 deaths result from lack of regular exercise.[31] The elimination of these and six other risk factors could increase US life expectancy at birth by 4 years.[31] Instituting preventive changes of this kind has no advance costs. The impact could be remarkable: 7 million cases of coronary artery disease result in 500 000 deaths per year and 284 000 bypass procedures, each of which costs $30 000 per patient (first-year medical costs only).[32]

Injuries are hardly addressed as a major US health policy issue. The installation of seat belts alone provoked resistance. Many available and effective injury prevention measures await implementation. Most chronic diseases, including an array of cancers and cardiovascular diseases, that are leading killers are preventable through strategies that engage the individual in healthy behavior (such as tobacco avoidance) and modify the home, workplace, and school environments. Elimination of smoking and reduction of alcohol abuse would decrease by more than half the chronic diseases and injuries that annually kill, hospitalize, or disable Americans. An estimated 90% of cancers in the United States are caused by environmental and behavioral factors; readily modifiable factors include diet and tobacco use, which are responsible for 35% and 30% of cancers, respectively.[33] However, US expenditures for treatment and rehabilitation of injuries and chronic diseases and associated economic losses that result from years of potential life lost are great compared with societal investment in prevention.

A disproportionate amount of US health care resources appears to be expended in the last 5 days of life, rather than in the promotion of healthy life-styles. Intensive care makes up 15% of health care expenditures, largely in providing services to individuals who will not survive. Historically, American society has offered little attention and few resources to disease prevention, spending the bulk of health care dollars on well-progressed disease that was preventable or amenable to early detection and remediation. Assessment of these cultural values and assumptions is ignored to our detriment.

CULTURAL OBSTACLES TO PREVENTION

The failure to institute prevention is rooted in American culture with its reliance on technology as the ideal solution to problems. The health care dilemma reflects American social philosophy by emphasizing the maximization of technological opportunity over the elimination of social inequity.[34] In much of American health care the most highly technical strategies, service provision programs, and practitioners, working retroactively after problems have become partially or completely refractory to intervention, are the best funded and most respected by peers and the public alike. Ultraspecialization has emerged as the primary index of professional and institutional value and competence in health care. The concept of prevention is at odds with the American predilection for quick, impressive results and immediate gratification.

This reliance on technology and its appeal in problem resolution are basic characteristics of American culture that should be reoriented as society moves toward an ethos of prevention in health services. Reform should emphasize individual choice and responsibility to avoid disease-causing behaviors. A health care system that creates dependency in the service population and divorces the concept of individual responsibility for health choices from actual health status will be difficult to maintain. There are few rewards, material and otherwise, built into the health care system for proactive prevention of disease within health institutions or professions or among the public.

The emphasis on a culture of technology is self-sustaining because it has shaped the educational system that produces

future health care providers. The longer-range framework required for demonstrating the benefits of prevention does not capture the public's attention or imagination and does not conform to the average legislator's electoral schedule, which reduces the appeal of prevention as a political objective. At a cultural level, Americans will have to learn not to equate a highly technologic, interventionist, and immediately gratifying approach with good health care.

INTEGRATING PREVENTION

The health care system should be reconfigured to directly reward health care providers, institutions, industries, and educational and research centers as well as the public for the prevention of disease and the promotion of health. This does not imply that the United States should discard or compromise the quality of therapeutic care; an essential societal need for state-of-the-art trauma and tertiary health care exists. In an era of limited resources and fiscal retrenchment in government, however, priorities must be set for the point in the disease process on which the health care system strives primarily to impact. Americans and their leaders should decide where the greatest energies and resources will be focused and what balance in the three levels of prevention is desirable and achievable.

Prevention at the primary level (health promotion and specific protective measures), secondary level (early detection and prompt treatment of disease), or tertiary level (limitation of disability and rehabilitation) are each capable of consuming all health care resources. At times it may appear that these are competitive and that excellence at all levels of health care is not possible because of resource constraints. Success achieved in primary prevention, however, will produce sustained cost savings of a magnitude to ensure future excellence in treatment and rehabilitation. Our current health care structure has lost this sense of the complementary nature of the different elements in the system.

By failing to move the point of intervention to earlier in the disease process, the current structure of US health care is diverting resources to highly costly late stages of disease that affect the nation's health with a diminishing return and are unsustainable economically. Until this basic issue is addressed systematically, access will likely remain a major public health and public policy problem. Issues that warrant consideration to ensure that prevention becomes integrated into American health care include the following.

Reimbursement mechanisms should be established for prevention and health promotion activities that occur in the community, physicians' offices, and hospitals and throughout the health care system. Financial reform of the health care system that fails to achieve this objective will be incomplete and palliative.

Medical technology, pharmaceutical, and biotechnology private-sector corporations should be encouraged to undertake research and development of interventions targeted at earlier points in the causal chain of disease. There is nothing inherently unprofitable about prevention, as demonstrated by vaccine product lines. Government incentives and disincentives should be part of a national prevention research and development initiative. If the doubling time of medical knowledge continues to decrease at the present rate, breakthroughs in such areas as gene therapy and immunology could target disease prevention to reduce morbidity and treatment expenditures. Incentives to promote investigation, evaluation, and marketing of preventive biological/biotechnical products can be facilitated by government and business working collaboratively.

A shift is needed from tertiary medical centers to the home, community, and intermediate-level care centers for the provision of less costly therapeutic services insofar as they are medically safe and effective. Current health care is often excessively and unnecessarily hospital centered, diverting critical resources away from available lower-cost therapies and from community-based disease prevention and health promotion. The health care system needs to more systematically and effectively determine when to hospitalize to ensure that even as technology becomes more costly, the highest standard of care can be provided to all when it is necessary.

Because behavioral and life-style factors contribute to the etiology, shape the expression, and influence the outcome of major chronic diseases, much greater national emphasis on the medical, social, and behavioral sciences is needed. Research and practice should focus on successful voluntary avoidance of tobacco, alcohol, dietary, and life-style factors that contribute heavily to major causes of US morbidity and mortality. Behavioral change to reduce risk is a cost-effective and powerful preventive technology, and research in this area should not be secondary to basic science or clinical research.

Professional health care training should be modified to teach prevention skills in areas such as risk counseling, clinical preventive medicine, and community-oriented primary care. Populational health and behavioral-change principles and practices, with epidemiology informing client management, are much needed.

To implement a national prevention research and development initiative, closer operational ties between academia, local community nongovernmental health organizations, and public-sector health organizations are needed. Academic training and research centers should view local community health providers, public and private, as laboratories for innovation, as data-rich resources, and as yardsticks of their own impact on the public. The severity of the health care crisis, overlaid by the fiscal crisis, warrants overcoming the scientific and programmatic isolation of academia from the greater community.

Institution of rigorous training in cross-cultural health service provision will be needed to respond to the new American demography. If health care reform does not keep pace with the profound changes occurring in the racial and ethnic composition of the nation, preventable morbidity and mortality may increase and the access problem may worsen.

Practitioners and policymakers should learn about these changes and their implications for health care provision; they need to be educated about cultural issues that affect disease in their communities. This difficult area can be made into interesting and relevant training and continuing education curricula. Linguistic translation of services or educational messages is inadequate from both the clinical and cost-efficacy perspectives. Literacy levels and cultural concepts of disease origin, treatment, course, and outcome are all critical elements in the provision of affordable preventive and curative health services to expanding minorities.

To accomplish the above, it will be necessary to increase dramatically the understanding and use of epidemiology as a driving force for health policy development. Programmatic health care decisions made without the benefit of epidemiologic data as their basis are obsolete in this expenditure-conscious era. The human immunodeficiency virus pandemic has well illustrated that epidemiology is the only effective, reliable, and universally applicable method for cutting through rhetoric, partisan politics, and discrimination related to complex health issues. Many health practitioners and decision makers are being trained or are operating without appreciating the application of epidemiology as an essential professional activity.

Integrating prevention is not an area shrouded in scientific mystery; the knowledge to prevent many diseases and injuries affecting the American public exists, but the political will to build prevention into the infrastructure and culture of US health care is lacking. As long as this persists, reform of the US health care system is at serious risk of failure. Expenditures will likely remain uncontrolled, and the impact of health investments may diminish as public health challenges multiply in number and complexity.

Reform should shift the focus of intervention toward earlier, less costly, and more equitably distributed preventive services. As reform proceeds, it is important that we look to our many successes as well as our deficiencies, and recall that on a global basis the American health care system has provided a higher level of health to greater numbers than any civilized society in history. Maintaining and extending that accomplishment into the 21st century will not be easy or painless. Only then, however, will our achievement be untarnished.

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Reprint requests to the Arizona Department of Health Services, Division of Disease Prevention, 3008 N Third St, Suite 302, Phoenix, AZ 85012 (Dr Gellert).

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