

INDUSTRY STUDIES

ADVANCED
MANUFACTURING

AGRIBUSINESS

AIRCRAFT

BIOTECHNOLOGY

CONSTRUCTION

EDUCATION

ELECTRONICS

ENERGY

ENVIRONMENT

FINANCIAL SERVICES

HEALTH SERVICES

INFORMATION
SYSTEMS

LAND COMBAT

MUNITIONS

NEWS MEDIA

SERVICES

SHIP BUILDING

STRATEGIC
MATERIALS

SPACE

TRANSPORTATION

HOME

INDUSTRY STUDIES
2000

Health Services

ABSTRACT

The health care industry is the United States' largest enterprise, accounting for more than \$1 trillion in sales of goods and services each year. It is also the nation's largest employer—one of every 9 U.S. employees works in the health care industry.^[1] The industry continues to transform itself as it seeks to find the proper balance among cost, quality, and access to care. Areas of concern in health care that affect U.S. national security include the negative trends that lead to an increased incidence of disease, the growing number of uninsured residents, and consolidation within the industry that may limit the nation's ability to respond to mass casualty situations.

CDR Robert W. Baird, USN

Col Michael R. Carpenter, USAF

LTC Mary Carstensen, USA

Mr. William F. Davnie, Dept. of State

COL Jeffrey L. Doerr, USA

Dr. Michael Falat, Defense Information Systems Agency

LtCol James T. Haas, USAF

BG Abdelsalam Harazneh, Jordanian Army

Mr. Eric L. Hembree, Dept. of State

LTC Patricia E. McQuiston, USA

Mr. Eric R. Mens, Defense Information Systems Agency

Mr. Andrew D. Singer, Dept. of the Navy

COL Richard I. Stark, USA

CAPT Eugene F. Uricoli, USN

Col Darnell M. Waun, USAF

COL Dale R. Brown, USA, faculty

Dr. William A. Knowlton, faculty

PLACES VISITED

Domestic

Allegiance Medical Supply Distribution, Hayward, CA

Center for Health and Community, University of California, San Francisco Medical Center, San Francisco, CA

Center for Health Promotion & Preventive Medicine, Aberdeen Proving Grounds, MD

Chinatown Alternative & Complementary Medicines, San Francisco, CA

George Washington University Medical Center, Washington, DC

Heart-Math, Inc., Boulder Creek, CA

Johns Hopkins University and Medical Center, Baltimore, MD

Kaiser Permanente Hospital System, Oakland, CA

Molecular Design Institute, University of California, San Francisco Medical Center, San Francisco, CA

Siemens Corporation, Cancer Research and Manufacturing Center, Concord, CA

U.S. Naval Ship *Comfort*, Hospital Ship, Pier 11, Baltimore, MD

Walter Reed Army Institute of Research, Forest Glenn, MD

Walter Reed Army Medical Center, Washington, DC

International

British United Provident Association (BUPA), London, United Kingdom

Egyptian Military Medical Headquarters, Cairo, Egypt

International Committee of the Red Cross, Geneva, Switzerland

International Medical Center, Cairo, Egypt

KASR EL AINI Hospital, Cairo, Egypt

King's Fund, London, United Kingdom

Maadi Military Hospital, Cairo, Egypt

United Nations' AIDS (UNAIDS), Geneva, Switzerland

United Nations' High Commissioner for Refugees (UNHCR), Geneva, Switzerland

U.S. Embassy, Cairo, Egypt

U.S. Naval Medical Research Unit (NAMRU), Cairo, Egypt

World Health Organization, Geneva, Switzerland

INTRODUCTION

Health care is the largest industry in the United States, accounting for more than 14 percent of U.S. yearly gross domestic product. Health care spending topped \$1.1 trillion in 1998, up 5.6 percent from the previous year.^[ii] The health care industry is increasingly market-based and price-driven, characterized by cost-cutting pressures, increased consumer power in decision-making, changing physician employment and compensation systems, major restructuring of the hospital sector, and significant divergence of health care arrangements.^[iii]

One medical professional described the health care industry as “an accident of history” that haphazardly evolved over the past 50 years. After World War II, as U.S. industry shifted from wartime manufacturing to the production of consumer goods, the government froze wages and prices to promote stability and prevent massive inflation. Employers could not compete for workers by offering higher wages; they had to find other incentives. In the tax code of the day, health benefits were not considered income, so employers offered increasingly competitive health benefits to

attract and retain workers. This strategy established the pattern of private health insurance that the United States has since followed. In the mid-1960s, Congress enacted the Medicare and Medicaid programs, establishing public health spending patterns. By the early 1980s, U.S. medical costs were spiraling out of control, and economists were predicting that health care would eventually consume the entire gross national product. To avert a potential crisis, the industry turned to managed care.

Over the past 10 years, health maintenance organizations (HMOs) have enrolled more than 60 million U.S. citizens. In this highly competitive market, the number of fee-for-service plans continues to shrink as insurers seek to cut costs, primarily through the use of capitation. In a capitated environment, providers usually receive payment on a per-patient, per-month basis, rather than on a per-service basis. Since the advent of managed care, medical costs have leveled at a rate equal to, or lower than, other consumer prices. Although managed care has successfully contained costs, it has raised concerns in the areas of access, quality, and patient choice.

HEALTH CARE INDUSTRY DEFINED

The U.S. health care industry is a broad and complicated enterprise. Major industry sectors include health services and supplies (\$1.1 trillion gross annual investment as a subset of the gross domestic product), including personal health care, hospital care, professional services (e.g., physician, dentist), and home health care; pharmaceuticals (\$122 billion); program administration (\$94 billion); research (\$20 billion); medical equipment and supplies (\$16 billion); and construction (\$16 billion).^[iv]

The health care industry is adjusting to new government policies, insurance industry financing rules, and shifts to outpatient treatment and home nursing care options. Group practices and HMOs continue to absorb individual physician practices. Hospital closures and clinic consolidations continue to improve operating efficiencies. Hospital occupancy rates, which plummeted because of cost pressures and reduced lengths of stay, finally stabilized in 1998. In the United States today, there remain approximately 6,500 acute care hospitals and 15,245 nursing homes with 1.7 million beds.^[v] There are 275 million U.S. residents who expect to receive health care whenever they need it. Their expectations of receiving the highest quality of care with unconstrained access at the lowest cost set the conditions for a very turbulent industry.

Nearly 1.5 million physicians, dentists, nurses, physician assistants, therapists, pharmacists, and other medical professionals provide health care in approximately 200,000 private medical offices and clinics around the United States. One of the most significant changes within the industry has occurred in the role of providers—that is, the dramatic shift from a historical, paternalistic culture to one of cooperative provider–patient consultation. Providers also include institutions that provide medical education and firms that produce medical equipment and supplies, ranging from linear accelerators to bedpans and bandages. For example, pharmacy benefit managers, firms that negotiate with drug companies for the best value on the bulk purchase of pharmaceuticals, provide pharmacy benefits to about half of the insured U.S. population.^[vi]

Payment for health care in the United States may be public or private. Medicare is the largest public health care payer. In 1998, the program financed nearly \$217 billion for the health care of 38.8 million elderly or disabled beneficiaries.^[vii] For almost 50 percent of those who live in the United States, however, private employers fund health care. Beyond the government-sponsored and employment-based coverage,

approximately 60 million U.S. residents are self-employed or otherwise elect to pay for health insurance on an individual basis. The 44 million U.S. residents who have limited or no medical insurance coverage include many young adults who elect not to purchase coverage, those who do not apply for Medicare/ Medicaid benefits, and a large number of residents, including children, who cannot afford insurance.

CURRENT CONDITIONS

The bulk of the \$1.1 trillion that those in the United States spent on health care in 1998 was on personal health care, including hospital care, physician services, dental care, other professional services, and home health care.^[viii] Aggregate statistics indicate slow, stable industry growth, although some sectors (i.e., pharmaceuticals, research, physician services, and private health insurance) are benefiting more than others are; home health care and construction, for example, experienced negative growth. Twenty percent of the total health care expenditures—about \$230 billion—were for physician services. Private insurance took care of the majority of these payments (50.5 percent); public funds, about 32 percent; and self-paying consumers, 15 percent.^[ix]

In 1998, for the first time in a decade, public spending decreased its share of total health care expenditures.^[x] This was primarily a result of the 1997 Balanced Budget Act, targeted to reduce fraud, waste, and abuse in Medicare and Medicaid programs. The most significant factor in this reduction was Medicare's spending growth of only 2.5 percent, compared to 6 percent growth in 1997.^[xi] Additional balanced budget provisions scheduled over the next few years will further reduce public spending growth through 2002.

In contrast, private spending for health care rose in 1998 because of higher health insurance premiums, which jumped from a 3.5 percent increase in 1997 to an 8.2 percent rise in 1998.^[xii] Insurers raised premium rates to cover higher costs, provide more benefits, and improve profitability. Significantly, U.S. residents spent more to treat chronic and acute diseases and considerably less for health promotion and prevention.

Health Trends

A combination of health issues presents significant challenges for the United States.^[xiii] For example, one study indicated that almost 40 percent of children aged 5–8 exhibit at least one risk factor for heart disease.^[xiv] At least 25 percent of the nation's youth are above desirable weight standards. Furthermore, adult obesity has increased 50 percent over the past two decades.^[xv] Costs associated with obesity (including medical and lost productivity costs) were estimated at \$99 billion in 1995.^[xvi]

Additionally, only 64 percent of adolescents engage in the recommended amount of

daily physical activity; only 15 percent of adults perform the recommended amount; and fully 40 percent of U.S. adults engage in *no* leisure time physical activity. Compounding the effects of lack of exercise and poor nutrition, almost 3,000 adolescents each day start smoking. An estimated 20 percent of U.S. citizens suffer from mental illness during a given year—depression is the most common disorder. The estimated cost of mental illness in the United States in 1996 was \$150 billion.^[xvii]

Social, Political, and Ethical Issues

More than any other industry, health care has far-reaching and long-lasting effects across the United States. Advances in pharmaceuticals, biotechnology, the human genome project, organ transplants and artificial organs, and diagnostic and treatment capabilities provide health care practitioners and their patients with a widening array of higher quality illness treatment, disease prevention, and health promotion possibilities, albeit at a much higher cost.

Other major issues within the industry involve ethical considerations about appropriate health care treatments and strategies. Society has yet to come to grips with some fundamental questions—*How much and what type of health care is affordable, and what is the best way to decide who gets it?* Patients are demanding the resolution of issues of medical malpractice, medical errors, and protection of patient rights and privacy. A recent Institute of Medicine report estimated that medical errors cost approximately \$37.6 billion each year and that about \$17 billion of those costs originate with preventable errors.^[xviii] Adverse drug reactions are responsible for a high number of hospital admissions, and medication errors alone cause an estimated 7,000 deaths each year. ^[xix]

Internet access has enabled U.S. residents to become increasingly knowledgeable about health care issues and to demand more choice. They find traditional health care interventions to be too intrusive, too stressful, and too expensive. Increasingly, they feel alienated from what they perceive as an impersonal health care system—one aimed at treating illness rather than promoting health.

In the future, patients are likely to take more responsibility for their own health and to work more closely with their health care providers. New studies confirm the efficacy of health promotion and alternative medicine therapies. Complementary and alternative medicines (CAM) constitute a growing field for providers, insurers, schools, and manufacturers. In 1997, U.S. residents spent \$27 billion out-of-pocket for alternative health care, visited alternative medicine providers 629 million times (compared to 386 million primary care visits), spent an estimated \$4 billion on herbal supplements, and paid \$6 billion on 114 million visits to massage therapists.^[xx]

Health insurance and access to care, population-based medicine, and efficiencies to be gained through widespread adoption of information technology are three key issues addressed in more detailed essays at the end of this paper.

CHALLENGES

As the 21st century begins, rapid globalization and technological advancement frame the challenges confronting the health care industry. The primary challenge is to find the proper mix of cost, quality, and access.

The population of the United States is increasingly diverse—racially, ethnically, and genetically—and population aging presents additional health challenges. Today, the average life expectancy at birth is about 77 years (up from 47 years at the beginning of the 20th century). Life expectancy for every age group has risen. For example, those who are currently 65 years old can expect to live an average of 18 more years; today's 75-year-olds can expect to live to 86.^[xxi] These are impressive figures, although less so when considered in tandem with the fact that people in at least 18 other developed nations have a life expectancy greater than that of those in the United States.^[xxii] To their credit, U.S. health care providers have made significant advances in diagnosing and treating cancer, reducing the incidence of unintentional injuries, and decreasing death rates for heart disease and stroke, though arguably not as much as might be expected, given current knowledge of the causes.

Most U.S. residents obtain health insurance through an employer or professional association. Within 5–10 years, health care planners predict that most employers will cease to offer health insurance plans. Instead, employers may give workers pay increases and expect the workers to shop for their own health care coverage. The booming economy and low unemployment rates have kept employers from making workers pay more for health insurance this year, even though employers paid an average of 7.5 percent more to insurers. Despite seemingly rosy news for workers, money to pay the rising cost of health insurance eventually must come from somewhere, possibly from lower than expected wage increases. According to the Employee Benefit Research Institute, the percentage of insured people who obtain coverage through employers has already dropped from 69 percent to 65 percent in the past year.^[xxiii]

Residents of the United States spent \$122 billion on drugs and other medical nondurables last year.^[xxiv] Over-the-counter drugs accounted for roughly \$30 billion in spending, while prescription drugs topped \$90 billion (a per capita spending rate of \$335).^[xxv] Spending on prescription drugs accounted for a disproportionately large (20 percent) share of 1998's industry spending growth. Several factors have contributed to this increase in prescription drug spending—a greater number of available prescription drugs, higher costs for preferred brands, explosion of direct-to-consumer advertisements that increase consumer awareness and demand, and greater access to drug coverage with small co-payments available to the medically insured. The Health Care Financing Administration estimates that prescription drug spending will increase 11 percent annually over the next 2 years. Pharmaceutical companies point to the astronomical costs of research as the main reason for high drug prices. Interestingly, drug companies spend one to three times as much on marketing as they do on research.^[xxvi] In 1998, pharmaceutical manufacturers spent \$1.3 billion on direct-to-consumer advertising of new drugs.^[xxvii] Spending on pharmaceutical advertising is expected to be double that amount for 1999.^[xxviii] Even with these expenses, drug companies are among the most profitable firms in the United States.^[xxix]

OUTLOOK

Companies in the U.S. health care industry will remain competitive in the global market, particularly

in the high-technology medical equipment, pharmaceutical, and research sectors. Growing dissatisfaction with the choice and access limits of managed care is forcing the health care industry to change. Many experts believe that the industry will find innovative solutions to managed care through information technology.

Support for National Security

The nation's security depends on the safety and welfare of its people and the men and women of its armed forces. The National Security Strategy has stated, "Healthy populations internationally provide an essential underpinning for economic development, democratization, and political stability."^[xxx] The health care industry supports the Strategy not only by providing health care for U.S. residents, but also by developing and exporting pharmaceuticals and high-technology medical equipment, by supporting health care programs for developing nations, and by sponsoring research and treatment programs for those with acquired immunodeficiency syndrome (AIDS), to name just a few.

There are several health care concerns that may have a negative impact on U.S. national security; among them are the increased incidence of disease, the growing number of uninsured residents, and the consolidation within the industry that may limit the nation's ability to respond to mass casualty situations. Because of major consolidations within the hospital sector, it is essential to reevaluate the surge requirements that support national security requirements. Recent simulations of mass casualty-generating scenarios (i.e., weapons of mass destruction or bioterrorism) revealed a number of problems, including a shortage of emergency medical personnel and hospital beds, inadequate equipment, and legal and ethical issues of patient care.

The Future

Despite much progress over the past decade, medicine stands at the brink of even greater changes. The future shows great promise; for example, personalized medicine and therapies are likely to evolve from today's genetic mapping research. The integration of traditional Western medical practices with complementary and alternative therapies is gaining greater acceptance as researchers document positive outcomes. In the nearer future, access to health services via information technologies will become even more prevalent than it is today. The money that U.S. citizens spend for health care will continue to grow. The Health Care Financing Administration projects that U.S. health care expenditures will reach 16.2 percent of the gross domestic product by 2008.^[xxxi]

The practice of medicine continues to be an attractive career choice. There are approximately 570,000 physicians in the United States, with another 170,000 in medical schools.^[xxxii] For each retiring physician, three new ones enter the system. The trends for physician availability over the next 20 years appear favorable, but as the supply of physicians increases, the demand may decrease. Medical practices are becoming more efficient because of their increased use of "extenders," such as physician assistants and nurse practitioners.

Between 1994 and 2010, the per capita supply of alternative care physicians will increase by 124 percent, compared to 16 percent for conventional practitioners.^[xxxiii] Residents of the United States increasingly use CAM as an adjunct to—not a replacement for—conventional medicine. They want treatments that fit well with the mind-body connection, as well as more personal relationships

with their health care providers. Some predict a future in which the distinctions between traditional Western medicine and CAM blur as herbalists, masseurs, and acupuncturists work in concert with health care professionals to focus on the patient's well-being.

Increased use of outpatient care and decreased use of inpatient care and facilities will continue. The home health care industry will prosper as medical technologies continue to mature. Diagnostic procedures, clinical tests, diagnoses, and consultation will be delivered in new ways, both digitally and virtually. Laboratory work may be self-administered in particular cases. In others, the patient may undergo some procedures at a local drive-in laboratory or radiology center. An on-line conference with the primary health care provider or specialist and a priority mail-delivered prescription may well conclude the treatment. Such modalities may seem impersonal by today's standards, but they could well provide greater benefits to beneficiaries at lower cost and greater convenience. Person-to-person contact will be the most expensive form of health care.

GOVERNMENT GOALS AND ROLE

National health is a critical component of national security. Because a nation's people are its single most important element of national power, a major goal for any government is to ensure that its citizens have access to affordable, high-quality health care. Most significant among the trends that will influence access are changing demographics, rising health care costs, advances in information and biological technologies, rising consumer expectations, increasing concerns about patient rights, and the growing number of uninsured citizens. The Information Age will continue to affect the economics and substance of medicine, expanding the horizons of health, creating greater knowledge, and disseminating experiential bases.

The way in which the nation chooses to address health care issues and ensure adequate access will affect U.S. national security for years to come. Government policy on regulation, litigation, and financing continues to have the single largest impact on health care providers, payers, and the U.S. population's health. Pressure for rational and coordinated government policy grows with an ever-expanding array of health care choices and demands, an increasingly disgruntled population, and an unabated demand for cost containment.

Population and National Will

In 1998, an estimated 44 million U.S. citizens, including 11 million children under the age of 18, were not covered by health insurance. Despite Medicaid coverage, 11 million people, or 32 percent of the poor, had no health insurance.^[xxxiv] Without some form of universal health insurance, the numbers of uninsured will continue to grow, presenting the nation with social, economic, and political challenges. Those with access to the U.S. medical system benefit from world-class medications and treatments, state-of-the-art technology and research, and unsurpassed medical practitioners. The uninsured have limited access to this world. The Health Insurance Portability and Accountability Act of 1996 is a step toward providing uninsured patients with more options. To build on this reform, Congress should enact legislation that addresses fundamental issues such as ensuring access to specialty care, developing criteria for the use of emergency services, promoting unfettered patient-physician communications, and establishing grievance procedure guidelines.

Global Health Issues

Lying at the core of the global development agenda, the health of a nation's people is a basic tenet of its international strength. Globalization results in interdependent relationships with the world community and shared burdens for health care. According to the World Health Organization (WHO), the central point for global health initiatives, the only way that the world can withstand and fight disease effectively and efficiently is through unity of effort. Disease does not recognize national borders, ideological differences, or variations in the stage of economic development among nations. Devastating infectious diseases such as AIDS, malaria, and tuberculosis, particularly in developing nations, have become international security issues. This growing disease burden is likely to aggravate and, in some cases, provoke economic decay, social fragmentation, and political destabilization.

An integrated response to global health issues requires the development of new coalitions to mobilize the resources necessary to meet the health care needs of all people. Governments, industry, and finance now have a vested interest in the health status of the global community, as health levels directly correlate to economic development. The overriding goal is to improve people's lives, reduce the burdens of disease and poverty, and provide access to responsive health care for all. Great progress has occurred globally in this area, with a new emphasis on the critical role of primary care, the continued improvement in living standards, and the generation and application of new knowledge about diseases and their control.

There is still a long way to go before the WHO goal of health for all is realized. More than a billion people entered the 21st century without having benefited from the advances made in the 20th century—their lives remain short and scarred by disease.[\[xxxv\]](#) The WHO has identified four challenges in improving global health: (1) reduce excess mortality and morbidity suffered by the poor; (2) counter potential threats to health resulting from economic crises, unhealthy environments, or risky behavior; (3) develop more effective health care systems; and (4) invest in expanding the knowledge base that made the 20th century revolution in health care possible.[\[xxxvi\]](#)

The U.S. health care system, the most developed in the world, must be prepared to play a major role on the international scene. The investment in the WHO and other agencies focused on improving health will result in a more stable world, promote strong economies and trading partners, and provide a safer environment for U.S. citizens and troops.

ESSAYS ON MAJOR ISSUES

ACCESS TO HEALTH CARE AND THE UNINSURED

Eric L. Hembree

Those with access to the U.S. medical system benefit from its world-class medications and treatments, state-of-the-art technology and research, and unsurpassed medical practitioners. However, a growing number of uninsured U.S. residents have little access to this world-class system. The American College of Physicians summarized the social and economic impact of the uninsured as follows:

Millions of Americans are unable to receive the care they need, which endangers the health and lives of all patients, adds cost to the health care system, and reduces productivity. Furthermore, medical treatment for the uninsured is often more expensive than preventive, acute, and chronic care of the insured, because the uninsured are more likely to receive medical care in the emergency department than in a physician's office. These higher costs are absorbed by providers as free care, passed on to the insured via cost shifting and higher health insurance premiums, or paid by taxpayers through higher taxes to finance public hospitals and public insurance programs.[\[xxxvii\]](#)

Dimensions of the Issue

Social Dimensions. An estimated 44.3 million people in the United States—16 percent of the population—were without health insurance coverage during 1998, an increase of 1 million since 1997. According to the U.S. Census Bureau, the key factors associated with lack of health insurance coverage are age, race and Hispanic origin, educational attainment, work experience, and nativity.[\[xxxviii\]](#)

Among the poor, 50 percent of full-time workers were uninsured. Hispanics were less likely to be insured than non-Hispanic whites, as foreign-born U.S. residents were less likely to be insured than native-born U.S. residents.[\[xxxix\]](#) One study estimated that 11 percent of the 15 million college students in the United States have no health insurance.[\[xl\]](#) Another study showed wide variations between communities in the ability of an uninsured person to obtain medical care, with some communities having twice the access difficulties for the uninsured that other communities have.[\[xli\]](#)

Health insurance is an important factor that often determines health care outcomes and access to the range of health care services. Uninsured persons are at least 50 percent less likely to have a primary care provider, to receive preventive care, or to have made a recent medical visit. Lack of insurance correlates with lower use of medical services, increased risk of premature death, hospital death rates, and child death rates.[\[xlii\]](#)

Economic Dimensions. Despite sustained real growth in the economy, the number of uninsured workers increases each year. A growing segment of the population obtains health insurance from the government (federal, state, and local) either as government employees or as participants in public programs, such as Medicare, Medicaid, and the Children's Health Insurance Program. Private sector employment-based health insurance coverage declined from 69.2 percent of the non-elderly population in 1987 to 64.2 percent in 1997. Structural changes in the economy are significant factors: employers' shift of insurance costs to employees in cost-cutting moves and employees' subsequent decision not to purchase insurance, the decline of labor unions and the disappearance of union-negotiated health benefits, and the shift from industrial and manufacturing jobs to service sector jobs, which are statistically less likely to offer insurance coverage.[\[xlili\]](#) When added to the effects of rising health care costs and structural changes in the economy and the labor force, an economic downturn could rapidly increase the number of uninsured workers.

The growing numbers of uninsured are placing additional pressures on “safety-net” health care providers. Private practice physicians, once willing and able to provide charity care, are less likely to be available either because they have consolidated into a group practice or an HMO, or because they cannot afford to provide free care. As a result, the uninsured most often turn to the closest hospital when they need medical services. In 1994, U.S. hospitals incurred \$16.8 billion in uncompensated care costs, received \$3.3 billion in government subsidies against that cost, and lost \$13.5 billion for uncompensated care against total revenues of \$290 billion. To cover these costs, hospitals cross-subsidize from other revenue sources, including private patients, Medicare, Medicaid, and other government sources.^[xliv] Legislative reductions in federal reimbursements and subsidies, combined with mergers and consolidations within the industry, have decreased the number of traditional “safety-net” hospital providers available to care for this population, however.

National Security Dimension. The sheer numbers (16.3 percent of the population), the demographic distribution (disproportionate representation of the poor, the immigrants, the young), the economic impact, and the long-term consequences make the issue of the uninsured a national security issue. The National Security Strategy depends on healthy military and civilians who can be recruited and trained to implement national defense activities.^[xlv] If the uninsured are less likely to receive preventive care and, thus, experience adverse health outcomes, then 15.4 percent of all children and 30 percent of 18- to 24-year-olds—those most needed to serve in the nation’s defense—are at risk of not being healthy enough to serve in the armed forces. More directly, the uninsured population, who are less likely to have a regular source of health care or use preventive health care services, could be more vulnerable to the spread of infectious disease brought within U.S. borders through increased globalization, international migration, and bioterrorism.

Political Dimensions. Congress purposely omitted national health insurance from the Social Security Act of 1935, but later dealt with the issue through the enactment of Medicare and Medicaid in 1965 and incremental changes since then. Viable options for addressing the issue are circumscribed by the failure of President Clinton’s national health insurance plan. As Henry J. Aaron stated,

It is inconceivable that any president for the foreseeable future will raise the banner of national health insurance. The political catastrophe the Democratic Party experienced in 1994, to which the entire health reform episode contributed significantly, will stand like a political skull-and-cross-bones warning any administration that trying to assure universal coverage carries lethal risks.^[xlvi]

Policy Options

The U.S. political system’s “marketplace of ideas” is full of policy options for fixing the health care system, in general, and the uninsured problem, in particular. These options are grouped around four themes: (1) maintaining the status quo, (2) making incremental market-based reforms, (3) making incremental public sector reforms, and (4) pushing for universal health insurance coverage.

Status Quo. The United States stands alone among “high-income market-oriented democracies” in not mandating universal health coverage. At 14 percent of the gross domestic product, U.S. health care costs range 4–7 percent higher than the percentage in other countries.^[xlvii] On the basis of competitive advantage alone, without considering the other adverse impacts of the uninsured on the economy and public health, status quo is not a viable option.

Incremental Market-Based Reforms. The Health Insurance Portability and Accountability Act of 1996 provided options for individuals to maintain insurance coverage when they changed or lost jobs, became self-employed, or went to work for a company that did not provide health insurance. In

addition, the act provided for a 4-year demonstration of medical savings accounts (MSAs),^[xlviii] offering tax incentives only to self-employed individuals and workers in small firms who purchase their own health care coverage. Many policymakers propose using tax credits to reduce the number of uninsured. The intention behind these proposals is to ensure equity between health benefits provided by an employer and those procured by the individual, but they risk weakening employer-based systems by skimming healthier workers from the health insurance pool and, thus, increasing insurance costs for the remaining workers. Despite many demographic differences, almost all uninsured individuals are low income. By themselves, tax credits would be insufficient to substantially reduce the numbers of uninsured.^[xlix]

Public Sector Reforms. The basis for some incremental public sector reforms is an expansion of Medicaid and state coverage through the Children's Health Insurance Program.^[1] Past Medicaid expansions reduced enrollment in employer-based coverage, however, as Medicaid-eligible workers dropped employer coverage.^[li] Public reform must also wrestle with health coverage variations between states, and the increasingly mobility of the population makes incremental public sector reform difficult. Beyond reforms that cut the administrative costs of public programs or make them operate more efficiently, incremental public sector expansions of current programs would almost invariably have unintended negative consequences for the employer-based system.

Universal Health Insurance Coverage. It is a national disgrace that 44 million U.S. residents lack health insurance coverage, and fixing the system should be a national priority. Every high-income democracy, except the United States, has universal health insurance coverage. Even so, other countries look at the possibility that U.S. practices could improve their systems. Many countries are adopting U.S. market practices within their universal coverage programs to increase cost efficiencies; for example, some are shifting costs to consumers through co-payments and controlling supply and demand for drugs, hospital payments, and nursing care.^[lii] The United States should enact legislation that brings the nation closer to universal coverage by targeting those segments of society that currently lack insurance, beginning with the 11 million children who are currently uninsured.

POPULATION HEALTH

Darnell M. Waun

Throughout history, disease and illness have plagued nations great and small, affecting them socially, economically, politically, and militarily. Therefore, it is critical to assess population health needs and status, enhance the delivery of the spectrum of health care services, manage disease conditions, and evaluate population health status improvement and delivery system effectiveness.

The U.S. health care system is moving from the traditional medical model of reactive, episodic, sickness-based care to a more efficient, proactive, prevention-based system. In this environment, there are great opportunities to improve population health and quality of care while controlling costs. The primary focus of a population health program is on the quantity and quality of life—to live to complete life expectancy while remaining free of preventable disease and injury.

Population-Based Health Care

Programs for population-based health care address the overall health status of a given population, frequently the population enrolled in a particular health plan, and design health care interactions focused on the specific needs of that population. The significance of such programs is that they focus on all members of a population, not just those who access the health care system with an illness-related problem. If properly implemented, population-based health care focuses on both the recipient and the provider of care in a health care system.

The process to optimize the overall health status of a defined population must be instituted in an integrated manner and applied across the continuum of the population—from those who are disease-free to those who manifest clinical disease. It involves needs assessment; proactive delivery of preventive services, including health promotion; condition (disease) management; and outcomes-based measurement.

Needs Assessment. Unfortunately, a population's health status is largely unknown to the agencies responsible for delivering health care. Consequently, the first step in a population-based health care program must be to assess the needs and health of the population. A needs assessment stratifies population segments by disease states (e.g., no disease, subclinical disease, clinical disease) based on characteristics (e.g., age, gender, occupation, educational level, domicile), and needs (e.g., currency of preventive services, risk factors, health care utilization patterns). This information forms the basis for prevention and intervention activities within that population.

Preventive Services. The backbone of population health initiatives lies in preventive services. The most common preventive services are immunizations and screening tests. Proactive delivery of preventive services keeps the population from progressing to a higher, frequently more costly, disease state. Primary preventive services keep well people well. Secondary preventive services are interventions with individuals and groups who have risk factors for premature illness, injury, death, or disability. Tertiary preventive services involve the treatment of individuals and groups with acute and chronic conditions in ways that produce high-quality clinical outcomes at reasonable cost.

The most promising role for prevention in population-based health care may lie in changing the personal health behaviors of individuals before clinical disease develops. Health promotion balances awareness, education, motivation, and interventional activities designed to facilitate behavioral and environmental alterations in lifestyle to optimize health and prevent disease or injury. Health promotion activities support and influence individuals in the management of their health through self-care, health maintenance, and avoidance of disease and injury risks. Health promotion programs encompass lifestyle issues, such as physical fitness, nutrition, and stress management, as well as issues of alcohol and drug abuse prevention, tobacco use prevention and cessation, and communicable and chronic disease prevention.

The significance of health promotion activities on population health is evident in the links between personal health behaviors and some of the leading causes of death in the United States, such as heart disease, cancer, cerebrovascular disease, lung disease, injuries, and human immunodeficiency virus (HIV) infection. Approximately half of all deaths in the United States in 1990 were attributed to behavioral factors, such as tobacco, alcohol, and illicit drug use; diet and activity patterns; motor vehicles; and sexual behavior. Changes in personal health behaviors could have prevented these fatalities.

Condition Management. Often referred to as disease management, condition management is the efficient delivery of evidence-based interventions that, if properly administered, move the patient from higher disease states to lower states. This is a process of managing individuals or groups with a common set of conditions using evidence-based guidelines to improve clinical outcomes in a resource-efficient manner. The process encompasses all health care settings and emphasizes prevention and maintenance, thus benefiting from integrated methods of population health care.

Outcomes-Based Measurement. It is essential to evaluate the ways in which a population's health status changes in order to improve the effectiveness of the health care system. This process validates the appropriateness, quality, and cost parameters of the programs delivered to the population based on measured outcomes. At some point in the future, reimbursement is likely to be tied to outcome-based measures.

Recommendations

Population health programs need a stable enrollment system to accurately capture the size, characteristics, and unique needs of their patient populations. This is a particular challenge for health care systems that have frequent turnover in their enrolled population. Maintaining enrollment may actually be easier in the military health system than in the civilian sector because of the homogeneity of the military population.

An integrated information system is an essential component in the successful optimization of population health initiatives. Efficiency in the use of resources requires moving from interventional services to primary prevention of illness and injury. Most likely, the recognition of the benefits of a system that focuses on quality of life through prevention of serious illness will lead to consumer demand for this change. Although initial costs may indicate that dollars moved from intervention to prevention do not make up a "zero-sum" proposition, the long-term impact on population health status makes it the right thing to do.

Population health programs involve more than interventions by the medical community. They must encompass all health care resources available to a given population to be truly effective. Although the impact of population health on national strategy cannot be quantified as effectively as, perhaps, that of manufacturing, it is every bit as important.

INFORMATION TECHNOLOGY AND KNOWLEDGE MANAGEMENT IN HEALTH CARE

Michael Falat and Robert W. Baird

Never before has the combination of information technology and knowledge management provided such an opportunity for synergistic and competitive advantage as it now does for the health care industry. From the East Coast to the Pacific shores, however, health care lags far behind other industries in adopting these important enablers. The challenge for government officials, chief executive officers, chief information officers, military leadership, and vendors of information technology related to health care is to integrate information technology and knowledge management to provide "the greatest return in improved care outcomes, reduce long-term costs, and increase customer satisfaction."^[iii]

Areas of Focus

The major roles of information technology and knowledge management in the health care industry center around three interrelated areas: (1) health care recipients, (2) health care providers, and (3) the health care infrastructure.

Health Care Recipients. Information technology and knowledge management practices are enabling patients to choose health care providers, make informed decisions with their physicians, and direct their therapies. This transformation of patients—from passive recipients of health care to active participants—is a profound departure from the past.

The Internet has been a primary catalyst for this change. According to recent surveys, 72 percent of on-line consumers use the Internet to obtain health care information, and this market is expected to grow to \$1.7 billion by 2003.^[liv] The Internet allows the rapid flow of health care information, and myriad tools and techniques (e.g., databases, documentation tools, palm pilots, sensors, voice recognition, expert systems) facilitate the proliferation of that information.

Information technology poses new challenges for the health care industry—primarily privacy and security issues. Much of the data needed to identify cost savings and determine best clinical practices could readily come from electronic patient records, but many fear the possible misuse of personal health information. The Computer-Based Patient Record Institute was created to help deal with these issues, but patient record privacy issues will not be easily resolved.

Health Care Providers. Knowledge management gives providers opportunities to practice more integrated health care. It “can be broadly defined as a systemic approach to fostering the creation, sharing and application of knowledge for enhanced organizational performance.”^[lv] Providers can receive better training at less cost through real-time knowledge management systems. The tools necessary to bring this about include relational databases, Web technology, digitized video and voice, and video teleconferencing.^[lvi] Collaborative tools, such as Lotus Notes, can increase exchanges among physicians and enhance graduate medical education. Although telemedicine has existed for more than 40 years, its explosive growth over the Internet may have a significant impact for remote areas where specialists are in short supply.

The Institute of Medicine has determined that using information technology can reduce medical errors, which are the eighth largest killer in the United States. Approximately 98,000 patients die each year as a consequence of treatment errors.^[lvii] The Veterans Administration is testing a system that uses bar-coding technology to control medication delivery to patients. Initial tests have shown a 57 percent reduction in medication errors.^[lviii]

Health Care Infrastructure. Because its survival depends on them, the health care infrastructure has embraced information technology and knowledge management. Requirements for complying with regulations, reducing costs, identifying customer needs, increasing sales, boosting profits, accelerating growth, and gaining market share are just a few reasons that knowledge management is crucial to improving infrastructure efficiency.^[lix]

Officials of the Voluntary Hospitals of America (VHA), a national health care network that makes up 24 percent of the nation’s community hospitals, consider it a “hub of knowledge.” With 1,850 hospitals, VHA receives approximately 2,000 requests for information each month. The VHA’s knowledge management initiatives include a knowledge repository to improve customer service, a directory of “who knows what,” and the formation of communities of practice.

Pharmaceutical manufacturers, using “knowledge maps,” are able to view complex

relationships between research partners in a very graphical way. This allows faster dissemination of information and increased competitive advantage.

Among the myriad functions that health care providers perform is the administration of health care activities in hospitals and other medical institutions. Information technology is an integral component of the administrative function. Decision support systems, a \$330-million niche market, enable hospitals to set internal pricing, negotiate fees with providers, and review the clinical practices of their own physicians.

Information technology also plays a significant role in the physical security of hospitals and patients. In hospital pharmacies, for example, combinations of automatic dispenser systems, access cards, and personal identification numbers not only serve as preventive measures, but also record every entry and exit to the pharmacy area. At Chicago Suburban Hospital Medical Center, an access control system, barriers, and closed circuit television cameras serve as the 21st century's security solution for both patients and staff. To protect infants in newborn areas, hospitals use electronic tags combined with photographs and footprints.^[ix]^[xi]

Lastly, identifying the estimated 80,000 genes that comprise human deoxyribonucleic acid (DNA) has been referred to as the "Manhattan Project of Biology."^[xii] This 15-year, \$3-billion undertaking is considered to be the largest knowledge management project in the world. Bioinformatics, the information technology tools used to access, store, and analyze data, has accelerated progress in the human genome project.

Military Efforts

Since 1996, military medicine has "gone digital" to enhance its medical personnel's ability to perform their missions. Under Operation Primetime III, the U.S. Army's Medical Advanced Technology Management Office installed a telemedicine network at a cost of \$10.5 million to support the 20,000 U.S. troops involved with the Implementation Force in Bosnia.^[xiii]

The military uses the Remote Clinical Consultation System and Medical Diagnostic Imaging Support Program to transmit diagnostic-quality images over satellite links from remote facilities. The integration of laptop computers, software packages, and digital cameras provides high-resolution color images.^[xiv] Medical contingency forces from the United States include telemedicine and teleradiology capabilities in their deployable medical systems.

The Walter Reed Army Institute of Research (WRAIR) is a premier biomedical research facility focusing on the treatment of infectious diseases, combat casualty care, field medical and dental care, and defenses against chemical and biological agents, supplemented with the latest information technology tools. The Department of Defense Global Emerging Infections Surveillance and Response System (DOD-GEIS) is an emerging information technology strategy to track and combat outbreaks of infectious diseases. A partnering effort of federal, private, and international organizations, the DOD-GEIS makes use of information technology and knowledge management.^[xv]

Other new technologies in the medical arsenal include MediTag (a solid-state memory device that can transfer three megabytes of patient information in less than 2 seconds via swiped contact) and the personnel status monitor-, a wearable biomedical device that allows medical personnel to monitor the

health status of front-line troops.

Recommendations

The health care industry is poised to improve health care, administration, policy making, and health outcomes at lower costs as it embraces information technology and knowledge management. A much larger investment in information technology is needed, however, and issues such as privacy and confidentiality must be resolved while access to essential research data is being provided.

To begin this huge undertaking, the U.S. government should mandate the adoption of a single, computerized format for patient medical records, based on the DOD model now being introduced. A single format for patient records would allow efficient comparison of treatment outcomes, ensure better care for an increasingly mobile population, reduce medical errors, and trim administrative costs. As promising as information technology and knowledge management enablers are, the resolution of interoperability and security issues is only half the battle. The other half is gaining senior leadership commitment to making the cultural shift required to benefit fully from the capabilities Information technology and knowledge management can provide to the health care industry.

[i] Richard Bannick, briefing on Health Care Reform, TRICARE Management Activity, February 25, 2000.

[ii] Katharine Levit, Cathy Cowan, Helen Lazenby, Arthur Sensenig, Patricia McDonnell, Jean Stiller, Anne Martin, and the Health Accounts Team, "Health Spending in 1998: Signals of Change," *Health Affairs* 19, no. 1 (January/February 2000): 124–133.

[iii] Daniel Drache and Terry Sullivan, "Health Reform and Market Talk: Rhetoric and Reality," in *Market Limits in Health Reform: Public Success, Private Failure* (London: Routledge, 1999), 1–2.

[iv] All spending figures are from Levit et al., "Health Spending in 1998."

[v] All hospital data are from Standard & Poor's *Industry Survey of Healthcare Facilities* 167, no. 51, sec. 2 (23 December 1999).

[vi] Haiden A. Huskamp, Meredith B. Rosenthal, Richard G. Frank, and Joseph P. Newhouse, "The Medicare Prescription Drug Benefit: How Will the Game Be Played?" *Health Affairs* 19, no. 2 (2000): 10.

[vii] Levit et al., "Health Spending in 1998," 130.

[viii] Levit et al., "Health Spending in 1998," 125.

[ix] Levit et al., "Health Spending in 1998," 129.

[x] Levit et al., "Health Spending in 1998," 124.

[xi] Levit et al., "Health Spending in 1998," 130.

[xii] Levit et al., "Health Spending in 1998," 124.

[xiii] U.S. Department of Health and Human Services, *Healthy People 2010, Conference Edition in two volumes, (Washington, DC: January 2000).*

[xiv] Arlene Ignico, "Children's Sedentary Lifestyle: A Forerunner of Unhealthy Adulthood," *USA Today* 126, no. 2636 (May 1998), 58.

[xv] Last year, the National Institutes of Health (NIH) published new cut-off points for overweight and obesity based on weights at which a person's risk for heart disease sharply increases. Under the old (1980) cut-offs that were not tied to actual health effects, 26 percent of Americans were identified as overweight or obese. Under the new standards, the age rose to 55.

[xvi] U.S. Department of Health and Human Services, *Healthy People 2010*, 25.

[xvii] U.S. Department of Health and Human Services, *Healthy People 2010*, 25.

[xviii] Linda T. Kohn, Janet M. Corrigan, Molla S. Donaldson, eds., *To Err Is Human* (Washington, DC: National Academy Press, 2000).

[xix] Kohn et al., *To Err Is Human*.

[xx] David M. Eisenberg, "Trends in Alternative Medicine Use in the United States, 1990–1997," *Journal of the American Medical Association* 280, no. 18 (11 November 1998): 1569–1575.

[xxi] U.S. Department of Health and Human Services, *Healthy People 2010*, 10–12.

[xxii] Japan, France, Switzerland, Sweden, Spain, Canada, Australia, Italy, Norway, Netherlands, Greece, Finland, Austria, Germany, Belgium, England and Wales, Israel, Singapore all have higher average life expectancies for both male and female populations than does the United States.

[xxiii] "Employee Benefit Finance," *EBRI News*, May 2000.

[xxiv] Levit et al., "Health Spending in 1998."

[xxv] Current U.S. population figures are 275 million.

[xxvi] Joseph Pizzorno, *Total Wellness* (Rocklin, CA: Prima Publishing, 1998), 9.

[xxvii] Levit et al., "Health Spending in 1998," 129.

[xxviii] Michael S. Wilkes, Robert A. Bell, and Richard L. Kravitz, "Direct-to-Consumer

Prescription Drug Advertising: Trends, Impact, and Implications,” *Health Affairs* 19, no. 2 (2000): 110.

[[xxix](#)] Pizzorno, *Total Wellness*, 9.

[[xxx](#)] The White House, *A National Security Strategy for a New Century*, December 1999.

[[xxxix](#)] Health Care Financing Administration, *National Health Expenditures Projections: 1998–2008*, 12 January 2000.

[[xxxixii](#)] Robert Wood Johnson Foundation, Institute for the Future, *Health and Healthcare, The Forecast, the Challenge 2010*, June 2000, <http://rwjf.org>.

[[xxxixiii](#)] Gina Shaw, “Taking an Integrative Approach to Complementary Medicine,” *AAMC Reporter* 8, no. 6 (February 1999).

[[xxxixiv](#)] U.S. Census Bureau, *Health Insurance Coverage: 1998*, October 1999, 1–4, <http://www.census.gov/prod/99pubs/p60-208.pdf>.

[[xxxixv](#)] World Health Organization, *The World Health Report 1999: Making a Difference*, (Geneva, Switzerland, May 1999).

[[xxxixvi](#)] World Health Organization, *The World Health Report*.

[[xxxixvii](#)] American College of Physicians, American Society of Internal Medicine, *No Health Insurance? It’s Enough to Make You Sick—Scientific Research Linking the Lack of Health Coverage to Poor Health*, January 2000.

[[xxxixviii](#)] U.S. Census Bureau, *Health Insurance Coverage*.

[[xxxixix](#)] U.S. Census Bureau, *Health Insurance Coverage* 1–4.

[[xli](#)] “Young Americans Often Unknowingly Lack Adequate Health Insurance,” *Detroit Free Press*, 14 March 2000.

[[xlii](#)] Peter J. Cunningham and Peter Kemper, *The Uninsured Getting Care: Where You Live Matters*, Issue Brief Number 15 (Washington, DC: Center for Studying Health System Change, September 1998).

[[xliii](#)] U.S. Department of Health and Human Services, *Healthy People 2010*, Section 1, Access to Quality Health Care Services, <http://www.health.gov/healthypeople/document/html/volume1/01Access.htm>.

[[xliiii](#)] Steven Findlay and Joel Miller, *Down a Dangerous Path: The Erosion of Health Insurance Coverage in the United States* (Washington, DC: National Coalition on Health Care, May 1999).

[[xliiii](#)] Stuart Altman and Stuart Guterman, “The Hidden U.S. Healthcare Safety Net: Will It Survive,” in *The Future U.S. Healthcare System: Who Will Care for the Poor and Uninsured* (Chicago: Health Administration Press, 1998), 167–168.

- [xliv] The White House, *A National Security*, 12.
- [xlvi] Henry J. Aaron, *Less is More: After the Clinton Plan, Let's Think Small*, (Chicago: Health Administration Press, 1998), 233–234.
- [xlvii] World Health Organization, *The World Health Report 1999: Making a Difference*.
- [xlviii] National Conference of State Legislatures, *NCSL Health Committee Bill Summary: The Health Insurance Portability and Accountability Act of 1996* (Washington, DC: 13 August 1996).
- [xlix] Brian P. Rosman, *Using Tax Credits To Reduce the Number of Uninsured* (Waltham, MA: Council on the Economic Impact of Health System Change, 17 December 1999).
- [l] American Association of Health Plans, *Improving Access to Health Insurance: Now and in the Future* (Washington, DC: February 2000).
- [li] Raymond C. Scheppach, *The State Health Agenda: Austerity, Efficiency, and Monitoring the Emerging Market* (Chicago: Health Administration Press, 1998), 293.
- [lii] David W. Kalisch, Tetsuya Aman, and Libbie A. Buchele, *Social and Health Policies in OECD Countries: A Survey of Current Programs and Recent Developments—Health Care, Labour Market and Social Policy – Occasional Papers No. 33*, Organization for Economic Co-Operation and Development, 8 July 1998.
- [liii] “Managed Care Represents Driver for Information Systems Priorities,” *Health Management Technology* 20, no. 6, 6.
- [liv] Russell C. Coile, Jr., and Brett E. Trusko, “Healthcare 2020: Challenges of the Millennium,” *Health Management Technology* 20, no. 11 (December 1999): 44–48.
- [lv] Brook Manville, Knowledge Management Review, May/June 99.
- [lvi] “Public Web Sites to Morph into Interactive Platform. Knowledge Management,” <http://www.knowledge>.
- [lvii] Mary DeAngelo, “Internet Solution Reduces Medical Errors,” *Health Management Technology* 21, no. 2 (February 2000): 20.
- [lviii] M. Freudenheim, “Corrective Medicine: New Technology Helps Health Care Avoid Mistakes.” *The New York Times*, 3 February 2000, C9.
- [lix] Donald Johnson, *Executives Seek Knowledge Management Champions*. Health Care News Server, 13 May 1998, [Online].
- [lx] Samuel P. Martin, “Protecting the Safe Heavens: Hospitals and Schools Face Threats,” in *Consulting-Specifying Engineer* (Denver: 1998), 8–9.
- [lxi] Karyn Hodgson, “Proactive Planning: Chicago Suburban Hospital Medical Center Plans

for 21st Century Security Management Program,” *Security* 35, no. 6 (1998): 22–23.

[lxii] Charles DeLisi, “The Human Genome Project,” *American Scientist* 76 (1988): 488–493.

[lxiii] Mark Hewish, “Military Medicine Goes Digital,” *International Defense Review: Feature* 1, no. 5 (2000): 1.

[lxiv] Hewish, “Military Medicine,” 2.

[lxv] Division of Preventive Medicine, Walter Reed Army Institute of Research, *Addressing Emerging Infectious Diseases Threats: A Strategic Plan for the Department of Defense* (Washington, DC: 1999).

[Return to the Top](#)

[Return to the ICAF Home Page](#)