International Emerging Issues

The World Economic Forum (WEF) cited some implications concerning science and technology and their impact on health care:

- Advances in science outpace the public’s ability to understand science’s accomplishments and weigh the implications of the advances
- Medicine has pushed out the timing of death and disability through advances
  - Neurotechnology has enabled doctors to implant electrodes in a human brain, enabling a paraplegic to operate a robotic arm surf the internet by using thoughts
  - Deep brain stimulators are being used to treat epilepsy and Parkinson’s
  - Retinal prostheses have successfully restored sight
  - Bioengineers have developed prostheses that substantially restore natural motion and give the wearers the ability to feel pressure and weight (and possibly feel sand from a beach beneath artificial feet)
  - Biomaterials might allow the regrowth of nerves
  - Genomic scientists
    - anticipate uncovering the causes of virtually all common disease within the next five years
    - are developing a cancer genome atlas that identifies which genes control susceptibility to certain cancers
    - have identified the genes that control the risk of adult-onset diabetes, asthma, breast cancer, hypertension, macular degeneration, prostate cancer, and heart disease
  - Genomic medicine enables physicians to individually tailor treatment for patients
    - developing an account of medically significant genes in a person’s DNA costs about $1,000
    - individualized treatment plans and genomic medicine may change the pharmaceutical industry by encouraging the development of boutique companies that specialize in specific medical problems that do not have widespread clinical applicability
    - personalized diagnosis and treatment might pose problems for conventional health care systems that are based on equality of access and treatment with common procedures

U.S. System:

Current Costs and Projections

The Congressional Budget Office (CBO) studied the growth in health care spending and specifically the impact of technological change on that growth. In its January 2008 study, the CBO defined technological advances to include any changes in clinical practice that enhanced the ability of providers to diagnose, treat or prevent health problems. The study concluded that
the single driving factor behind the growth in health care spending is those broadly defined technological advances. While noting that in theory technological innovations should reduce costs, in application they tended to increase spending when broadly and rapidly integrated into the clinical practice arena. Projections indicate that if spending per beneficiary is allowed to grow as projected under current law, future budgetary deficits will rise to a level that seriously jeopardizes long-term economic growth. Excerpts from the study:

- Historical growth in health care spending
  - 1965 – $187 billion (in 2005 dollars)
  - 1985 – $666 billion (in 2005 dollars)
  - 2005 – $1.9 trillion
  - per capita over the last 40 years, 4.9% increase in health care spending, 2.1% increase in GDP
  - U.S. spends more per capita ($6,400) than any other industrialized country, and devotes a larger share of GDP (15.3%) to health care than does any other industrialized nation

- Growth rates in categories of health care spending
  - Hospital care and physician services – majority (not quantified) of growth in spending has been in these two areas
  - Prescription drugs – from 1995 – 2005, grew at 10% per year
  - Administration of insurance – from 1995 – 2005, grew at 7% per year

- Projections in growth of health care spending
  - Assumptions are that current law is not changed (i.e., coverage of elderly programs, no employer mandates, etc.)
  - In 2035, health care spending will be 31% of GDP
  - In 2060, health care spending will be 41% of GDP
  - In 2082, health care spending will be 49% of GDP
  - Federal spending on Medicare and Medicaid
    - Currently 4% of GDP
    - 9% of GDP in 2035
    - 19% of GDP in 2082

- Factors underlying growth in health care spending (based on three economic analyses of historic data) – percentages represent the estimate of the factor’s impact on the increase; the analysis acknowledges that measuring the impact of these factors is challenging
  - Population aging – 2%
  - Changes in third-party payment (e.g. Medicare) – 10-13%
    - Reduce patients’ out-of-pocket costs
    - Consumers’ out-of-pocket costs as a percentage of personal health care costs have fallen from 52% in 1965 to 15% in 2005
  - Personal income growth –
    - Consensus is that rising incomes cause more health care consumption, but no consensus on effect
    - estimates range from 5% to 18-23%
  - Prices in health care sector – 11-22%
  - Administrative costs – 3-13%
  - Defensive medicine – negligible
  - Technology related – 38-65%; examples cited
- Revascularization for coronary artery disease (angiography, angioplasty, pacemaker and bypass procedures)
- Renal replacement therapy for kidney failure
- Bone marrow and stem cell transplantation
- Neonatal intensive care
- Joint replacement
- Diagnostic imaging

**Implications suggested**

- Changes to Medicare and Medicaid, such as more stringent eligibility, greater cost sharing, or changes in provider payments could shift costs from the federal government to private households, but such changes are unlikely to be sustainable unless there also is slower cost growth in the overall health care sector
- Effective long-term control for health care spending must address the way the system incorporates technological advances into practice; suggests that
  - Newer services should be adopted more selectively
  - Diffusion of existing services should be slowed
- Difficulties facing attempts to effectively control costs
  - Current financial incentives (for both providers and patients) encourage or at least facilitate adopting new, expensive services
  - Added clinical benefits of new services are not always weighed against added costs before such services enter common clinical practice
  - Newer services, usually more expensive, are used in cases where older, cheaper alternatives could offer comparable patient outcomes
  - Costly services that are highly effective for some types of patients are provided to other patients even though rigorous demonstration of clinical benefits to the extended group has not been proven

**Performance Scorecard**

The Commonwealth Fund (formed with the mission to promote a high performing health care system that achieves better access, improved quality, and greater efficiency, particularly for society’s most vulnerable) created the first-ever comprehensive means to measure and monitor health care outcomes, quality, access, efficiency, and equity in one report. Presented in September, 2006, the report compared the performance of the U.S. health system across 37 separate indicators to the performance on the same indicators in benchmark countries, to specific targets, or to other benchmarks. The comparison assesses current performance of the system relative to what could be achieved (i.e., the benchmarks), and thus offers targets for improvement. The overall score of the U.S. system is 66 out of 100.

- Highlights from the report on some of the specific indicators measured:
  - Long, healthy and productive lives – overall 69
    - U.S. is 1/3 worse than the best country on preventing deaths with timely and effective care (reaching the benchmark rate would mean 88,000 fewer deaths annually)
Infant mortality is 7.0 deaths per 1,000, compared to 2.7 in top 3 countries (reaching their levels would reduce infant deaths by 17,000 annually)

U.S. overall average adult disability rate is 1/4th worse than rate in best 5 states

- Quality of health care – overall 71
  - Only 49% of adults received preventive and screening tests according to guidelines for their age and sex
  - Only 47% of adults and 59% of children in need of serious mental health needs receive care
  - Gap between national average rates of diabetes and blood pressure control and the rates achieved in the top 10% of health plans translates into 20,000 to 40,000 preventable deaths and $1 - $2 billion in avoidable costs
  - Only half of patients with congestive heart failure receive written discharge instructions regarding care following hospitalization
  - Average score for coordinated care was 70 out of 100
  - More than half (54%) of children and 31% of adults lack access to a primary care physician that is an easily accessible central source of care
  - U.S. rate for medication review (coordination of new with existing medicines) upon discharge from hospital is 67% v. 86% in Germany
  - One-third of patients reported a medical or medication mistake was made in their treatment; it would take a 1/3 reduction in the error rate to reach the levels of the top countries, the UK and Germany
  - Adverse drug effect experiences by patients are up in the last 5 years, but down compared to 10 years ago
  - The national rate of pressure sores would need to be reduced by 1/3 to reach the level achieved in the top 5 states
  - Rapid access to primary care
    - 23% of adults report having to wait 6 or more days for care
    - 61% find it difficult to get after hours care except in emergency rooms (compared to 25% in Germany)

- Access to health care – overall 67
  - In 2003, 35% of adults under 65 (61 million) were underinsured or uninsured at some time during the year
  - 34% of adults under 65 report problems paying medical bills

- Efficiency – overall 51
  - National preventable hospital admissions for patients with diabetes, congestive heart failure, and asthma were twice the level achieved in the top states
  - Hospital 30-day readmission rates for Medicare patients ranged from 14% to 22% across various regions
  - U.S. insurance administration rates were more than 3 times the rates of countries with the most integrated insurance systems
  - Only 17% of U.S. doctors, compared to 80% in the top 3 countries, report using electronic medical record systems
  - 23% of U.S. adults report test and medical records were not available when needed at an appointment, compared to 11% in Germany
- Duplicating testing (repeating tests unnecessarily) rates are 18% in the U.S. compared to 6% in the UK
  - Equity – overall 71
    - Quality of care and access to care for low-income and uninsured would need to improve by 1/3 to close the gap with those with higher incomes and insurance
    - Hispanic risk rates on being uninsured, lacking a regular source of primary care, and not receiving preventive care, would need to decrease 20% to reach White benchmark rates on quality, access and efficiency
    - Mortality, quality, access and efficiency rates for Blacks would need to increase 24% to approach comparable benchmarks for Whites
  - Capacity to innovate – not scored
    - Research to assess effectiveness, develop evidence-based guidelines, or support innovations in care delivery is low
    - Current federal investment in health services research is estimated at $1.5 billion, less than .1% of the total spent on national health care
    - National scorecard can’t score this area because good indicators have not been developed

- Implications
  - Closing the gaps described would save $50 to $100 billion annually and prevent 100,000 to 150,000 deaths
  - Universal coverage and participation are essential
  - Quality and efficiency can be improved together
  - Failure to coordinate care puts patients at risk and raises costs of care
  - Payment systems must be revised to reward more effective and efficient care, with a focus on value
  - Research and investment in data systems are important keys to progress
  - Savings can be generated from more efficient use of expensive resources and more effective care in controlling chronic disease and assuring better access to primary care
  - Setting national goals for improvements based on best achieved rates will be an effective method to motivate change

Geographic Variation in Health Care Spending

In a recent study (February, 2008), the CBO analyzed per capita spending on health care across the United States. It noted wide variations, ranging from $4,000 (Utah) to $6,700 (Massachusetts). In California, Medicare spending per patient at large hospitals during the last two years of life ranged from $20,000 to $90,000. Some researchers estimate that among Medicare beneficiaries who are otherwise similar, those living in high-spending areas receive 60% more in services than those who live in low-spending areas, and that Medicare spending could be cut 29% if spending in high- and medium-spending area regions moved to the levels of
low-spending regions. Not surprisingly, the report suggests that large differences could indicate a system that is not as efficient as it should be. Some findings:

- Nebraska spending per capital in 2004 was approximately $5,600, ranking 35th and significantly higher than Colorado but not within several hundred dollars of Wyoming, South Dakota, Iowa, Kansas, Missouri, and North Dakota.
- The number of physicians per 100,000 varies from approximately 160 per 100,000 residents (in Idaho) to almost 450 per 100,000 residents (in Massachusetts); Nebraska ranks 21st in physicians with approximately 240 per 100,000 residents, slightly fewer than Colorado and Missouri, about the same as North Dakota and Kansas, and slightly more than Iowa and South Dakota; Wyoming has about 200 per 100,000.

Miscellaneous

Pew reports that 51% of adults living with chronic diseases that prevent them from fully participating in work, school or other activities go online, compared to 74% of the population in general that goes online. However, once they are online, 86% of the chronic disease population searches for health topics, compared to 79% of those people with no chronic illnesses. These searches affected treatment decisions, interactions with doctors, ability to cope with the condition and diet and fitness.

In his recent opinion piece on the likelihood of reform in the U.S. health care system, Brown observes that the U.S. system includes not just the private and public sectors, but also a third, the safety net. He describes the safety net as the public and voluntary resource centers, clinics and donated service programs that enable people not served by the first two sectors to receive the care they need. By including the third sector, he argues that the moral urgency to reform the health care system is weakened because, as President Bush said, even Americans who lack coverage can “still get care.” The existence of the safety net creates a disincentive for redistribution of resources from have-nots to have-nots. Brown labels the U.S. system as “disturbingly stable” and suggests that change is not inevitable. He cites the growth over the last 60 years of federal encouragement of scientific medicine. He states, “As [NIH] research grants became central to the missions, budgets and faculty of teaching hospitals, medical schools and universities (“academic medical centers”), innovation and specialization became integral to medical education and to U.S. definitions of high-quality care.” He notes that the U.S. system is a “nonsystem” described as local (community based), voluntary (few employer mandates), private (insurance industry is free to reject risks or price them at high rates) and federal variations among the states on Medicaid. He also observes that the opposition to reform in the past, which has come from business, insurance and providers, agree that reform should not make government bigger, that reform costs should not fall on the opposition players, and that other items on their agendas are more important than reform.
Comments:

The WEF observation about the ability of people to understand and assess the impact of science and technology, especially in the health care industry, might offer the opportunity to create public service forums, especially for low-income and immigrants, to assist them in making informed choices about health care. While the problems of the U.S. system are well documented, and must be addressed nationally, local participants that take leadership in addressing challenges that can be locally controlled will help bring about incremental change. Greater curricular emphasis on effectively controlling costs to educate the next generation of health professionals might be an effective tactic. Integrating appropriate components of the Commonwealth Scorecard into academic programs also might be an effective tactic to address deficiencies in the quality of the U.S. system. Co-curricular and non-curricular programs that combine data management, business practices, and regulatory mandates could offer both students and practicing professionals insights into methods for improving efficiency of health care services. Securing additional funding for safety net services, such as community clinics, would enable expansion of those services and a closing of the local equity gap between the various demographic cohorts.

Sources:
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Pew Research Center, “E-patients with a Disability or Chronic Disease,” (10/9/07)
Congressional Budget Office, “Geographic Variation in Health Care Spending,” (2/08)
Congressional Budget Office, “Technological Change and the Growth of Health Care Spending,” (1/08)
World Economic Forum, 2008 Annual Report