

## The Troubled Healthcare System in the US

The Society of Actuaries (SOA) Health Benefit Systems Practice Advancement Committee sponsored this review of recent academic literature on the US healthcare system.

We could begin with some debate as to whether the US healthcare system has troubles or whether its troubles are worse than those of any other country's system. There is little point. What are its troubles? The Society of Actuaries' request that guided this project and the vast academic literature are concerned with the common themes of quality, access, and costs. In particular, The SOA was concerned that costs were once again rising after a short period of relative stability.

### Quality

The poor quality of medical care is shocking and yet little known to those outside healthcare. Medical errors probably kill twice as many Americans as automobile accidents. The press and public show little awareness or concern. During the ten years in which 300 people died in much-publicized accidents involving Ford Broncos with Firestone tire blowouts, medical providers' mistakes killed between 400,000 and 900,000 US patients. (See the Coye or Kohn or other articles in the quality section.) Even lawyers, despite the furor over malpractice insurance, have only scratched the surface of the suits they could file. This is not solely a US problem. The quality literature discusses similar problems in all modern healthcare systems. Recent news has included sensational medical errors: two children receiving transplants from donors with incompatible blood types, a woman undergoing mastectomy and chemotherapy because her negative biopsy specimen was switched with another patient's positive specimen, and a man having his healthy leg amputated. The quality section discusses the "barriers", including perverse financial incentives and culture, which have made healthcare resistant to quality improvement efforts. The section also discusses many attempts to improve quality that have had some impact but the overall tone is not positive.

About ten other countries have longer life expectancy and lower infant mortality than the US while spending far less per capita on healthcare. Lifestyle factors, such as diet and accidents, do not explain the difference. Access is part of the explanation for the other nations' systems' superior efficiency but Starfield, in the changing demographics section, directly blames our healthcare system for causing many deaths.

### Access

Access to care is somewhat dependent on insurance that is dependent on income or membership in certain groups. The poor have coverage through Medicaid. Children who are from not-quite-so-poor families may have coverage through the State Children's Health Insurance Program (SCHIP). Medicaid and SCHIP qualifications and coverage vary greatly by state. Those aged 65 and over and those with certain conditions are eligible for coverage through Medicare and many also purchase supplements. Most Americans obtain their coverage through the family breadwinner's employer. Military veterans receive care in Veteran's Affairs facilities. The working poor, recent college

graduates, early retirees, and those in between jobs are those most likely to be uninsured although individual insurance is usually available. COBRA can extend the previous employer's insurance. Individual insurance is more expensive than employer sponsored coverage and may not provide coverage for existing conditions. The lack of coverage is often referred to as a small business problem but major retailers also employ many uninsured working poor. Those without coverage can still receive care in, for instance, emergency rooms or from charitable providers. There is a flurry of new research on faith-based providers. Much of this research was formerly directed at the "safety net". Those who are injured often have coverage through others' liability. In the particular case of on-job injury, employers must provide coverage even if they do not provide regular health insurance. One's level of coverage may depend on the provider one sees as well as on the liability. Non-citizen immigrants are a large group receiving generally poor care. They are often dependent on safety net providers and have inadequate access. Most other industrial countries have more consistent coverage systems. Attempts to expand coverage to the uninsured in the US must fill in the cracks between these programs. The scope of the cracks depends on the economy and shifting demographics. Some would replace this "crazy quilt" with a single, consistent design.

Our health care system is something of an illusion and is even more fragmented than the above indicates. For example, an elderly poor person would seem to have excellent, complete coverage between Medicare and Medicaid. She can experience otherwise. In the hospital, her chronic disease is only treated as an acute episode. Once the episode is controlled she is discharged to a long-term care facility or home care. Depending on her plan, she may be required to change doctors and/or she may fall under a different drug formulary. Or she may lose her drug coverage. Information from the hospital is probably not transferred to the new caregivers. The changing demographics and quality sections discuss attempts to improve care during these artificial handoffs caused by the financing system. An important lesson: coverage does not necessarily equal access. For a second example, consider the businessman injured in a taxi accident while traveling on business for his employer. He is covered by his group insurance, Workers Compensation, and the taxi's liability (or the other car's liability). Whom does he call for preauthorization of a course of rehabilitation? Lawyers can figure it out, but this demonstrates that the crazy quilt approach not only hurts care but is a source of inefficiency.

### Costs

The overall impact of rising costs is perhaps best understood as a percentage of the GNP. Healthcare is now 14% of the US economy. If patterns of care by age are not adjusted, the baby boom generation could cause this to rise to 30% when it gets to the age of demanding significant amounts of care. (See the article by Lee in the changing demographics section.) Technology is also contributing to the rise in costs although there is some debate and there are specific examples of new technology that reduce overall system costs. There is tremendous pressure to hold costs down (or transfer them to others) within the system along with pressure to spend to prolong active life. Current news includes budget pressure on the states and discussion of health care program cuts. The reform section addresses these conflicting pressures.

## Background

The SOA requested that this literature review cover the following nine sections:

- Number and growth of the uninsured;
- Use of risk assessment and adjustment;
- Impact of medical technology;
- Managed care effectiveness;
- Proposed system reform;
- Increasing prescription drug costs;
- Future role of the employer as a sponsor of benefit programs;
- Changing demographic landscape and aging population; and
- Quality-of-care issues.

These sections were created to assure thorough coverage of the academic health care literature. We feel this represents a crosscutting sample of a vast literature. A minimum of twenty-five articles was abstracted for each section. In no case was there difficulty finding twenty-five acceptable articles. The most specific section was that on risk adjustment and the first searches in this seemingly narrow topic uncovered sixty-five possibilities. In the other sections the articles were chosen from hundreds of possibilities because of their quality and representativeness. A search on Medline usually provided an adequate number of articles from which to choose but Lexis-Nexus Medical, Academic Search Premier, and other databases were used. Our initial intent was to include only reviewed articles but there are some exceptions, notably, government and research group reports, and a few working papers. We excluded many interesting articles that discussed foreign systems. We included a very few comparative articles (United States with other countries).

The sections have significant overlap. In order to study the quality of a provider's outcomes, we must consider its patient mix. Risk adjustment makes comparisons of different providers fair. Some think managed care achieves lower costs only by selecting healthier enrollees so, again, risk adjustment is necessary. The managed care effectiveness articles are focused on managed care's effect on quality or rising costs. Many reform proposals concern managed care, and many of the prescription drug articles refer to proposals to extend drug benefits to Medicare's aging enrollees. Technology is a term used synonymously with new drugs in some articles. Technology is seen to increase quality by reducing variance and to hurt quality by reducing patient satisfaction with less personal care. Questions about the uninsured, the role of the employer, and system reform obviously overlap. If seeking articles on a particular topic, consider all the possibly related sections.

For locating articles on quality, cost and access, quality problems are mainly addressed in the quality section with some reference in the changing demographics, risk adjustment, and managed care sections; access issues are addressed in the uninsured, reform, employer, and managed care sections; costs are discussed in all sections. Keywords are provided to aid searches.

## Section Summaries

*Number and Growth of the Uninsured*-Articles about the uninsured discuss their number, the role of the states, immigrant issues, and the “safety net”. The role of charitable choice in supporting the safety net is also discussed.

*Use of Risk Assessment and Adjustment*-The risk adjustment articles discuss the development and application of risk adjustment models. PIPDCG and proposed enhancements are the subject of many articles. Its expected impact on certain groups is considered. Risk adjustment is used for both provider payment and performance measurement.

*Impact of Medical Technology*-Technology has surprising impacts on healthcare. Rapid change makes information overload a real possibility. Many articles discuss the Internet’s impacts. Several discuss the dehumanization possibilities of technology.

*Managed Care Effectiveness*-Managed care has been subject to much study. It can improve preventative care but has created problems with access. It could improve continuity of care (that is very important for chronic conditions) but it has damaged continuity in some cases.

*Proposed System Reforms*-Proposed reforms include tax incentives, Medicaid expansion, and pre-Medicare retiree benefits all designed to reduce the number of uninsured or underinsured. There are also Medicare reform proposals and individual market reform proposals. There is little in the recent literature about single payer plans. Since September 11, 2001, there is less discussion of healthcare reform politically and the academic literature is beginning to reflect this.

*Increasing Prescription Drug Costs*-The articles on increasing drug costs are very wide ranging. Several discuss how to prevent wastage or otherwise improve compliance. Others advocate that increased utilization is good because it is a good substitute for surgery and hospitalization. Drug development and pricing and potential Medicare reforms are also discussed.

*Future of the Employer Role in the Provision of Health Insurance*-Articles about the role of the employer suggest a retreat from the coverage of the past. Fewer employers offer retirees health benefits and there is a trend to switch from defined benefit to defined contribution plans.

*Changing Demographic Landscape and Aging Population*-The aging section discusses the poor treatment of chronic disease in an acute care financing system, the many ways care for elders falls short because studies and guidelines are usually done for the younger patient, and projections of the impact of the aging baby boom. Some intergenerational equity concerns are raised. We have focused on the impacts of aging but some ethnic/racial/gender issues are addressed here and in other sections.

*Quality-of-Care Issues*-The quality section emphasizes the prevention of medical errors by determination of appropriate guidelines and encouraging compliance. A picture of poor compliance is painted and quality improvement efforts have usually failed to impact healthcare. Reasons or “barriers to improvement” are another popular topic.

### Synthesis

There is little consensus in this literature. Academic views on healthcare problems and needed reforms are no better aligned than among the healthcare industry or the public. In spite of this, we note a few themes that run through this literature:

A muted theme is that medical change occurs without considering its relative effectiveness or efficiency. Screening mammography, hormone replacement therapy, and electronic fetal monitoring are examples of technology on which many millions have been spent but research has yet to conclude that they actually improve outcomes. Similarly, new drugs are tested only to see if they are safe and they have an impact on disease. They need not be an improvement over existing drugs. They also need not be practical. Some approved drugs require such a precise regimen to be of benefit that few patients are able to comply and benefit. Although medical devices and drugs require extensive testing, medical procedures are not subject to such requirements. When improved procedures are developed, their dissemination through and adoption by the medical community is inconsistent. Some (Davidoff in the drug costs section) have called for a clearing organization, jointly established by government and industry, to screen new drugs and procedures for relative effectiveness. Underwriters Laboratories is something like the organization they have in mind.

Another theme is found in the number of the articles that discuss perverse financial incentives in the current system. A hospital or doctor that improves the quality of their work will probably lose income. A drug company will earn more by investing in a drug that helps one live with their disease than by investing in a drug to cure disease. Depending on an individual’s circumstances the “crazy quilt” of insurance access described above drives incentives to marry, divorce, relocate, and chose employers. While some articles explain the benefits of university-industry partnerships, others give examples of research that was terminated because of its potential harmful effect on a contributor. Lawsuits have even been filed to stop publication of results detrimental to a drug product. PIPDCG (the current Medicare risk adjustment system) rewards excessive hospitalization and pharmacy-based risk adjustment would reward excessive drug use. Fee-for-service rewards doctors for over-treatment and capitation rewards them for under-treatment. The many providers who may be treating a single patient have little incentive to share information and usually don’t. Perhaps the worst is the tremendous incentive to conceal errors of treatment.

Does the US healthcare system need incremental adjustment or complete reengineering? The reform proposals section does not contain sweeping recommendations for complete system overhaul. Perhaps these are out of favor after their defeat in the early nineties. The reform proposals are intended to make the market work more efficiently or to cover some certain group more thoroughly by mandate, tax incentive or market creation. The

normative comments in most other sections also suggest incremental change. The quality section does have some articles demanding major change. The Institute of Medicine reports said that the high error rates in medical care today are inherently due to the organizational and financial structure of medical care and cannot be improved within the current institutional design. The Newhouse article in the quality section, leaning on Kenneth Arrow's classic 1963 "Uncertainty and the Welfare Economics of Healthcare", says healthcare may never achieve quality under any system or organization. In the aging section several articles describe our insurance and Medicare systems as designs to pay for acute care, even though the majority of care in the US is for chronic disease. The result is poor, episodic treatment caused by the reimbursement structure.

Concerning the models and data being used by the academic community, the risk adjustment section is heaviest on models and lightest on opinion pieces. In this as well as the other sections the most common statistical method is regression analysis. Because the dependent variable is often dichotomous, many researchers have used logistic regression or probit models. Survival models are used in some cases since mortality is an important outcome in more serious procedures. Many of the risk adjustment articles deal with mortality. Some also use Quality Adjusted Life Years, which consider not just the states of life and death but also functional status. In all these articles, we did not find an attempt at an overall model of the US healthcare system. Is this too much to ask? Stallard's article in the aging section describes the most comprehensive model. In the reform section, Bolnick discusses the components of an ideal system. Ballard and Goddeeris model the system, but with a focus on the labor market; and Pauly models the efficiency of the Medicare-eligible market. Pauly and Percy describe the individual and group markets in a wide-ranging financial model. Some articles distinguish the medical approach to decision making from the economic approach. For instance, the medical approach calls for increasing medical care until the incremental improvement in health becomes zero or negative (beyond which medical care is called iatrogenic). The economic approach would stop short of that, when the incremental cost of more care exceeds the incremental value of improvement in health. Reconciliation of the two is the subject of ethics and values.

Published academic articles are necessarily somewhat out-of-date and often lag behind the latest trends or current events. The data used for modeling is also usually dated. Some authors explained that the ideal data is not currently available but will be soon. For instance, early Medicare HMO plans were priced using fee for service claims data. Most of the data used in research is from government agencies, government-supported agencies, or nonprofit research or public interest organizations.

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