

Health: The Devil of a Problem – *Nathan Rosenberg*

I start out with the intention of playing the Devil's advocate. I collected a series of propositions that the Devil might state on the topics of health research, health cost explosion, and quality of life. It has been a rather disconcerting experience: I found out that I personally believe, or at the very least half believe, most of the Devil's observations.

“We have the idea of a health cost explosion totally out of perspective,” says the Devil. The rising cost of medical care is a phenomenon that the United States has been sharing with most other affluent nations. In fact, if we go back a few decades to 1960, it turns out that our medical care costs have not been rising much more quickly than that of other OECD countries. Then why all this breast-beating over a health cost explosion?

Indeed, if we look at the annual rate of increase in real per capita health spending for OECD countries between 1960 and 1990, the Devil has a point. The U.S. is by no means at the top of the list. Our rate of growth at 4.8 percent was not very much higher than that of Germany with 4.4 percent. It was well under that of France and Italy with 5.5 and 6.1 percent, respectively, and far below that of Japan, which headed the list at 8.2 percent. And although there may be many features of the Canadian health system that are admirable, cost containment is not one of them. Although their health spending did not grow as rapidly as America's 4.8 percent, it was, in fact, as close to the American figure as you can get; it was 4.7 percent.

These figures, extending over a period of three decades, strongly suggest that there are some widely pervasive common forces at work driving up expenditures on medical care.

Technological change in medicine, the product of our huge past expenditures on health research, is one such common force. I will focus on that connection.

What really distinguishes U.S. health care spending among OECD countries is not its rate of growth, but its level, roughly 14 percent, substantially higher than other OECD countries.

Here the Devil – if he's a Devil, and if the Devil is a he – has an incisive and powerful riposte. Why should that be a cause of national concern? What is wrong with the richer country choosing to spend a larger share of its income on medical care? Our population is aging, largely as a product of some of the spectacular successes of earlier generations of health researchers. In view of these demographic changes, what could be more appropriate than committing more of our affluence to healing the sick and alleviating various discomforts and disabilities of the aged? Indeed, the Devil here can cite very powerful econometric scripture for his purpose. A number of careful econometric studies have shown that there is a high income elasticity of demand for medical care.

The truly disturbing thing is not how much we spend, it's that the U.S., with its huge spending on medical care, does not rank very high internationally on the basic measures of health care status: life expectancy, infant mortality, et cetera.

We seem to be in the position of spending more and benefiting less; we are getting very little bang for the marginal medical buck. Experimental studies by the Rand Corporation have confirmed this at the family level. The Rand Health Insurance Experiment studied two groups of families, one with full medical coverage and the other with a large deductible. The families with full insurance coverage spent 40 percent more on health care than did the families with a large deductible. However, the researchers were unable to detect any measurable health benefits associated with the 40 percent of additional spending for the families with full insurance.¹

Now here again, the devil has a powerful response. That is, there are obviously many determinants of health that have little or nothing to do with medical care. While everyone or almost everyone besides the devil is opposed to purely wasteful expenditure, it is naïve, says the devil, to expect a close association between spending on health and health status. Consider the startling mortality differentials, he points out, between two contiguous states in the United States, Nevada and Utah.

¹ Funded by the Department of Health, Education, and Welfare, the RAND Health Insurance Experiment was a 15-year, multimillion-dollar effort that to this day remains the largest health policy study in U.S. history. The study's conclusions encouraged the restructuring of private insurance. For more information, please visit RAND's Health Insurance Experiment at www.rand.org/organization/health/researchnav.html.

The states are quite similar in many respects: access to medical care, climate, and schooling. Nevada's income is actually slightly higher than Utah's. Yet infant mortality in Nevada is 40 percent higher than in Utah, and comparable differences in premature mortality exist for both males and females and higher age levels. Victor Fuchs pointed out that it is difficult not to attribute much of the difference to the fact that the population of Utah is 70 percent Mormon. Mormons abstain from tobacco and alcohol, and have a much higher level of marital stability. It is not surprising to find that Nevada has the highest incidence of smoking related deaths among U.S. states and Utah the lowest. I've done a little further research of my own on this intriguing topic. I discovered that Utah has the highest birth rate of any American state but is the lowest in terms of unwed teenage mothers. Somewhat outside of the immediate range of our present interests, it also turns out that Nevada has the second highest student loan default rate in the United States, while Utah is very, very close to the bottom. Nevada also has one of the highest incarceration rates in the United States, whereas Utah has one of the lowest. I could continue.

I'm not quite sure what the devil would have to say about this Nevada/Utah comparison, but it seems obvious that conducting one's life so that it is constant with certain behaviors may make a great difference to health status.

Finally, there can be little doubt that a great deal of the justifiable American concern over health care is that its high cost makes proper medical care much less accessible to the poor. Even the devil has to concede that. More equitable access to medical care is both highly desirable and, I believe, politically inevitable. But even here our devil has one final parting iconoclastic shot: one should not expect universal access to health care system, whatever exact form it may take, to make very much difference in terms of measures of health status. The devil cites the powerful counter-example of the British National Health Service introduced in 1948.

The main rationale for its introduction was to remove the financial barriers to access to medical care in the belief that this would drastically narrow the huge inter-class health differentials that existed in Britain at the time. Although the NHS did indeed provide

universal access to medical services and although mortality rates in all social classes subsequently declined, the gradients in mortality across social classes did not narrow. They are as wide now as they were in 1948, suggesting at least the persistence of strong socioeconomic and behavioral differences as dominating determinants of health status.

So the devil walks away with his tail between his legs, but he's heard to mutter something about the inevitability of unfulfilled expectations over any future reforms that provide universal access in the confident expectation that such access will eliminate inter-class health differentials. Well, so much for the devil.

I will now narrow my focus to the connection between medical innovation and the cost of medical care. We do not need the devil to inform us of the mixed nature of our blessings. That, for example, the genuine wonders of modern medical technologies come with higher price tags attached to them. Although it is not impossible to find new medical technologies that are cost-reducing, there can be little question that the vast majority are used in such a way as to increase costs. One of the most careful students of the subject, Joseph Newhouse, estimates that more than 50 percent of the growth in medical care costs has been due to technological change.

The rising costs are fairly obvious in the case of medical imaging technology such as magnetic resonance imaging (MRI). An MRI machine costs about \$2 million to purchase, another half million dollars to install, and another million dollars or so per year to operate. Surgical procedures such as coronary artery bypass surgery are now performed hundreds of thousands of times in this country each year. But the rising costs also come in more subtle forms such as antibiotics, certainly one of the great glories of 20th century medical research. Antibiotics may be thought of as wonder drugs that provide low cost cures for infectious diseases, but they also keep elderly people alive long enough for them to require lengthy periods of costly treatment for some chronic or incurable conditions.

Sixty years ago, they would have died quickly and cheaply of pneumonia, which was once known as the old man's friend. So death, to put it brutally, makes little demand on medical budgets. The availability of AZT and other drug treatments for HIV means that the lives of

HIV victims are prolonged. But from a purely budgetary point of view, it also means that they now become candidates for extremely costly treatment regimens. In short, when the medical profession acquires the competence to do things it could not do before, medical costs are likely to go up and not down.

Now, the way this occurs is sometimes rather subtle, and therefore worth looking at a bit carefully. Think of laparoscopic cholecystectomy, one of the most widely practiced forms of laparoscopic surgery in America. The percent of gall bladders removed by laparoscope in 1987 was zero. By 1992, it had risen to 83 percent of the total and currently it's over 90 percent. This procedure is widely acknowledged to offer many advantages including cost reduction. It involves only small incisions rather than opening up the abdominal cavity, it causes less discomfort, more rapid recovery and consequently, much shortened hospital stays and a more rapid return to work for the patient.

According to an article in the Journal of the American Medical Association that reported on the experience of a very large HMO in the Philadelphia area over a five-year period, 83 percent of its patients with diseased gall bladders were opting for the laparoscopic procedure by 1992 (Legorreta et al. 1993). According to the HMO, the cost of each operation had decreased by about 25 percent over the period under review. Nevertheless, the HMO's total expenditures for gall bladder surgery rose by 18 percent. The reason was simple: associated with the 25 percent reduction in cost per patient was an increase in the number of gall bladder removals of no less than 60 percent. How do you account for this? Apparently, the less invasive procedure has made it possible for doctors to remove the diseased gall bladders of patients who, due to the frailties of age or the existence of comorbidities, had previously been regarded as too high a risk for the traditional operation. Moreover, the laparoscopic procedure led to an increase in cholecystectomies in younger patients who are only mildly symptomatic. Since the new procedure was not nearly as big a deal as the old one, the doctor or patient or both interpreted the risk/benefit ratio in terms that were more favorable towards surgery.

Indeed, it appears as if some of the increase may have been prophylactic in nature; that is to say, gall bladders were removed from some patients who were totally asymptomatic. In

these patients, it was accidentally discovered while exploring for another problem that the gall bladder problem existed.

In economic language, this experience suggests a greater elasticity of demand for medical services than is commonly believed. But this is because the nature of the service being delivered has undergone substantial change. In the case of gall bladder surgery, a downward shift in the supply curve and associated lower cost brought with it an outward shift in the demand curve for the removal of diseased gall bladders. The critical point is that the large increase in demand was a reflection of a significant qualitative improvement in the surgical service that could now be supplied. So that cost savings on a per patient basis – and there are cost savings on a per patient basis – have been more than offset by the increase in the use of the new medical technology.

This experience is far from unique. Indeed, I suggest that it may provide a prolegomenon to the future economics of medical care in affluent societies, reinforced by the aging of their populations. Expectations of new technologies offering the prospect of expenditure reduction are likely to continue to be disappointed for the excellent reason that the quality of medical care is also likely to continue to improve.

Very similar stories could be told in the category of coronary medical care. Angioplasty was once hailed as a cheaper alternative to coronary bypass surgery. In fact, what seems to have happened is that subsequent improvements in bypass surgery led to an extension of the procedure to both angina pectoris and congestive heart failure. Moreover, many patients were also given both procedures since the rate of failure of angioplasties due to rapid restinosis has been very high so that the total expenditures for both procedures rose very rapidly throughout the 1980s.

By the late 1980s, both angioplasty and bypasses were being performed in significant numbers in the over-80 years of age population. Again, this was partly due to significant improvements in the new technologies. Nevertheless, difficult ethical as well as economic concerns have emerged. It is estimated that 20 percent of this age group suffers from some form of coronary heart disease, but when subjected to either of the two procedures, death

rates are several times higher than when those procedures are performed on people in the 65-69 years age bracket.

At the other extreme of the age spectrum, neo-natologists have made quite remarkable progress in saving the lives of extremely premature babies, even those weighing 2 pounds or less. The availability of lung surfactants now offers protection for immature lungs, which had been a leading killer of premature infants. But the evidence is now compelling that such infants will go on to suffer a much higher incidence of mental retardation, chronic lung disease, cerebral palsy, and severe visual disabilities than less premature infants.

Recent research suggests that two-thirds of such infants will never emerge from an extreme state of dependency and will require life-long treatment at enormous financial cost. Putting aside all financial considerations for the moment, a medical technology that is improving but still highly imperfect poses profoundly disturbing ethical questions of the kind I think we have to worry about. Is the most aggressive therapy, even therapy that borders on the experimental, always justified? When formulating a course of therapy in which the prospects are so uncertain, how is it to be decided when aggressive therapy is justified? What are the appropriate criteria? And not least, who is to decide?

I have deliberately cited situations from the extremes, extreme old age and extreme prematurity, in order to underline a general point: improvements in medical technology, however welcome, inevitably bring with them difficult ethical questions, questions that previously did not have to be confronted and from which there is now no escape. Once you know how to do something, should you do it? The questions are difficult not only because they require that momentous decisions be made in situations characterized by poor information and a high degree of uncertainty, but also because the downside risks are so devastating when unfavorable outcomes occur.

However ironic it may be, the conclusion to which I am drawn is this: a major reason, perhaps *the* major reason, for the so-called explosion of health care costs is a steady upward drift in the technological capabilities of the medical profession, combined with strong economic incentives, at least until very recently, to utilize these capabilities in a highly

aggressive way. It remains to be seen whether the growth of managed care will change these incentives very much.

In the meantime, is it plausible to try to control this explosion by setting new priorities for the National Institutes of Health peer review process? One suggestion that has received some attention is that technology assessment might be systematically introduced in the early stages of the development of new medical technologies so that judgments of the probable cost implications of the emerging technology can be formed at an early stage. While this suggestion has some merit in principle, I think it founders on a single observation, which is that the history of medical technology ought to make us very skeptical of our ability to anticipate the eventual uses and eventual impact of new medical technologies. The uncertainties that dominate this realm are so great not only at the level of fundamental research, but even at the clinical level, that such an assessment approach will be quite simply unworkable.

Nevertheless, I do believe some form of technology assessment is inevitable and that if a high priority is attached to cost containment, it may be of use in determining what fields or what disease categories warrant a high research priority. Consider the fact that in 1993, the cost of caring for Alzheimer's patients was estimated to be \$90 billion a year, consisting mostly of nursing home costs. Should not the possibility of reducing such a huge financial burden through geriatric research raise the priority of Alzheimer's disease within the nation's medical research budget? Because in fact, geriatric research remains a small research specialty and the National Institutes of Health currently spends about ten times as much on AIDS research than on Alzheimer's disease. I've become more convinced with each passing year that our criteria for allocating resources to health research devotes insufficient attention to the problems of the elderly.