
What Is Good Care, and What Is Bad?

David M. Cutler

Introduction: The Story of Sal

I would like to tell you about a fellow named Sal. Don't worry; I made him up.¹ But imagine he is real.

Sal is a 60-year-old white male. He is slightly overweight, is borderline diabetic, and smokes half a pack per day. But otherwise Sal is in good health. Aside from minor ailments, Sal has never been very sick. Sal's doctor periodically advises him to lose weight, take medication for his diabetes, and stop smoking, but Sal has always felt fine.

Increasingly, however, Sal feels chest pain when walking up stairs or running to catch the subway. After some nagging, Sal visits his primary care physician. The doctor suspects angina and refers Sal to a cardiologist, who does a variety of tests. The results are not great. Sal has probable heart disease.

Cardiac catheterization, a procedure to measure how well blood flows to the heart, is performed. Significant narrowing is detected in one of the arteries supplying blood to Sal's heart. A heart attack won't happen next week, but will in the next few years. The cardiologist recommends angioplasty, a procedure to open the clogged artery and insert a mesh tube to keep it open. The procedure is successful, and the artery is reopened. Fortunately, insurance pays the \$20,000 bill.

The cardiologist sends Sal back to the primary care physician, along with some recommendations: nitrate pills for periods of intensive pain; aspirin and beta blockers as well; more regular use of diabetes medication; absolutely no smoking; switch to non-fat milk instead of whole milk; use salt only in moderation; and exercise regularly.

Sal has the best of intentions. He starts taking the medications more regularly, and switches to a salt substitute. After years of his wife's entreaties, he finally gives up cigarettes. He walks 30 minutes a day, three times a week, for two weeks. But life soon catches up. The medication needs refilling, and there is no time. Sal's weight, which fell at first, increases again. It is hard to exercise in winter, Sal tells himself; when the weather is nicer, he'll begin the exercise program.

Come time for his annual physical, Sal feels ashamed of his lack of progress. He grudgingly goes to the doctor a half-year later than he should. The doctor repeats the unfollowed advice. Sal again tries to comply. Walking is resumed and red meat consumption is lowered, at least for a time. Medications are back in use. But old habits are hard to break. In just a few months, most of the progress is gone. This cycle continues for a few years: recommendations are given, acted on for a while, and then discarded. Sal's visits to his doctor become progressively less regular.

Five years later, Sal pays the price. He has a massive heart attack. Sal is rushed to the hospital and stabilized. Bypass surgery is performed two days later, at a cost of \$50,000 (thank God for insurance!). The surgery keeps Sal alive, but there are complications. Sal's heart doesn't pump that well anymore, and fluid builds up in his lungs. Over the next three years, Sal is in and out of hospitals with pneumonia, heart, and respiratory complications. At age 68, Sal dies.

Did Sal Receive Good Care?

Considering everything, how do we evaluate this story? Did Sal receive good or bad medical care? Could things have gone better? If so, how?

Since this is a participatory conference, I want to take a survey. How many of you believe that Sal received good medical care? How many believe that Sal received bad medical care? I would say about three-quarters believe that he received good medical care, and one-quarter say that he received bad medical care.

Sal is interesting because he shows how the medical system works—the good and the bad. I want to use this case as an example of the kinds of things that go right and wrong to illustrate the challenges that Cathy Minnehan correctly raised.

The correct answer is that Sal received both good and bad medical care. All the medical procedures that Sal received, if I understand correctly what my physician friends have told me, were appropriate. They either alleviated the immediate symptoms or they saved his life. Angioplasty alleviated his immediate symptoms, bypass surgery saved his life, and the medication and lifestyle recommendations he was given were appropriate. This is state-of-the-art medical care.

But was it worth it? Did the benefits exceed the costs? The golden rule of economics is that you do something if the benefits are greater than the costs. In this case, if you consider the time when Sal had his heart attack, the costs are the up-front treatment, including all those spiffy things that he got in the hospital, plus the downstream costs of caring for him after he survived. The primary benefit is the expectation of longer and higher quality of life. There is also a personal dimension: whether people were satisfied with the care they received. Finally, there are some financial implications that may be either positive or negative. In this case, they are mostly negative. For example, keeping Sal alive means that he collects Social Security and other benefits. So these costs represent a reduction for everybody else in the amount of money (resources) they have for goods and services, and these costs offset the benefits to him and to us of Sal's living a longer life.

Totaling up the benefits and the costs, the balance sheet looks as shown in Table 3.1, below:

Table 3.1
Benefits and Costs of Sal's Treatment

Benefits	Costs
<ul style="list-style-type: none"> • Expectation of longer and higher-quality of life • Patient/family satisfaction with care • Financial implications for others of keeping a person alive and/or healthy 	<ul style="list-style-type: none"> • Upfront treatment costs (tPA, aspirin, primary angioplasty, beta blockers, etc.) • Downstream treatment costs • Financial implications for others of keeping a person alive and/or healthy • Other downstream costs

We can think about asking whether care is worth it or not in the case of Sal—or in the case of the medical system as a whole—by trying to take account of the costs and the benefits of care. Sal's case is actually emblematic of the medical system as a whole.

Weighing the Evidence: The Net Gain from Recent Medical Advances

The discussion below is based on a decade of research on changes in treatment standards over the past half-century in three important areas: cardiovascular disease, low-birth-weight babies, and care for the mentally ill. Many more details can be found in my recent book, *Your Money or Your Life* (Cutler 2004).

Changes in Medical Care for Severe Heart Disease

If you go back a couple of decades, to, say, 1950—Sal's therapy would have been bed rest. The 1950 standard of care for severe heart disease (myocardial infarction, or MI) was bed rest for six months or more. So rather than getting all those fancy procedures in the hospital, they would have put him in bed for at least six months. The direct cost of this care was minimal (although the opportunity cost to the patient and his family may have been high). One can think about other costs, like the fact that the person is not working and that he is perhaps supported through some other programs. Conceptually, I include the reduced value of transfer payments on the benefit side. Here, I just want to think about the medical costs.

In contrast, the 2000 standard of care for MI involves technologies such as thrombolytics and revascularization—procedures whose direct cost is high. Just to give you a sense of the magnitude, the direct cost of cardiovascular disease care per 45-year-old rose from about \$0 to about \$30,000 in present value terms over the last half of the twentieth century. The reason we spend more in caring for heart disease today than in the 1950s and 1960s is that we do more. And that is true across the board. As Cathy Minnehan mentioned, medical spending currently represents 15 percent of the economy. It's going to be 18 percent. And the reason for this is that we can do more.

Changes in Medical Care for Low-Birth-Weight Infants

The 1950 standard for treating low-birth-weight infants was to use the first generation of incubators and to experiment with warming and other intuitive actions. These treatments were available at a very low cost. But again, they were not very effective. In 2000, low-birth-weight infants can be treated in sophisticated neonatology units, employing ventilators and artificial “surfactant.”² These treatments are quite costly: the cost per low-birth-weight infant rose from about \$0 in 1950 to about \$70,000 in 2000.

Changes in Medical Care for People Suffering from Depression

The 1950 standard of care for people suffering from depression involved institutionalization in a mental hospital for the very ill, with very little care for those with milder symptoms. Procedures for treating the severely ill in institutions included lobotomy, electroconvulsive therapy, and insulin therapy. Two of those, thankfully, have been laid to rest. The 2000 standard for treating depression includes selective serotonin reuptake inhibitors (SSRIs), antidepressants, and advances in psychotherapy such as cognitive behavior therapy and other techniques. The advances in treatment options for depression over the past half-century enable more people to be treated more effectively. However, as a price to be paid for this progress, spending on depression has doubled in the past 20 years, as many more people are diagnosed with depression than were in the past.

Net Gains

One cares not just about what is spent, but about the return on spending. As I said, there are a number of components to this reform. The most important is how long a person lives. In this case, Sal probably lived about five years longer because he had the care, much of it of reasonably good quality. Actually, there’s a whole industry of people who go out and measure the length of life and quality of life. Let me tell you a little about what they have found.

As Figure 3.1 shows, cardiovascular disease mortality has declined by over 50 percent since 1950. Put in terms of years of life, the average 45-year-old will live another four and one-half years because cardiovascular

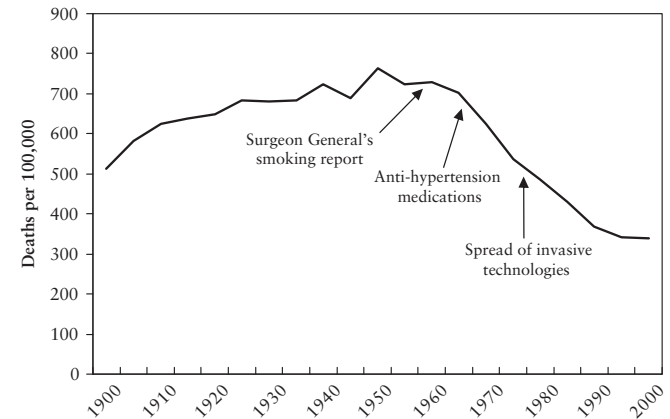


Figure 3.1
Mortality from Cardiovascular Disease
Source: *Vital Statistics of the United States* (2000).

disease mortality has declined. Several factors have been important in this trend, among them the marked decline in mortality rates that followed the release of the Surgeon General’s report on the dangers of smoking, the wide adoption of anti-hypertension medications, and the spread of invasive technologies to treat cardiovascular disease. My estimate is that about two-thirds of the increase in longevity—or roughly three years of increased life—results from medical intervention, with most of the remainder due to smoking cessation.

Let me now combine the costs and benefits of medical care. Since 1950, we have spent about \$30,000 per 45-year-old and obtained in return about three years of longer life. And so your second quiz question is, is it worth it? The correct answer is, yes, it is worth it. In case you’re wondering, the present value of the benefits calculated by a methodology I won’t go through—it will be familiar to most of the economists here and is based on valuing risks to life and using that information to infer the value of traditional life years—is about \$120,000, yielding a rate of return of four to one. Let me know when banks start paying that return on their deposits, and I will sign right up. Indeed, when you look at quite

a number of medical interventions, they have benefits that are substantially greater than the costs, as Figure 3.2 shows.

What is going on in Figure 3.2 is that people value their health highly; two-thirds of Americans rank health care as a top item for an expanding economy. Most Americans are willing to pay the equivalent of \$100,000 to save a year of life. Most of us have enough money to provide for the basics in life: food, clothing, shelter, and basic medical care. And so, as we get richer, we want to extend the quantity and improve the quality of our lives. Medical advance costs a lot, but is worth it. That is why the “R” word (rationing) cannot be uttered in polite company in the United States.

Let me come back to the big picture. Why do we spend more now on medical care? In part because we are well insured, and in part because the technology is worth it. Now, that does not mean we can afford to keep doing it; but as an approximate matter, what is going on with medical spending is that we spend a lot more because we get a lot more. At least

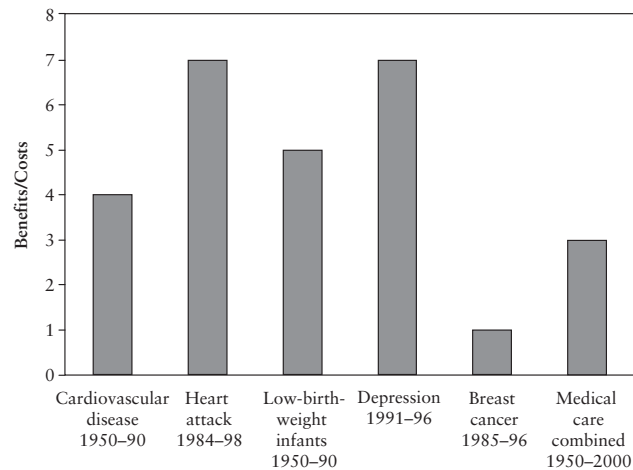


Figure 3.2
Benefit/Cost Ratio of Medical Care in America
Source: Author's calculations.

by my estimation, on the whole it is worth it. So, Sal, and we, as a whole, are actually doing fairly well. Why shouldn't we spend our money on being healthier?

The Glass Is Half-Empty

Sal: The Sad Part of the Story

So, that's the good side. The bad side is what was *not* done for Sal. Although medical care bought Sal years of life, many things that should have been done were not. No one followed up on his adherence over time to the recommended lifestyle changes. This, too, is state-of-the-art medicine. No one helped Sal with medications, side effects, or any other complicated issue of managing disease.

Consider poor old Sal. He was told, "Change your life." So, here he is, a 60-year-old man who all his life has been obese and has not taken care of himself. He goes to the doctor and the doctor says, "You know what, Sal? You really ought to make these major lifestyle improvements. Why don't you go away and do that?" Well, of course, he's going to have difficulty doing that. Every one of us has difficulty doing that. Next week, I'm giving up cookies. I promise. So, the single biggest problem in Sal's story is that Sal's chronic disease was not well controlled. We could have saved a lot of money, at least in the short term, and extended his life by many years, had we controlled it better.

We Know We Can Do Better

What would good prevention look like? I will give you just one example, that of HealthPartners, an HMO in Minneapolis that decided a few years ago that it was going to focus on improved care for diabetics like Sal. The primary components of diabetes management programs are the dissemination of guidelines, provider education, member education, screening programs, performance feedback to physicians, patient reminders, case management, and at-risk lists. The HMO went to the doctors and said, "We're going to give you profiles of how well your diabetic patients are doing compared with other doctors' diabetic patients. Then we're going to contact the patients and make sure they come in, to see whether they are taking their medications and, if they are not, why not." This is not

very intensive stuff. Still, the HMO showed significant improvements in the care for diabetics, all as a result of low-tech care. This is not inventing a spiffy new way to treat people once they have kidney failure. This is figuring out ways to get people to do what's best for them. A study of the outcomes of this program showed a dramatic decline in patients' mean HbA1c levels³ from 1994, when the program began, to 2000 (see Figure 3.3 below).

There are other similar examples—Kaiser Permanente in California, for instance—where people have shown that it is, in fact, possible to do much better in managing chronic disease.

The real question is, why is Sal's case so typical? Why isn't more being done to control chronic disease? My answer is: money. The kinds of information technology that you would need in order to work with patients are not reimbursed at all. There's no reimbursement for anything other than a doctor seeing a patient. Take the simplest example: what share of doctors communicate regularly by email with their patients? I can email virtually everybody in my life with the exception of my doctor. The share of doctors who communicate regularly with their patients by

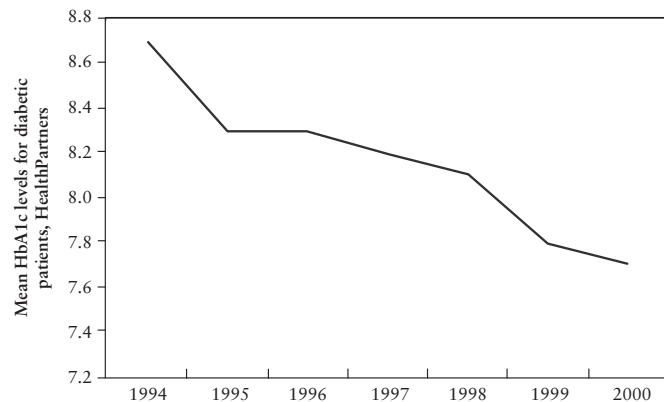


Figure 3.3
Improvement in Diabetes Management from Low-Tech Care at HealthPartners, Minneapolis
Source: Beaulieu et al. (2007).

email is 3 percent, which is smaller than the share of priests who are on email. I think it's even smaller than the share of people who communicate with the Lord by email.

And, by the way, if you ask any doctor why they don't communicate via email, the reason is because they are not paid for it. I once knew an HMO that was trying to figure out whether it could set up email for only those employers that agreed to pay for it, even though there was no additional cost to provide it to everybody.

One result is that we spend a lot more than we need to on people when they get sick. We also substitute intensive care for lifestyle chronic disease care. If you ask, "What is the single biggest difference between care in, say, the United States and care in Canada?" the answer would probably be that in the United States, Sal got his angioplasty when he was feeling chest pain; while in Canada, they would have told him to take his statin drug, exercise more, and try to lose weight. The net results are that our health care system is much more expensive than Canada's. Both could be effective. Indeed, if you look at Jack Wennberg's work at Dartmouth (Wennberg, Fisher, and Skinner, 2002), areas of the country that spend more don't have sicker patients going in, and probably don't have healthier patients coming out—although I must admit, I'm a bit less convinced of that—and, on the whole, don't have more satisfied patients. What happens when you spend more is that doctors do more. Sometimes, it is needless stuff, that is, testing that doesn't need to happen; at other times, it is substituting intensive testing for lifestyle changes that people could make.

The net impact is mixed. Figure 3.4 shows the division of medical care along two axes: should the care be provided—a statement about whether the care has benefits greater than costs—and whether the care is provided. The happy situations are where appropriate care is provided and inappropriate care is not provided.

Unfortunately, what we get is too much of the other boxes. In Figure 3.4, those other boxes represent the two kinds of mistakes that are made. The box on the top right represents things that are done that should not be done. This includes intensive procedures that are used when simpler interventions would do, and unnecessary testing that happens because doctors are paid for it. There are different guesses as to how much money that represents. Twenty percent seems like a lot. Actually, Jack Wennberg

		Should Be Done	
		Yes	No
Is Done	Yes	☺	Overused care (20% of health)
	No	Underused care (10% of health)	☺

Figure 3.4
Overall Assessment of the Level of Care Being Provided
Source: Author's calculations.

at Dartmouth says it is 30 percent. My colleague Michael Porter at Harvard Business School thinks it is even higher (Porter and Teisberg 2006). There's a fair amount of money in there. And, this does not even include administrative expenses. This is just medical care that is provided, but is probably not doing much good beyond what we could accomplish otherwise. So, you could save that 20 percent, at least.

On the other hand, there is the bottom-left quadrant, where things that should be done are not being done. Nobody has a great guess as to what it would cost to do these things. My own personal guess is that we could spend about 10 percent more on medicine by, for example, dealing better with Sal and his chronic disease. What would that involve? Having him come to the doctor, get tests, and take medication. Similarly, uninsured people should get more care. After all, if we didn't want them to get more care, why would we want them to have insurance? My rough guess is that if we waved a magic wand and started doing all the right things, and stopped doing all the needless ones, we might save about 10 percent of our medical care spending on a net basis, but we would actually have remarkably improved health.

Getting to the Promised Land: Three Strategies

So, how do we get there? The Holy Grail of health care reform is cost, access, and quality. People want costs to be lower, access to be higher, and quality to be better. And so, how does one deal with this analysis that suggests that while we are doing pretty well on the whole, there are some very

gross errors? There are three strategies that are out there. I will try to give you a very brief overview of them and tell you a bit about how I lean.

The first strategy is consumer-directed health care, which entails making health care more of a market. This strategy includes greater cost sharing, more information provision, and related interventions. This solution comes out of the literature that worries a lot about the overuse of medical care. And, indeed, everything that we know from the RAND Health Insurance experiment (Newhouse et al. 1993) suggests that increasing cost sharing by people will lead to less use of care, and that would be good on the overuse dimension. What people worry about is whether this will exacerbate the problem of underused care. When people give up care, who is to say that the care that is saved is only the low-valued care? Some evidence suggests that it is not (Huskamp et al. 2003).

The second strategy is the single-payer system: lower fees, restrictions on what is done, and lower administrative expense. This approach is also, to a great extent, designed to address the issue of care overuse, since the United States spends more on health care than other countries do. But will the single-payer approach do anything on the prevention side? Most of the evidence we have from other countries—some of them single-payer—is that they actually don't do much better on prevention than the United States does. All medical systems are geared towards high-tech treatment. Some just do more of it, while others do less of it. So, I worry that health would not improve in a single-payer system.

The third broad direction is payment reform—paying for performance, not quantity. This strategy is primarily designed to address underused care, by paying doctors to do things that they ought to do. The primary concern that people have with respect to this strategy is: will it actually save money or will it just lead to more care, and will providers game this system in some way? There is enormous debate about this, which other speakers will address. My personal belief is that this is the best way to go, since both underuse and overuse are significant problems.

I cannot resist ending on a cautionary note. In the past few decades, there have been any number of "magic cures" for health care. The prospective payment system was going to be great. Managed care was going to be great. Provider integration was going to be great. Provider disintegration was going to be great. Having insurers provide medical care was

going to save the world. Having providers and insurers be separate was going to solve our problems. We have gone through various fads, and we need to be cautious about all of these ideas. In fact, this is where I want to leave things: in the religious world, they have been searching for the Holy Grail for 2,000 years. In health care, we have only been searching for 100 years, so we have quite a way to go. That is not to say we shouldn't try these approaches, but just to say that we should be a bit skeptical about our ability to work wonders.

Notes

1. For the curious, Salus is the Roman god of health.
2. "Surfactant" is a fluid secreted by the cells of the alveoli (the tiny air sacs in the lungs) that serves to reduce the surface tension of pulmonary fluids and thus keep the lung from collapsing.
3. The test measures the amount of glycosylated hemoglobin (hemoglobin molecules that have become chemically linked to glucose) in the blood. The test gives a good estimate of how well diabetes is being managed over time.

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The Health Care Challenge: Some Perspectives from Behavioral Economics

Richard G. Frank

Introduction

Health economists, led by David Cutler, have brought into question the long-held proposition that most of the increases in health care spending consist of waste and inefficiency. Cutler makes a strong case that, on average, the growth in spending has been used to purchase care whose value exceeds the value of the outlays. Advances in medical technology and knowledge have produced these gains. At the same time, it is widely acknowledged that the U.S. health care system operates some distance from its efficiency frontier. The point of departure for economists seeking to address such issues is to consider the traditional incentive problems in health insurance markets that stem from adverse selection and moral hazard, which are clearly important.

However, rapid increases in medical spending and dissatisfaction with quality of care appear to be nearly universal in Western nations that operate under vastly different health care rationing arrangements. David Cutler's analysis of health care delivery in the United States consists of two main parts. The first assesses empirically whether, on average, the gains in health over time are comparable in value to the rise in spending on medical care that has produced them. The second part begins with an acknowledgment that we are unlikely to be on the efficiency frontier and argues for a "pay-for-performance" approach to improving health care delivery in the United States. In this essay, I focus on a few behaviors related to medical decision-making that may help to explain why the health care system operates at some distance from the efficiency frontier. I also concentrate on aspects of the psychology of decision-making that

may be important to the design of pay-for-performance schemes. My aim is not to provide a comprehensive review of issues, but rather to highlight a few fundamental ideas from behavioral economics that may offer some insights beyond those provided by the traditional mode of health economics analysis regarding why the health care delivery system performs the way it does.¹

My remarks are organized into three additional sections. First, I offer a cursory review of the performance of the U.S. health care delivery system. Second, I identify two behavioral economics concepts that may have particularly strong power to explain some of the observed patterns of performance: "status quo bias" and "unrealistic optimism." I then apply a third idea from behavioral economics that is related to some proposed supply-side remedies to the cost and quality problem: the "psychological response to complex pricing schemes." The final section of the paper offers some concluding observations.

Health Care Spending and Value

The United States spent roughly \$1.99 trillion or 16 percent of gross domestic product (GDP) on health care in 2005.² Health care spending is also growing at an annual rate of 7.8 percent, a rate that is 2.7 percentage points higher than the rate of growth in GDP for that period (5.1 percent). These trends are a return to historical patterns that were interrupted briefly during the late 1990s (1996 to 1999), the era of managed care. The popular press and many policy analysts view the growth in health care spending as unsustainable. Students of the federal budget note that the share of the federal budget accounted for by health expenditures, currently about 16 percent, is expected to rise to 21 percent in 2017, and will equal the size of all current federal outlays by the year 2070 (CBO 2007, Table 3-1).

David Cutler and others have noted that deciding whether health spending is too low or too high requires considering the value of what health expenditures purchase (Cutler 2004). Dramatic advances in medical science have produced cures where none previously existed—treatments that allow people to function effectively in society where previously they

would have been disabled and dependent, as well as procedures that can be administered in a physician's office that would have required many days in a hospital just a few years ago. Thus, the technical frontier of medicine has expanded enormously over the past 20 years. Cutler's analysis uses changes over time in medical spending and health outcomes to assess whether the gains in health have been worth the extra outlays on health services. Using case studies on infant health, cardiovascular disease, and depression, he offers persuasive evidence that average productivity of spending on medical care has been rising. This is very important because it has shifted the debate from the idea that most additional medical care spending in the United States stems from price increases and produces little in the way of increased health.

Cutler's insights have encouraged other analyses that point in similar directions. For example, Thorpe and colleagues decompose the source of expenditure growth for the 15 medical conditions that account for the highest rates of nominal growth in health care spending (Thorpe, Florence, and Joski 2004). They decompose changes in spending into changes in the cost per treated case, number of cases treated, and population (growth and composition). For 7 of the top 15 conditions, they show that changes in treated disease prevalence account for 40 percent or more of the increase in spending, an indication that more people are getting some treatment for important illnesses. In addition, for several of the disease categories for which spending growth is being driven by the cost per case, there is evidence of important gains in health outcomes; this is the case with heart disease, as discussed by Cutler.

Cutler's analysis recognizes features of health care delivery that suggest inefficiency. He notes a variety of troubling reports that suggest that the health care system does not operate on the technical frontier and that there is, in fact, a great deal of poor quality in American health care (Institute of Medicine 2001; McGlynn et al. 2003). Research has also established that there is vast variation in the costs of providing health care to various patient populations located in different regions of the country. For example, in 1999, it cost 103 percent more to provide health care to Medicare beneficiaries living in Miami than to those in Minneapolis. The difference cannot be accounted for by demographic

differences, health care prices, or health status (Wennberg and Cooper 1997). Together, these reports suggest that the health sector does not produce on the production frontier and often does not minimize the cost of producing health or health improvements.

What Cutler's analysis does not say is either (1) how health care is not efficient, or (2) whether efficiency is improving over time. This then leaves open questions of how one might want to change the organization and financing of health care. Cutler's prescription for improving the value of health care spending or efficiency is based on his observation that health care payment systems in the United States do not typically reward the outcomes that we want. Hence, he sees pay-for-performance (P4P) schemes as a step towards paying for the kinds of outcomes that efficiency dictates and Americans want. Cutler is not alone in his enthusiasm for P4P. There has been a recent rush by payers to implement such policies (Rosenthal et al. 2004; Institute of Medicine 2007). I believe that it is worth stepping back to consider how doctors make decisions and whether the "rationality" that is behind P4P is present to a sufficient degree to warrant the current enthusiasm. This raises two specific questions:

- (1) If physicians are rational and money oriented, how do they respond to P4P schemes?
- (2) If physicians are not entirely rational and money oriented, how do they respond to P4P schemes?

Below, I focus mainly on the second question and leave most of the first question for another time.

Inertia, Optimism, and Complexity

In this section, I concentrate on the inertia of professionals, or what has been termed status quo bias in decision-making and unrealistic optimism by professionals, in the context of a highly complex and uncertain decision-making environment. I will also examine the psychology of responses to complex payment environments. These concepts will be applied to help explain the inefficiency in health care delivery and the possible difficulties with P4P as a remedy.

Inertia or Status Quo Bias

Thaler has identified a general tendency of people to exaggerate the value of an item they possess (selling price) relative to how they would value the same item if they did not own it (buying price) (Thaler 1980). This has been termed the “endowment effect.” Samuelson and Zeckhauser make some related observations regarding the tendency of people to exaggerate their preference for the current state of affairs (Samuelson and Zeckhauser 1988). This occurs in the context of more complex circumstances (choices over multiple goods or complicated attributes) and has been termed status quo bias. These apparent anomalies in decision-making have been linked to reference points and strong loss aversion. A number of experimental studies have provided evidence that status quo bias occurs under a variety of circumstances in which decisions are made under uncertainty.

For example, a test of status quo bias was conducted among electric power consumers in California. Consumers were asked to indicate their preferences over different combinations of service reliability and rates. The respondents came from one of two groups, one with much more reliable services than the other. Each group was asked to indicate preferences over six service-rate combinations, where one was the status quo. The results showed that 60.2 percent of the high-reliability group chose the status quo, and 5.7 percent chose the low-reliability option, which came with a 30 percent decline in rates. In the low-reliability group, 58 percent chose the status quo, and 5.8 percent selected the high-reliability option, which came with a 30 percent increase in rates (Hartman, Doane, and Woo 1991). The results suggest that people are reluctant to adopt a new service or to even-handedly evaluate new choices.

The departure of everyday medical practice from recommended evidence-based medical practice has been widely documented. A recent study examined the quality of care for 30 chronic and acute conditions as well as for some preventive practices (McGlynn et al. 2003, Note 3). They found that, overall, people seeking care received about 55 percent of recommended care. Many of these practices have been recognized for some time in published research and by professional medical societies as forming the basis of high-quality treatment. A recent example of off-frontier production was examined by Skinner and Staiger who found

that economic incentives and budgets did not explain departures from frontier production (Skinner and Staiger 2005). Thus, the advances in medical treatment techniques that Cutler and others identify as driving the health system to deliver more health care also require physicians and other providers of medical care (hospitals and nurses) to modify treatment approaches that in numerous cases appear to have met with success for many years. In other words, these advances require providers to alter the status quo. The puzzle for economists is that the “costs” of adopting these new practices are generally quite low for physicians, while the prospects for improving health outcomes are quite high. Why, then, would professionals focused on treating the ailments of those who are most often well-insured people not adopt these new practices?

In the context of medical decision-making and studies of diffusion of medical knowledge and practice, status quo bias may offer a foundation for developing a new model that explains the tendency of medical practice to cling to older methods of treatment. Prescription drug decisions furnish an important choice to study this issue. Since physicians generally do not gain financially based on the drugs they choose, one would expect them to behave as “perfect agents.” For example, physicians have been shown to favor pharmaceutical products that they were introduced to in medical training even if newer products have been shown to be superior (Scherer 2000). One recent study conducted in Germany examined the characteristics of psychiatrists most likely to adopt the new generation of anti-psychotic medications. The analysis found that the age of the psychiatrist (as a marker of how long he or she had been in practice) was the most important variable explaining the adoption of the new drugs. Patient characteristics had no significant effect on prescribing patterns (Haman et al. 2004). Hellerstein (1998) studied a very simple decision, whether to prescribe a generic drug, using U.S. data from 1989. She found that most of the variation in the prescribing of generics was unexplained by patient, price (insurance), and regulatory factors. As in other research, she found that older physicians were less likely to prescribe generic products than were younger physicians. These studies offer evidence on patterns of prescribing that are consistent with status quo bias.

The implication of status quo bias in medical decision-making is that, while innovation in medical care will result in improved health outcomes over time, even at levels where the benefits exceed the incremental expen-

ditures, the distance between average practice and the efficiency frontier can be substantial and will grow ever larger during times of accelerating innovation. In terms of consequences for P4P, status quo bias will likely attenuate any response relative to what one might expect from a “purely” rational, money-oriented doctor. It also implies that the rewards needed to “move practice” may be larger than expected.

Unrealistic Optimism

People tend to be overconfident. Studies of drivers and entering students all suggest that large majorities of people believe that they are better than average. That is, they believe they are more accomplished drivers than the average or that they will achieve a higher grade in a course than the average student. For listeners to National Public Radio, this is the “Lake Wobegone” phenomenon, where all children in the community are above average. Holding these beliefs does not mean only that one moves through life with a more positive outlook, but rather that decision-making is potentially distorted. Such distortion in decision-making under uncertainty has been termed unrealistic optimism (Weinstein 1980).

In the business context, overconfidence by top management (CEOs) has been associated with the wave of mergers that took place between 1998 and 2001. During that period, about \$2 trillion was spent on acquisitions. Yet, shareholders of the acquiring companies lost about \$250 million as a result of those deals. This raises the question of why there was so much enthusiasm for mergers if the deals were unfavorable for the acquiring companies (Moeller, Schlingemann, and Stulz 2003).

In the context of a model of physician decision-making in which the physician is treated as a Bayesian information processor, the establishment of priors and the updating of priors with new information may be subject to distortions by unrealistic optimism.

Experimental research on optimism reveals that key among the characteristics that explain the degree of unrealistic optimism are the desirability of the anticipated event, its perceived controllability, experience with the event, and the perceived probability of the event (Weinstein 1980). Research also shows that having detailed information on experiences of comparison groups attenuates, but does not eliminate, unrealistic optimism.

Physicians are trained and function in environments that are consistent with the conditions that breed unrealistic optimism. Because they

are trained to take control, physicians frequently believe that they have considerable ability to stave off the consequences of illness. Physicians are also charged with taking a central role in making decisions about life itself and about the ability of individuals to function and engage in basic human activity. Thus, the outcomes they aim to influence are highly emotionally charged and valued by their patients. A physician has frequently dealt with particular cases on a number of occasions, in many cases with a positive outcome. Finally, it is seldom the case that physicians have detailed information on comparison groups to help them judge the likely incremental outcomes of their efforts.

The consequences of unrealistic optimism in physician decision-making may be several. First, physicians may have gained confidence in their choices as they have received additional information about a case, even when their accuracy in, for example, making a diagnosis has been unchanged by the information (Oskamp 1965). Thus, optimism in the presence of clinical information will generate more testing and diagnostic procedures. Second, unrealistic optimism may make physicians overestimate the expected benefits from administering additional treatment—possibly because they overestimate both their own abilities and the potential impact of their preferred technologies. This can result in the provision of excessive levels of care. Finally, the physician may imbue patients with an overestimate of the benefits of receiving more treatment.

Data on the experience of caring for people at the end of life illustrate these possibilities and direct us towards hypotheses about optimism in medical care. The experience of patients at the end of life offers a disturbing reflection of medical decision-making and resource allocation that reflects larger issues in health care delivery. Specifically, the majority of terminally ill patients state a preference to die at home, but frequently do not actually do so (Buntin and Huskamp 2002). Spending for care at the end of life accounts for a large share of Medicare expenditures, estimated at about 25 percent over the past two decades. There is considerable disagreement regarding how much this level of spending can be reduced. However, Skinner and colleagues compare regions with the highest and lowest deciles of physician utilization during the last six months of life. They report utilization of diagnostic tests that differ by factors of between 2 and 3.5. In addition, they note differences in high-

intensity treatments (feeding tubes, dialysis, and ventilators) that differ by factors of 3 to 8 (Skinner, Fisher, and Wennberg 2001). These figures suggest potential for savings even if there are some differences in patient preferences across regions. Strikingly, patterns of end-of-life care do not vary substantially according to insurance arrangements (Experton et al. 1997). Thus, spending levels and the ability to deliver care consonant with people's preferences do not appear to be driven primarily by payment incentives.

Unrealistic optimism appears to play a central role in clinical decision-making at the end of life, as physicians tend to overestimate the duration of survival. Lamont and Christakis studied the prognostication abilities of physicians treating cancer patients in hospices (Lamont and Christakis 2001). The median physician estimate of survival time was 75 days after admission to hospice, while the median actual survival time was 26 days. In addition, physicians then communicate more optimistic prognoses to patients than they actually believe. In the Lamont and Christakis study of cancer patients, for instance, physicians reported optimistic outlooks for patients to their colleagues about 12 percent of the time, whereas the same physicians reported optimistic outlooks to the same patients 41 percent of the time (Christakis 1999). The true prognosis was communicated to only 37 percent of the cancer patients. The unrealistic optimism potentially affects both the physician's decisions about the therapies to pursue and the patient's demand for care. Optimism has been posited to lead physicians to overprescribe intensive interventions aimed at cure, while under-referring to hospice (Lamont and Christakis 2001). Some research has observed that terminally ill patients who overestimate their expected survival time are far more likely to demand intensive "curative" care relative to palliative treatment (Weeks et al. 1998). Optimism therefore drives care towards high-intensity treatment that is unlikely to generate many clinical benefits, and away from the use of hospice, an arrangement that may better serve the desires of well-informed patients.

Unrealistic optimism is likely to be important in medical decision-making in a range of other areas as well. It probably contributes to the emphasis on high-intensity medical care in the United States and for off-frontier performance of the health care system. Clearly, other economic and professional influences are also at work in this case, but it is likely

that unrealistic optimism about technology and the ability to apply it have played a key role. Unrealistic optimism may result in a diminished response to P4P schemes, since physicians may be hard to convince that they are not currently doing "the right thing." In addition, physicians may be resistant to schemes that "undervalue" their efforts. Corporate CEOs have responded in an analogous fashion when capital markets have tended to undervalue their investment and acquisition decisions.

Complexity and the Limits to Supply-Side Fixes

Policymakers in the health sector have moved quickly in recent years to adopt measures that aim to address quality and cost problems by the implementation of P4P schemes (Rosenthal et al. 2004). Under these arrangements, health plans implement various types of payments that reward achieving levels of performance on quality indicators (in some cases, performance is relative—for example, top 20 percent—in others, it is absolute). One health plan, for instance, used data on physicians with respect to whether they screened for breast, cervical, and prostate cancer as well as for high cholesterol, and whether they managed diabetes and instituted other prevention programs. The plan paid \$20 per patient to those doctors in the top quartile of performance, and \$10 per patient to those between the 50th and 75th percentiles. Hundreds of such payment arrangements are being adopted around the country. The appeal is clear. Demand does appear to be very sensitive to quality or performance differences. Prices of health care are generally administered so that higher-quality providers cannot charge more than others, and so there are incentives to underprovide quality if improvement is costly. Such schemes tend to assume that market participants (doctors and hospitals) exhibit a high level of economic rationality.

Even standard economic models that assume rationality raise cautions regarding the enthusiasm for P4P schemes. Principal-agent models, for example, lead to concerns with multi-tasking or "teaching to the test," whereby the outcomes upon which one pays will improve, while other outcomes that are valued but not well measured or not rewarded will be neglected and may decline. Recent research on P4P offers some evidence to suggest that multitasking behavior takes place among physicians (Mullen, Frank, and Rosenthal 2007). Other institutional features and

behavioral phenomena may also be important in determining the impact of P4P.

The health care delivery system is very complex, with each provider typically serving 10 to 15 different public and private payers. Thus, payment methods, quality guidelines, level of care criteria, formularies, and coverage arrangements for patients will differ from payer to payer. Within each plan, payment arrangements are complicated, and the benefit designs facing individual patients are typically highly nonlinear and frequently dependent on prior treatment choices. This complexity requires that physicians be able to process large amounts of information in the context of strict time constraints to make optimizing choices. Recent theoretical and empirical analyses suggest, however, that the ability to do so may be quite limited.

If we consider layering P4P schemes on top of existing payment systems—which for most physicians consist of mixes of capitation, fee for service, and case rates, and also frequently include productivity bonuses, pharmacy performance bonuses (sometimes related to generic prescribing), and some straight hourly payments for a set of 10 to 15 payers—the typical physician faces a very complicated price schedule. Liebman and Zeckhauser (2004) argue that complex price schedules have the potential to confuse physicians and patients and to increase the market power of the organizations establishing the pricing schemes. They postulate that people respond to the complexity in pricing schemes by adopting simple rules to govern behavior. The design of the pricing schemes in anticipation of the psychological response to the complexity is key to determining whether the pricing schemes enhance or harm social welfare.

The health care system has had a variety of experiences with complex payment methods. A recent paper by Glied and Zivin (2002) examines physician behavior in the face of multiple incentive systems. They find that observed physician behavior does not respond to the incentives associated with the marginal patient in the way that simple profit maximization would predict. Instead, their empirical results show that the response to one category of incentives depends on the composition of payment schemes for other patients in their practice. This suggests an alternate rule to profit maximization that governs response to supply behavior, such as a response to the modal incentives. During the 1980s, Medi-

care and some state Medicaid programs instituted a hospital prospective payment system. That payment system had two parts: a prospective part that paid for an admission as stratified by diagnostic category and a part where supply-side cost sharing obtained after a specified level of spending was reached. Frank and Lave studied the effect of changing the payment system from cost-based reimbursement to per-case prospective payment for psychiatric care (Frank and Lave 1989). They showed that the response was a reduction in both long-stay and short-stay cases. The expected pattern was for a reduction in long-stay cases and an increased density of short-stay cases. Interviews with physicians suggested that they treated the prospective payment based on an average hospital stay for a case as if it were a target, and so the density of cases increased around the mean stay.

The implication of these ideas and the experience with complex payment schemes is that, in a fragmented delivery system, P4P will not automatically elicit the expected behavioral responses. Very little is known regarding the most effective design for such policies.

Conclusions

David Cutler's work has stimulated health economists to think in different ways about the performance of the health care delivery system. He emphasizes that assessing the performance of the health care delivery system is an empirical matter that requires careful and detailed analysis of spending and outcomes. The next step in that research program is to understand more about where we are relative to the efficiency frontier, and why. I have offered some examples of ideas that might be useful in putting behavioral economics to work on that task. This is a big job, but it is one that Cutler's work clearly points to as unfinished business.

Cutler's call for P4P is well reasoned and sensible. However, whether one begins with the rational, money-oriented doctor or the optimistic person with limited ability to respond effectively to complex economic environments, theory will probably be of limited use in predicting responses to P4P schemes. Thus, Cutler suggests that some of these schemes be tried and that we begin to learn from these experiences. While I agree completely with that proposal, I also believe it is quite likely that the rational,

money-oriented physician may not be the best starting place. If this is correct, then there are some useful implications from behavioral economics for how to design P4P schemes. I will conclude by mentioning three. First, use relatively simple payment schemes so that attention is easily focused on the key outcomes that will be rewarded. Second, implement these schemes on a large scale to diminish the complexity (number of payment schemes) and to increase the share of business affected, so that it pays to change. Finally, make the rewards large enough to overcome inertia, reluctance, and intrinsic motivational concerns.

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Notes

1. For a complete review of such issues, see Frank (2004).
2. See National Expenditures at www.cms.hhs.gov/statistics/nhe/default.asp (Accessed May, 2005).

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Costs, Benefits, and Rationing of Health Care: Comments on Cutler's "What Is Good Care, and What Is Bad?"

William D. Nordhaus

A Very Hard Problem

To put health care in perspective, it is useful to consider some of the major economic problems facing the United States today. These include: (1) the budget deficit, (2) global warming, (3) the current account deficit, (4) Social Security, (5) dependence on imported oil, and (6) health care. After some study, I believe that we could fashion a reasonable solution that would resolve the first five problems, at low cost and with relatively little inequity and economic dislocation.

For the sixth one, health care, I do not believe that an obvious solution exists. Henry Aaron called health care "the problem that won't go away." I wonder whether it is the problem that cannot be solved, or that cannot be solved in a simple and efficient way. This is perhaps the message of the papers prepared for this conference by David Cutler, Alain Enthoven, and Henry Aaron; it is the message from the dozens of presentations and papers I have read over the years. Most experts believe that they have a solution to the American health care problem—whether this-or-that kind of competition or this-or-that kind of payer—but it is not obvious to me that any of these plans will actually resolve the problems of the American health care system today.

What are the barriers to fixing health care? There are many, but some that seem particularly important to me are the following. First, the economic stakes are huge in terms of the incomes of the providers (doctors, insurance companies, lobbyists, and the rest).¹ Health care is too large to tuck into an omnibus bill. Second, the welfare stakes are enormous for patients. People have benefited greatly from improved medical care, and

they, particularly the elderly, see health care as a basic right. Reducing benefits or entitlements among powerful groups will not be easy. Third, medical care is seen as a special kind of good and not as a normal economic good. The idea that medical care should be "rationed" the way we ration food, shelter, and automobiles is unacceptable not only to patients but also to many physicians. Clearly, some kind of rationing must occur, and the major questions are how it will be done, who are the losers and winners, and whether it will be efficient or inefficient.

The Costs of Health Care

Our economy has a very large stake in both the costs and the benefits of our health care system. I will begin with the familiar terrain of the share of health spending in the economy. There are clearly some ambiguities in estimates of spending on health care, such as whether to include spending on research and development, the environment, automobile and mine safety, and even health economists' salaries. Standard estimates from the U.S. Department of Health and Human Services (HHS) indicate that the share of health expenditures rose from 8.8 percent of gross domestic product (GDP) in 1980 to 15.3 percent in 2003.

Figure 3.5 shows the share of medical care in personal consumption expenditures (PCE), with a share under 4 percent up to around 1950, then rising sharply to 17 percent of PCE in 2004. The share of health in government direct purchases (which exclude transfer payments), shown in Figure 3.6, has been stable at between 4 and 6 percent of the total. Figure 3.7 shows the estimated relative inflation rate of health care, according to the U.S. Bureau of Economic Analysis (BEA), compared with all personal consumption expenditures. Health care prices have been rising more rapidly than all prices by about 1 percent per year, although it is quite likely that medical care inflation has been overestimated because of measurement issues.

The Benefits of Improved Health

On the benefit side, there is evidence that the improvements in health status over the last century have caused substantial improvements to eco-

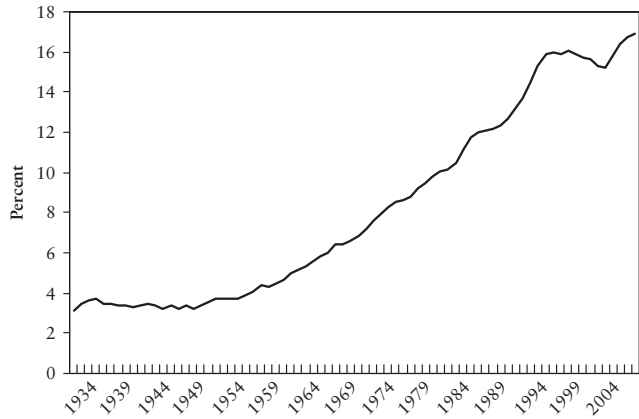


Figure 3.5
 Medical Care as a Share of Personal Consumption Expenditures
 Source: U.S. Bureau of Economic Analysis.

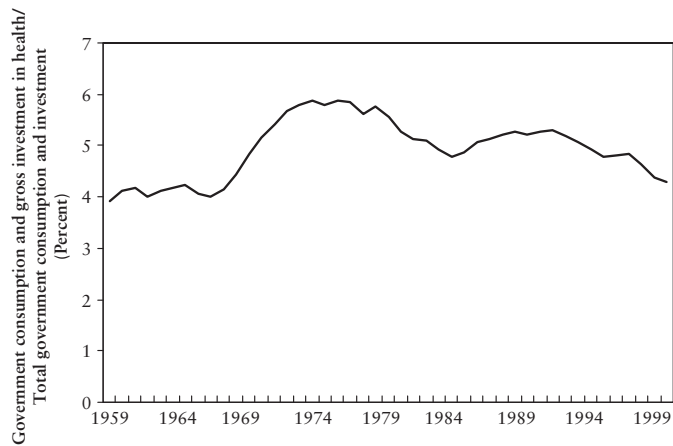


Figure 3.6
 Health as a Share of Government Consumption and Gross Investment
 Source: U.S. Bureau of Economic Analysis.



Figure 3.7
 Relative Inflation of Medical Care to All Personal Consumption Expenditures (Three-Year Moving Average)
 Source: U.S. Bureau of Economic Analysis.

economic welfare. This result emerges from several studies that value health improvements at conventional values of life extension. Studies by David Cutler and Elizabeth Richardson, as well as by Kevin Murphy, Robert Topel, and myself, have examined the economic equivalent of the extensions to life saving.²

My own conclusion from this exercise, based only on changes in life expectancy, was that the value of improvements in life expectancy is about as large as the value of improvements in all other consumption goods and services put together. Figure 3.8 shows an illustrative calculation from my study on “The Health of Nations” (Nordhaus 2003). This demonstrates that the growth of income from health improvements (shown as the first three bars in each group) is about as large as the growth in conventionally measured incomes.

Over the period from 1975 to 2000, for example, conventionally measured per capita income grew at an average rate of 2.0 percent per year. Over this same period, the annual average improvements in life expectancy had an economic value of between 1.0 and 2.1 percent of income (depending upon the discount rate and other assumptions).³ Over the entire period

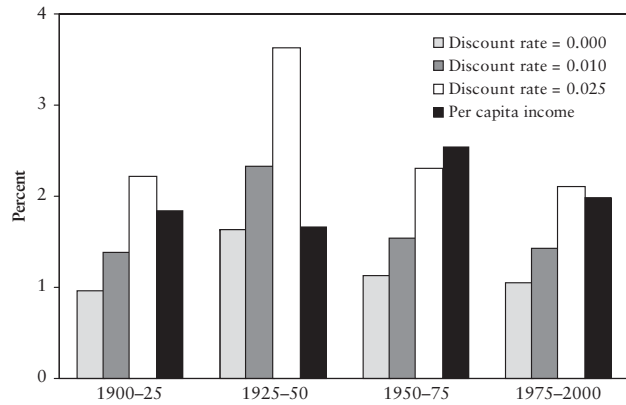


Figure 3.8
Growth in Health Income and Conventional Income, 1900–2000
Growth in health income is equal to the change in the value of improved health status divided by income and is shown for three different annual discount rates. The fourth bar shows the growth in per capita income. All figures are annual average percent per year.
Source: Nordhaus (2003).

from 1900 to 2000, the value of improved health or health income grew at between 1.2 and 2.5 percent of consumption (again depending upon the exact assumptions), whereas income grew at a rate of about 2.0 percent of consumption. Looking at the entire twentieth century, the contribution of the increase in life expectancy was between 59 percent and 126 percent of the contribution of income from all sources combined.

Specific Egalitarianism and the Need for Rationing

Among the public and many health care practitioners, it is widely accepted that everyone has a right to basic medical care. In a recent survey, 84 percent of respondents agreed that, “Health care should be provided equally to everyone, just as public education is” (Kaiser Family Foundation 2004). This strong sentiment is usually tempered by concerns about costs and restrictions to access. However, with respect to health care, it is striking how many people believe in “specific egalitarianism,” meaning

that specific programs or services should be distributed “equally” among all people. Some examples of this include the vote for citizens, the draft in time of major wars, as well as primary and secondary public schooling among children.

While there is general agreement that basic health care should be universally provided, this poses serious economic issues. First, as James Tobin pointed out, specific egalitarianism can be used most efficiently when goods are inelastic in supply.⁴ We do not worry (with the obvious exceptions) about inefficiencies in the “production” of votes in proclaiming “one person, one vote.” Similarly, there has generally been but a small response in the supply of citizens to the presence of a universal military service in most countries. By contrast, because much of health care is elastic in supply, particularly in the long run, mandating equal provision is likely to lead to major inefficiencies.

Two polar examples can serve to illustrate this point about elasticity. First, there is little in the health care sector that is truly fixed in supply in the long run (in the sense of being completely price inelastic). Perhaps the supply of organs for transplantation comes close to fixed supply. If these organs are allocated purely based on medical need, then the absence of a market signal will not reduce the number available and will not keep transplants from those who need them. If we desire specific egalitarianism, a parallel market in this case would be harmful. If a market in organs is allowed, those with higher incomes can bid some of the fixed supply away from those who need them most. This is one example where the Canadian model of prohibiting a private market to run in parallel to the comprehensive public system can be justified.

The opposite, however, would hold for medical drugs, the second polar example. Suppose that the government system includes payments for an expensive drug like Taxol for treatment of cancer. Like the majority of manufactured products, most drugs are close to perfectly elastic in supply (and may even have some positive learning effects). In this case, it would not be sensible to prohibit a parallel private market, because there is no crowding out of the public supply by increased private demand.

A second difficulty with specific egalitarianism in health is the definition of the bundle of goods to which equality should apply. Many people would agree that access to medical care for a life-threatening illness, such as a ruptured spleen or tuberculosis, should not be denied to anyone.

However, it is not clear that people would agree that everyone should have free and immediate treatment for removal of corns and calluses. Where to “draw the line” is a vexing problem—one that will not go away and indeed is likely to worsen as more conditions are classified and more treatments are discovered.

One of the results of poorly designed specific egalitarianism is the general view among health care experts that the allocation of health care in the United States is highly inefficient. The general view, expressed differently in the papers by Cutler, Enthoven, and Aaron, is that many critical conditions are untreated, while others with high costs and close to zero medical benefits are receiving substantial resources. Although this is self-evident to specialists, it is also a very difficult research issue. David Cutler’s presentation showed a number of illnesses for which the benefit-cost ratios for some treatments are quite high (cardiovascular disease, heart attack, low-birth-weight infants, and depression), with some suggestions of areas where the benefit-cost ratio may be low (such as Sal’s angioplasty). More than one-third of Medicaid spending goes to long-term care, and it is not clear that this qualifies as a high-benefit activity. It would be interesting to see whether a more comprehensive approach could be taken, using a nationally representative sample that matches treatments and conditions, to flesh out the larger picture.

Whether or not a country provides equal health care for all its residents, there must be rationing of health care. While rationing might be a jarring word, it reflects the reality that, in a world of scarcity, every need and desire cannot be fully satisfied. Until we get to the point where every symptom of every hypochondriac can be extensively examined, probed, tested, and treated, it will be necessary to leave some perceived medical need unsatisfied. Rationing is not an option. However, it is not obvious *how* we are to ration.

Most goods and services are rationed by the purse. Prices ration out the limited supply of fancy cars and mansions, as well as not-so-fancy gasoline and land, to those whose incomes and tastes lead them to want them most. In many areas of health care, we do not allow prices to ration out services to the highest bidders. The results are sometimes longer waits for care as a surrogate price (as is the complaint in many HMOs and in Canada), rising expenditures as the demand for services rises sharply (as for Medicaid and Medicare), or lack of coverage (for the rising number

of uninsured). One way of interpreting the fiscal crisis facing the United States is that the country is unwilling to ration health resources by price or by trimming the benefit package.

So long as we continue to seek some form of specific egalitarianism in health care, there will be no easy solutions to the rationing problem. For my tastes, I would prefer some type of explicit selection of covered benefits along the lines of the Oregon prioritized list of covered services. The philosophy of the Oregon plan is that all citizens should have access to care, and that there should be an open and reasoned process for determining the list of covered treatments. One initial component of the ranking of the prioritized list was a cost-benefit test, although that appears to have generated such disagreement that it was either dropped or demoted in favor of cost-effectiveness tests together with expert and public views.⁵

While not without shortcomings, this approach has several attractive features. First, it does allow a budget constraint to operate in the sense that a “line” can be drawn to fit treatments into available resources. So, for example, the funding line in 2004 just included simple and social phobias and just excluded acute conjunctivitis.

Second, while we might complain about the priorities, there appears to be little disagreement about the general rankings. Treatment of diabetes and appendicitis are covered, and few would probably disagree here. Below the line are elective dental services and several conditions for which there are either no effective treatments or no necessary treatments. There are also some brave exclusions, such as the decision not to treat cancers with five-year survival probabilities of less than 5 percent.⁶

It would be useful to have more study about the implicit valuations of different conditions along with treatment costs for the prioritized list to see whether, in fact, the cost-benefit calculations are reasonable. It would also be interesting to compare the cost-benefit calculations in the health care arena with those that have been done for environmental, health, and safety regulations. As Table 3.2 shows, results in the regulatory area indicate extremely disparate cost-benefit ratios, depending upon the regulation and agency. The regulations shown here range from highly cost-beneficial with large benefits and negligible costs (for the tobacco regulations for youths) to others where the costs per fatality prevented are in the billions

Table 3.2
Estimates of Cost of Life Saved by Major Federal Regulations

Rule (Agency)	Net cost per discounted life (millions of 1995 \$)
Toxicity characteristics to determine hazardous wastes (EPA)	-8,300.0
Underground storage tanks: technical requirements (EPA)	-350.0
Manufactured home construction standards on wind (HUD)	-37.0
Process safety management of highly hazardous chemicals (DOL)	-3.3
Regulations of cigarettes and smokeless tobacco for youths (HHS)	-0.5
Medicare and Medicaid programs, miscellaneous (HHS)	0.2
Quality mammography standards (HHS)	0.3
Food labeling regulations (HHS)	0.4
Childproof lighters (CPSC)	0.
Standard for occupational exposure to benzene (DOL)	7.1
Occupational exposure to methylene chloride (DOL)	8.5
Occupational exposure to 4,4' methylenedianiline (DOL)	18.0
Asbestos prohibitions, total (EPA)	19.0
National primary and secondary water regulations—phase II (EPA)	25.0
Occupational exposure to asbestos (DOL)	27.0
Hazardous waste management system—wood preservatives (EPA)	50.0
Sewage sludge use and disposal regulations, 40 CFR pt. 503 (EPA)	190.0
Land disposal restrictions for “third third” scheduled wastes (EPA)	190.0
Hazardous waste management system, solvents (EPA)	200.0
Occupational exposure to formaldehyde (DOL)	390.0
Prohibit the land disposal of the first third of scheduled wastes (EPA)	400.0
Land disposal restrictions—phase II (EPA)	910.0
Drinking water regulations, synthetic organic chemicals—phase V (EPA)	9,600.0
Solid waste disposal facility criteria (EPA)	36,000.0

Source: Hahn, Lutter, and Viscusi (2000, pp. 16–17).

of dollars (such as some drinking water regulations). Are cost-benefit ratios also this disparate under current programs like Medicare and Medicaid, and in current HMO and insurance benefit packages?

Third, a prioritized list, in principle, allows adjustments of treatments and coverages in response to changes in medical technology and clinical studies. One of the major difficulties with most approaches to coverage is “contractual stickiness,” whereby benefits are easy to add but difficult to remove.⁷ A prioritized list provides a mechanism for adding and removing services that legitimizes the process rather than politicizing the process from the very start. In this arena, the process of changing the list cannot be an easy one, any more than weaning people from their SUVs by high gasoline prices is painless in a market arena. Still, we clearly need mechanisms to substitute for a market mechanism when we decide, as in much of health care, not to allow the price mechanism to operate.

A prioritized list is not the only mechanism for selecting covered services, however. Every HMO and insurance contract must somehow make similar choices all the time. One major advantage of the prioritized-list approach is that, in principle, it uses a cost-benefit philosophy (ranking on the basis of the benefit-cost ratio) rather than a medical necessity philosophy (whereby procedures are included if their proven benefits are positive) or the results of litigation (whereby something is included to prevent legal action). Perhaps the most important advantage is that by excluding medical services that are low priority, particularly those that receive public funding, we make room for extending high-priority services to those who currently do not qualify or who are crowded out by market or bureaucratic forces.

Notes

1. This point was amply shown in an insightful set of essays in Aaron and Armacost (1995).
2. See particularly Cutler and Richardson (1997), and the chapters by William D. Nordhaus, Kevin M. Murphy, and Robert H. Topel, and David M. Cutler and Srikanth Kadiyala in Murphy and Topel (2003).
3. The single most important assumption in these studies is the value of extending the lifespan by a year. Most studies, including my own, value a life-year at around \$100,000 per year, or \$12 per hour, at income levels of the 1990s.

4. Tobin (1970). Tobin discusses several policies that are good targets for specific egalitarianism.
5. A description and the list are available at http://egov.oregon.gov/DAS/OHPPR/HSC/current_prior.shtml. A particularly useful discussion is by Bodenheimer (1997a, 1997b).
6. This is an interesting calculation for those in health economics. Assuming that the value of one year of life extension is \$100,000, then the value of such procedures would be less than $.05 \times 5 \times \$100,000 = \$25,000$. The cost of a course of treatment is probably in the same order of magnitude as the upper limit of benefit, so this seems reasonably well grounded in the underlying cost-benefit calculation.
7. Contractual stickiness is the health care analog to downward wage rigidity that macroeconomists analyze in such detail. The two syndromes arise from the same underlying source, the costs of negotiating changes to existing understandings.

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