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Follow the Money: Payment Reform as the Key to Health Reform

by
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Foreword

To commemorate its 20th anniversary, in 2005, the AARP Public Policy Institute (PPI) initiated the Twentieth Anniversary Invitational Lecture Series, supported in part by a generous bequest made to the AARP Foundation. In keeping with PPI's mission to stimulate and inform the debate on public policy issues areas of critical importance to mid-life and older Americans, the series of four lectures offered a platform for distinguished scholars to address a contemporary aspect of their public policy work in economic security, health care, consumer protections, or long-term care. Each scholar was given the opportunity to expand the ideas presented in his/her lecture in a paper published and disseminated by the AARP Public Policy Institute. This Issue Paper by David Cutler, Otto Eckstein Professor of Applied Economics and Dean for the Social Sciences of Harvard University, was the basis of his lecture, "Follow the Money: The Problems and Opportunities Posed by Financial Incentives in Medicine," on October 19, 2005.

While the primary aim of the health care system is to ensure optimal health outcomes, at the margin, financial incentives can affect the type, quantity, and quality of services delivered. Recently, policymakers and others have focused attention on using financial incentives to improve the quality and efficiency of health care. Drawing on previous publications on this subject, particularly his own body of work, Dr. Cutler explores how monetary incentives could be harnessed to improve the health care system. In addressing the effects of financial incentives on performance, he suggests timely approaches to improving the quality of care while streamlining the efficiency of our medical system. The author suggests that, when developed and applied appropriately, financial incentives can have a positive, substantial, and lasting impact on how the health system operates.

Other participating scholars in the Invitational Lecture Series have been Richard Thaler of the University of Chicago, who discussed "Libertarian Paternalism, Behavioral Economics, and Public Policy"; Michael Barr of the University of Michigan Law School, presenting on "Savings and Access to Financial Services: Transforming the Services Market for Low and Moderate-Income Boomers"; and Penny Feldman of the Visiting Nurse Service of New York's Center for Home Care Policy and Research, whose address was "From Baby Boom to Age Boom: How Can We Prepare Ourselves and Our Communities for Long-term Living?"

Theresa Varner
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Executive Summary

No topic in medicine draws as much debate as the role of money in medical practice. Single-payer reform proposals call for eliminating the role of money in medicine, while the consumer-directed health plan movement is founded on the idea that people do not bear enough financial consequence for their care decisions. All acknowledge that payment reform is the key to health reform, but disagree greatly on the nature of reform. I argue that the focus on payments is correct, but that we need a different direction of reform—to orient reimbursement toward health improvement, rather than just paying for services provided. Pay-for-performance systems offer the potential for great improvements in the value of medical care.

Medical care financing has an enormous effect on the services that are provided. When payment is more generous, more is done. The link between payments and services has many good features: the technological development of American medicine was a direct result of the generous reimbursement environment. But paying for services provided has adverse effects as well. Because payment has historically been very generous, too much has been done. Estimates suggest that medical spending in the United States is 20 to 30 percent above needed levels. When payment has been limited, in contrast, too little is done, as with poor use of information technology and lack of attention to chronic disease. Each of these areas could use enormous investment in new resources. By compensating physicians for the quality of the services they perform, the medical system can limit the incentives for overused care and increase the incentives for prevention.

I suggest four directions for health care reform consistent with this view. The first is to introduce performance-based payments for providers and health insurers serving Medicare patients using a number of available quality metrics. Second, the federal government could encourage regional collaborations focused on improving health care quality. Third, the federal government might pay for a significant information technology infrastructure in medicine. A national health information network would add perhaps two percent to medical spending over five years, but it would likely offset that cost with efficiency savings. Finally, the government could reduce the copayments individuals face for services with high value, and raise copayments on services with lower value. This would complement the incentives of performance-based payment for providers.

In all likelihood a performance-based payment system would lead to a lower level of spending, but continued increases in costs over time. Performance-based payments will thus not solve the long-run financing problems of medical care, but they will improve the value of the medical system.

Introduction

No topic in medicine draws as much debate as the role of money. Whether one agrees with the Apostle Paul, who wrote that “The love of money is the root of all evil” (Timothy, 6:10), or instead with George Bernard Shaw’s reformulation, “The lack of money is the root of all evil,” the flow of money is the key to health care. Indeed, single-payer proposals and consumer-directed health plan proposals each have monetary transformation at the heart of their ideas, albeit in different ways.

This essay considers the role of money in medicine. Like the single-payer and consumer-directed health care fans, I argue that monetary distortions have adversely affected the workings of the medical system. But my analysis differs fundamentally from the analysis of those other groups. Rather than decry money entirely, as in the single-payer proposals, or insist that people bear more responsibility, as the consumer-directed health plan movement does, I suggest that we pay smarter for care—rewarding the provision of good care over bad care and encouraging high value for our dollar. The heart of the problem in medical care is that we do not get enough out for what we put in. Paying for value has the potential for significantly better health outcomes and, perhaps, lower spending.

The reasoning behind my analysis can be seen in two case studies. The first is the Vioxx disaster that has recently unfolded. Vioxx was a once-promising painkiller that avoided the gastrointestinal side effects of traditional anti-inflammatory medications. The science behind Vioxx began to take shape in the late 1980s and early 1990s, with the discovery of the multiple mechanisms for action among existing nonsteroidal anti-inflammatory drugs (NSAIDs). Since the NSAIDs had significant side effects, it was thought that a more targeted drug might have a better side effect profile. The drug discovery race was on. After an intensive research effort, Merck discovered Vioxx and shepherded it through Food and Drug Administration (FDA) review. Heavy marketing followed. Within a few years after approval, Vioxx sales exceeded \$2.5 billion annually—a blockbuster by any measure—and total sales of Vioxx and similar drugs topped \$5 billion.

But the hype exceeded the truth. Vioxx was found to increase cardiovascular disease risk and has since been withdrawn from the market. Merck is facing thousands of lawsuits with billions of dollars at stake, and the FDA is being asked uncomfortable questions about why a drug that was harmful was brought to market so quickly and remained there so long.

Whether or not there was formal wrongdoing in the Vioxx case, it is clear that the possibility of enormous profits was an essential ingredient driving the story. The potential for earnings led Merck to push research and clinical testing rapidly, to seek rapid approval, and to market Vioxx heavily. There was no comparable pot of money arguing for caution.

If Vioxx is an example of too much money driving the system, aspirin is the counterexample: too little was done and far too late. We now know that aspirin is among

the most potent drugs to prevent heart attack and speed recovery, but that knowledge came out only slowly. The first indication that aspirin might have beneficial cardiovascular disease effects was in 1948, when Dr. Lawrence Craven noticed that men taking aspirin were less likely to have heart attacks than were men not taking aspirin (Craven, 1950). Studies on the cardiovascular benefits of aspirin dribbled out over the next several decades. The first clinical trials of aspirin as primary prevention for heart attacks were published in 1974 (Elwood et al., 1974). Aspirin was approved by the FDA for prevention of strokes in people with prior transient ischemic attacks in 1980 and for secondary prevention of heart attacks in people with a previous event in 1985. Finally in 1998—50 years after its benefits first became apparent—the FDA approved aspirin as primary prevention for a heart attack and recommended therapy during a heart attack. Heidenreich and McClellan (2001) show the importance of this knowledge: they estimate that increased aspirin use in the acute treatment of a heart attack was the leading factor in explaining improved heart attack survival between 1975 and 1995.

Why did it take 50 years for the relevant studies of aspirin to be conducted? Since aspirin was discovered in the late 19th century, it was long off patent by 1948. As a result, no pharmaceutical company stood to make money if aspirin proved effective in preventing heart disease. Public funders might have picked up the slack, but they did so only slowly. With no money, there was no research, and patient outcomes suffered.

The common theme in each of these stories is money. When a drug is on patent, the profits from additional sales are large, and companies do whatever they can to sell more. With off-patent drugs, in contrast, profits are smaller, and investment is reduced correspondingly. Sometimes society gets too much, and other times too little.

The missing ingredient in each case is money contingent on doing the right thing. If physicians (or pharmaceutical companies) were paid for curing arthritis, not just providing the newest medications, Vioxx would be valuable only if it were clinically effective and less expensive than other therapies. Merck would have to show cost-effectiveness to doctors and insurers, not just conduct safety and effectiveness studies for the FDA. Similarly, research on aspirin would have been far more valuable if reimbursement were made conditional on health improvement. When payment is based on value, the incentives created are the right ones.

This insight is the basis for the analysis in this paper. I discuss how reimbursement can be oriented to the value of the services provided, and what the effects of such a system might be. The themes in this paper are discussed in my recent book (Cutler, 2004), though I elaborate on them much more here and develop their implications. I start in the next section by discussing the dual problems of overused and underused care and how financial incentives play into this. The second section shows how financial incentives can optimally be structured theoretically, and the third and fourth sections present suggestions for reform. The final section states my conclusions.

I. Financial Incentives and Medical Care Provision

Why do doctors do what they do? The question is simple, but the answer is complex. Ethics is a big part of medical practice. People become doctors because they want to help those in need, and that guides a lot of care decisions. Patient preferences are important as well; many patients have opinions about the type of care they want to receive, and doctors increasingly respond to those views.

But money matters as well. A quarter-century of health economics research has demonstrated a simple point: when reimbursement is more generous, more services are provided. “You get what you pay for” is the mantra of much of health economics, though the French businessman James Goldsmith perhaps put it more memorably: “If you pay peanuts, you get monkeys.”

The development of the medical system as a whole shows the enormous importance of money. Before the 1950s, medical care was a small part of the economy and was not increasing in cost particularly rapidly. Adjusted for inflation, medical spending was only \$300 per person in 1929, or 3.5 percent of gross domestic product (GDP). These costs were manageable except for the very sick—and the problem for the very sick was as much loss of earnings as it was high medical bills. Today, the medical system is 20 times greater in per person spending and four times larger as a share of GDP.

The fuels for this remarkable transformation were technology and money—the former expanding what we could do, and the latter making it affordable. The technological end is well known: the development of diagnostics and therapeutics across the spectrum of disease. The money end is largely a story of health insurance. Health insurance was a perk offered during World War II when wages were regulated but benefits were not. Employer-provided health insurance expanded after World War II as tax policy, codified by the Internal Revenue Service (IRS), favored providing health insurance over cash wages. Medicare and Medicaid were created in 1965, expanding access to the elderly and poor.

When health insurance began to be popular, providers had charges for services, and health insurers did what came naturally: they paid providers the fees they charged. To ensure access to services, cost sharing was low. With generous payments to physicians and hospitals, and few restraints on patient demand, big medicine was the inevitable result (Finkelstein, 2005). On the supply side, public and private research dollars created the potential to do more, at higher cost.

Technology and insurance danced together. As the capabilities of medicine expanded, more people wanted access to the system, so health insurance coverage rose. And the more who were covered, the stronger were the financial incentives to do more. The modern health care system was the inevitable result.

In recent years, the tendency has been to cut back on spending generosity, and once again the practice of medicine has followed the changing incentives. Medicare

introduced prospective payment for hospital care in the early 1980s. Rather than paying hospitals the actual costs they incurred, Medicare paid a fixed amount reflecting the average cost of treating a patient with a particular disease. Additional tests and days in the hospital went from being well reimbursed to being cost drivers. The result was a dramatic reduction in hospital lengths of stay and less use of marginal tests and procedures (Coulam and Gaumer, 1991). In the 1960s and 1970s, for example, lengths of hospital stay averaged seven to eight days. Prospective payment launched an immediate downward trend. Lengths of stay average fewer than six days today, despite a much more acute patient population. But big-ticket items were still reimbursed well; surgical diagnosis-related groups (DRGs) pay more than medical DRGs, for example. As a result, technology diffusion continued apace, and overall costs rose.

Physician payments tell the same story. When managed care shifted from paying physicians on the basis of what they did to a salary payment, or further still to a fixed amount per person, out of which service costs are subtracted (termed “capitation”), the time physicians spent with each patient fell and use of services declined (Glied and Zivin, 2002). Physicians were so incensed by the conflict between managed care payment and their professional ethics that they—along with their patients—ultimately rebelled against the tight restrictions of managed care.

This story is repeated endlessly. From hospitals to physicians, to prescription drugs, to post-acute care services (nursing homes and home health care), generous payment leads to more care provided, and less generous payment leads to less being done.

Not all spending increases are bad. The life of the sick was not very pleasant in 1929; it is much better today. The health improvements we have witnessed in the past half-century—seven more years of life expectancy, reduced disability, increased vitality—are due in large measure to medical advances. By almost any metric, the return for our spending has far exceeded the cost (Cutler, 2004; Cutler, Rosen, and Vijan, 2006).

But, like Vioxx, not all that is done needs to be done. Canada achieved—more or less—the same outcomes we did, but its medical spending is 40 percent lower than ours. Medical spending in the United States varies by a factor of two across areas, with no discernable impact on patient health (Center for Evaluative Clinical Sciences, 1999). The magnitude of overused care is not entirely known, but some guesses are possible. Jack Wennberg and colleagues at Dartmouth have estimated that Medicare spending could be reduced by about 20 to 30 percent without adverse consequence if all areas practiced care at the level of the 25th percentile most expensive area (Fisher et al., 2003; Skinner, Fisher, and Wennberg, 2005). Looking at 30 conditions, Elizabeth McGlynn and colleagues at Rand estimated that 11 percent of chronic disease care was for services that were not needed (McGlynn et al., 2003).

Paying more than is warranted is bad, but doing less than is appropriate can be even worse. The consequence of overuse is largely financial, though patients are sometimes harmed; the consequence of underuse is lives lost. Because aspirin approval was delayed for a half-century, thousands of people died. The aspirin story is

symptomatic of a broad class of failures of the medical system to develop in the right way. In each case, innovations in medical practice that would improve care dramatically have not taken place, or have taken place far less rapidly than they should. I consider two classes of failure: poor use of information technology and underinvestment in changing patients' behaviors.

A. *Low Use of Information Technology*

Medicine is perhaps the most information-intensive industry in the economy. The goal of medical care is to prevent and diagnose potentially complicated problems and provide technically appropriate solutions to them. These are the tasks for which information technology (IT) was designed. And yet medical care uses information technology among the least of any industrial sector.

The lack of an electronic medical record is the most obvious failing. But the problems run much deeper. Consider the idea of decision support software. In complicated cases, doctors ought to be able to learn from the experience of thousands of similar cases. What diagnoses should be considered for a particular set of symptoms? Which medications are most appropriate for particular conditions? What strains of bacteria are common in the past week? And yet, the vast majority of doctors still rely on their personal experience in making clinical judgments, supplemented by a case or two from the literature and the experience of close colleagues. It is still common to hear physicians justify their decision making on the grounds that they personally have had success with a particular therapy, or that a course of therapy is standard in their institution.

A second example is the use of computers to catch errors. A major source of error in hospitals is prescription handwriting that is not legible to the pharmacist or calculations about dosage strength that are done hurriedly and are incorrect. The Institute of Medicine estimated a few years ago between 44,000 and 98,000 people die annually because of preventable medical errors in hospitals, making medical errors one of the leading causes of death (Institute of Medicine, 2000). Steps to reduce these errors, including better use of information technology and error detection systems, are not difficult to conceive and have been shown to reduce errors greatly (Bates et al., 1998).

But sophisticated information technology is rarely used. Only 4 percent of hospitals have adopted computerized physician order entry systems, and only 17 percent are near complete adoption (Cutler, Feldman, and Horwitz, 2005). Patients notice as well. In surveys, 17 percent of people report that test results were not available at the time of an appointment, 14 percent say that a doctor had to reorder a test that had already been done, and 18 percent indicate they had received conflicting information from different doctors. Thirty-one percent of people reported at least one of these failures of coordination (Schoen et al., 2004).

Fans of single-payer health care systems should note that the situation is not much better in other countries. The share of people reporting coordination problems was 28

percent in Australia, 26 percent in Canada, 25 percent in New Zealand, and 24 percent in the UK—all comparable to the United States.

It is not as if such errors are unknown. Doctors readily admit that information problems are pervasive in medicine. The problem, rather, is financial. Consider again the hospital-based computer system to catch medication errors. These systems have an up-front cost of \$3 to \$10 million, with ongoing costs of over \$1 million a year (Advisory Board Company, 2001). Because higher-quality hospital care is not reimbursed at a higher rate, there is no revenue down the road to justify the expense. There are some potential offsets in cost savings, but these are more speculative. Some have suggested, for example, that hospitals might save on malpractice premiums by adopting computer systems, but claims of such savings have not been convincing (Warner, 2004). There might also be savings in fewer duplicate tests, but again the amount is unknown. Ironically, this could actually turn into losses to providers, as additional tests often translate into additional income. On the revenue side, more patients might choose to go to hospitals that have higher quality, but quality metrics have not yet been disseminated widely or used in choosing institutions. As a result, the financial system is misguided, and computerized error detection systems have not been adopted.

B. Underinvesting in Behavioral Change.

Social as well as medical factors are important in treating chronic disease. For a patient with diabetes, not only must a therapy be available, but the patient must follow the regime as well. The patient must institute lifestyle changes, take certain drugs, and schedule and keep follow-up appointments.

For the bulk of patients, chronic disease is not adequately controlled. Thirty years after blood pressure medications were shown to be effective in preventing cardiovascular disease, only one-quarter of people with high blood pressure have their blood pressure medically controlled (Burt et al., 1995; Fields et al., 2004). A decade after statins became widely used, only 5 percent of people with high cholesterol keep their cholesterol below recommended levels (Ford et al., 2003). And among people with diabetes, only 7 percent attain recommended levels of blood glucose (HbA1c), blood pressure, and cholesterol (Saydah, Fradkin, and Cowie, 2004).

There are many faults here. Almost everything that can go wrong does go wrong—for some patients. Some people are not adequately screened, others are not adequately prescribed, some do not take medications as recommended, and still others give up because of cost or complexity. The way to address these issues involves provider as well as patient behavior.

In fact, we know it is possible to do better. The best health plans—ironically the old-fashioned health maintenance organizations (HMOs) that people love to hate—achieve much better outcomes than does the national average. Along with Nancy Beaulieu and Kate Ho, I have studied the care for diabetes at HealthPartners, an HMO in Minneapolis, Minnesota (Beaulieu, Cutler, and Ho, 2006). HealthPartners is largely a

staff-model HMO; physicians are on salary and lab results are done in house. As a result, HealthPartners is able to work with its physicians and staff on chronic disease control.

HealthPartners made a commitment to better diabetes care in the mid-1990s. One aspect of this commitment was working with physicians to provide better care to such patients. Specially trained diabetes-resource nurses coordinated the care of patients across multiple providers. Physicians were given “at-risk” lists and contacted about their patients who did not schedule or who missed appointments. Guidelines about lifestyle modification and medication use were developed and disseminated. HealthPartners also worked with patients to encourage compliance with the guidelines. Patients received help with lifestyle changes, education about the disease and its treatment, and reminders about what they should be doing. Cost sharing for diabetics was not changed, but one could imagine settings where it is (see below).

The program was extremely successful. Mean rates of HbA1c declined from 8.7 percent to 7.7 percent, near guideline levels for the average patient. Cholesterol control improved as well. Our estimate is that life expectancy for the average diabetic patient increased by nearly a full year.

Despite the obvious success, this type of model is not widely followed. Why not? Money is again the key. The cost of establishing a serious chronic disease program is high. Computer systems need to be purchased, physicians need to be trained, and new ways of care management need to be implemented. Even at HealthPartners, where computer systems were already in operation, the costs of treating diabetic patients rose in the short term. The payback is limited, however. Physicians do not get paid more when their diabetic patients are better controlled. Indeed, they may suffer losses if use of well-reimbursed procedures decline. The provider group’s volume may increase—more patients may choose that insurer or fewer disenroll. But as noted above, volume responses to quality are generally limited.

The same barriers to delivering high quality care, and more, face health insurers, and discourage them from doing the right thing. Increased volume can be good for business, but in health care that is not always true. New patients attracted to a health plan with good diabetes care are often sicker patients than average. As a result, even well-run plans can lose money. And a health plan that invests in its providers—giving them computer systems or paying for nurses as diabetic assistants—will find that those improvements spill over into all of the physicians’ patients regardless of their health plan or insurer. There is often no competitive edge in leading the way. The only reasonable source of financial benefit for an insurer is fewer complications from better-controlled disease (additional payment for sick people, termed risk adjustment, is possible but not widely used) but such savings are often years away, and after the patient has transferred to another insurer. A diabetic in his or her early 60s, for example, will often be on Medicare before substantial reductions in complications are realized.

In the case of HealthPartners, we estimate that cost savings were only a few thousand dollars after a decade of experience with the program. Even though better care

is a wonderful social investment, better chronic disease care is a private investment without real returns.

As best we can tell, chronic disease is slightly better controlled in other countries than it is in the United States, but not by much. The same international survey that asked about common errors (Schoen et al., 2004) also asked people about adherence to physicians' recommendations. Between 35 and 49 percent of people in the five countries surveyed did not take their medications as prescribed (the U.S. share was 35 percent). Between 24 and 40 percent of people did not follow lifestyle advice regarding diet, smoking, or drinking (the share was 37 percent in the United States). Seven to 14 percent of people did not schedule a follow-up appointment or see a specialist when recommended (compared to 13 percent in the United States). And 7 to 11 percent of people did not get a diagnostic test or have a surgical procedure recommended by the doctor (the United States was tied for the highest share at 11 percent). There is no existing model that the United States should adopt wholesale.

In each of these countries, communication failures are a key reason for the poor performance. About one-third of people say they disagree with their physician's recommendations, and another third find the recommendations too difficult to follow. Some people in the United States say they do not follow recommendations because of high cost, but this is not a large proportion (18 percent). Even in the United States, cost is not the major barrier to chronic disease care. In total, all countries do poorly in such care.

C. *The Quandary*

This discussion leads to a fundamental question—what is the best way to run a medical system? The belief that profit motives lead to misallocation drives the thinking of many. Arnold Relman, longtime editor of the *New England Journal of Medicine*, is most eloquent in this view: “A real solution to our [health care] crisis will not be found until the public, the medical profession, and the government reject the prevailing delusion that health care is best left to market forces... Once it is acknowledged that the market is inherently unable to deliver the kind of health care system we need, we can begin to develop the ‘non-market’ arrangements for the system we want” (Relman, 2005). Even some business-oriented observers tend to agree. “As long as Washington remains wedded to the illusion that market-based medicine will cure health care's woes, tens of billions of dollars a year will continue to vanish in waste, inefficiency, fraud, and in profits to companies that make money by denying care. It doesn't have to be this way.” (Bartlett and Steele, 2004).

Of course, single-payer systems do not get the money out of medicine. They just make it flow in a different way. Indeed, getting money out of medicine is no more a policy than is encouraging a more moral world. Both would be good, but what does it mean? Doctors could be paid a salary, but salaried systems have done poorly in other countries. Pharmaceuticals could be available at cost, but incentives for research and development (R&D) would fall accordingly. And this policy does nothing to encourage greater use of underused care.

At the other extreme are those who believe that consumers should be more in control, the way they are in other industries. Regina Herzlinger has written widely on this view: “But, can we have our cake and eat it too? Yes! With an American Revolution that replaces the Medicare entrepreneur-strangling apparatus with a market-based system of determining supply and demand.” (Herzlinger, 2003).

For goods where purchase and consumption are close in time, one suspects that this principle works well. Herzlinger justly notes the value of competition in retailing and automobiles. But health care is different: decisions about care today do not affect outcomes until years later. Hypertensive patients who do not take care of their health when the disease is asymptomatic will notice no ill effects until many years down the road, when they have a stroke or heart attack. In such an environment, the rewards associated with good decisions are not immediate, so behavior might not be changed (Angelitos et al., 2001). Even in the current environment, with relatively modest cost sharing, three in four people do not have their chronic disease adequately controlled. It is hard to believe that a system that places more financial burden on people to pay for costs will do better.

The key to better health care is not to pay less or shift costs to individuals, but to pay smarter. I describe this idea in the next section.

II. The Promise of Payment Reform

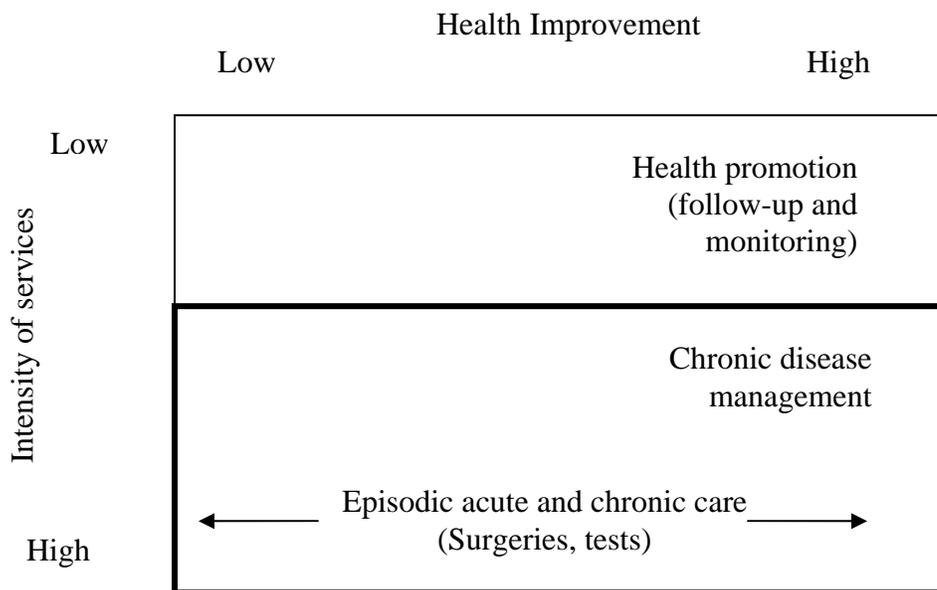
Where medical care payments go wrong is in focusing on the wrong dimension of performance. Almost all payment systems reimburse for quantity (how much is done) and intensity (how invasive it was). Doing more brings in more money, especially when it is very intensive. Quality is not an explicit component of reimbursement. As a result, systems result in too much care (if payment is very generous) or too little care (if payment is poor), but not necessarily the right care. Considering quality as an explicit goal could help rectify this situation.

To understand this idea more fully, consider figure 1, which differentiates medical care along two dimensions. Along the horizontal axis of the chart is the quality of the services provided, or the impact of the care on improving patient health. For any particular patient, some services are low quality, and others are high. The vertical axis is the intensity of services provided. The least intensive services are health promotion of the type discussed above: working with patients to ensure that recommendations are followed and helping to coordinate medical care across different providers. Because many of these services do not require detailed medical training, they can be performed by a nurse or other non-physician personnel. In practice, there is no payment to anyone for doing them. Somewhat more intensive is the medical component of chronic disease management—performing blood tests, prescribing appropriate recommendations, and monitoring adverse side effects. These services require medical training but not the most intensive type. Primary care physicians spend a good deal of their time providing this type of care. These services are reimbursed reasonably well; a typical primary care physician earns perhaps \$150,000 a year—less for family practice, more for internal medicine. The most intensive care is episodic acute and chronic care, including

sophisticated surgical operations and intensive tests. Specialists who provide this type of care can earn several hundred thousand dollars per year.

The box with the thicker border in figure 1 refers to the types of medical sciences which are encouraged by reimbursement incentives codified in traditional payment systems. More intensive care is reimbursed well, and less intensive care is reimbursed less well. Non-physician services are not reimbursed at all. Some features of this system are good. Sick patients in great need of high-tech care are well cared for (the bottom right of the figure). The hallmark of American medicine is the technological wonders it offers when survival is threatened. It is perfectly consistent with the incentives.

Figure 1: Typology of Medical Care by Service Intensity and Health Improvement: Incentives under Traditional Payment Systems



Not surprising, however, too much is done in this reimbursement environment. This is illustrated in the bottom left of the box: care that is very intensive but is not valuable. Examples of overused care include prescription drugs that are taken even when cheaper drugs are more appropriate and surgeries that are performed even when their clinical benefit is low and non-surgical options are readily available.

That such overused care abounds is not new. George Bernard Shaw said it best a century ago: “That any sane nation, having observed that you could provide for the supply of bread by giving bakers a pecuniary interest in baking for you, should go on to give a surgeon a pecuniary interest in cutting off your leg, is enough to make one despair of political humanity. But that is precisely what we have done. And the more appalling

the mutilation, the more the mutilator is paid” (Shaw, 1911). The best estimate that we have, from the Wennberg studies noted above, is that Shaw’s dilemma accounts for about 20 to 30 percent of medical spending.

The valuable care that is not provided—the underinvestment in information technology and the monitoring and counseling of patients that do not occur—are in the upper right quadrant of the figure. The hallmark of all of these services is that they involve costs without any obvious reimbursement. Underutilization is the not surprising result.

Estimates of total underuse are even sketchier than estimates of overuse. In their study of care received in 12 communities, Elizabeth McGlynn and colleagues estimated that only 55 percent of recommended care was provided (McGlynn et al., 2003). This study did not look at care in all clinical encounters, but it is the best we have. In the short term, providing these services would cost money, though there may be cost offsets from fewer acute events down the road.

A. *The Managed Care Debacle*

The idea that medical care is overused is not new. For several decades, the United States has spent more per person on medical care than has any other developed country, with no better health outcomes to justify the expense. A decade ago, businesses and government got serious about eliminating that overused care, and managed care was the vehicle to do so.

Managed care had many aspects, but at its most fundamental it sought to reduce the use of unneeded care and increase the incentives for less intensive care. These goals were accomplished through command and control features such as utilization review, *ex post* monitoring, and the like and by paying less for high-tech care. For example, some doctors went from being paid for each service they provided to receiving a fixed payment per patient, independent of the specific service they provided.

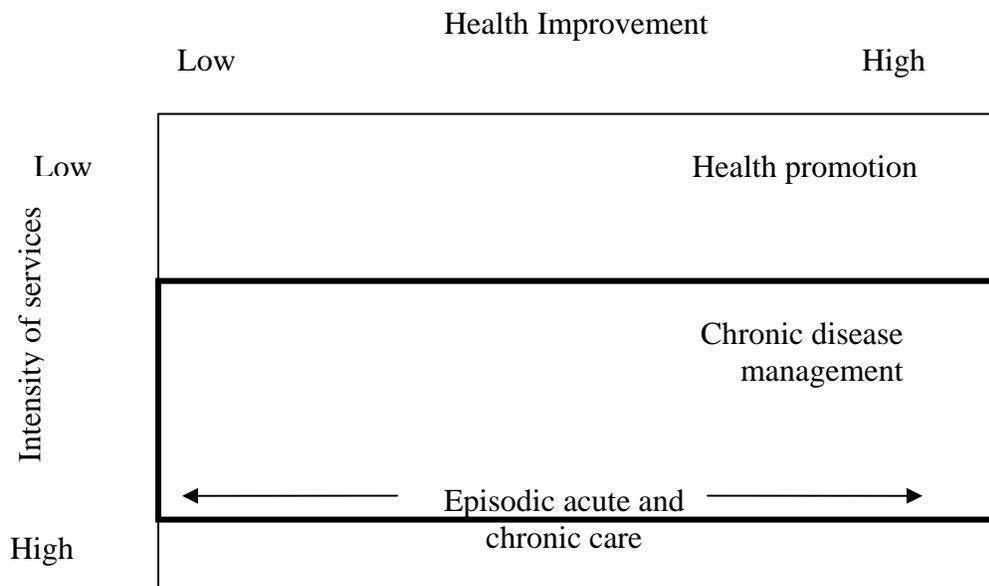
In exchange for supply-side incentives encouraging less care, managed care reduced the cost sharing people faced when seeing the doctor. Thus, patients were financially encouraged to access more routine and preventive care.

Figure 2 shows the nature of the incentives in managed care. The thick-bordered area of generous reimbursement is moved up on the intensity axis relative to traditional reimbursement. This reflects the financial and non-financial incentives to do less. Making high-intensity care less rewarding has good and bad features. Eliminating very intensive care that is of low value is good. Indeed, many health economists judge the managed care era as a success because it reduced the incentives to provide this type of care (Glied, 2000). But patients and physicians worried that would not be the only impact. Who was to say that some high-value care was not eliminated as well? The horror stories about managed care were largely of this form: people with rare conditions, for whom very expensive care can sometimes be necessary, being denied access to services because they do not fit the typical case. Without a fine scalpel, it is difficult to

separate healthy tissue from diseased, and managed care was not operating with a particularly sharp knife.

On the other side, the ideal of better access to primary and preventive care never really panned out. While patients paid little to see the doctor, the volume standards set on physicians limited the amount of time they could actually spend with each patient. The result was a system that saved money but struggled with the perception—partly deserved—that quality of care was compromised.

Figure 2: Typology of Medical Care by Service Intensity and Health Improvement: Incentives under Managed Care



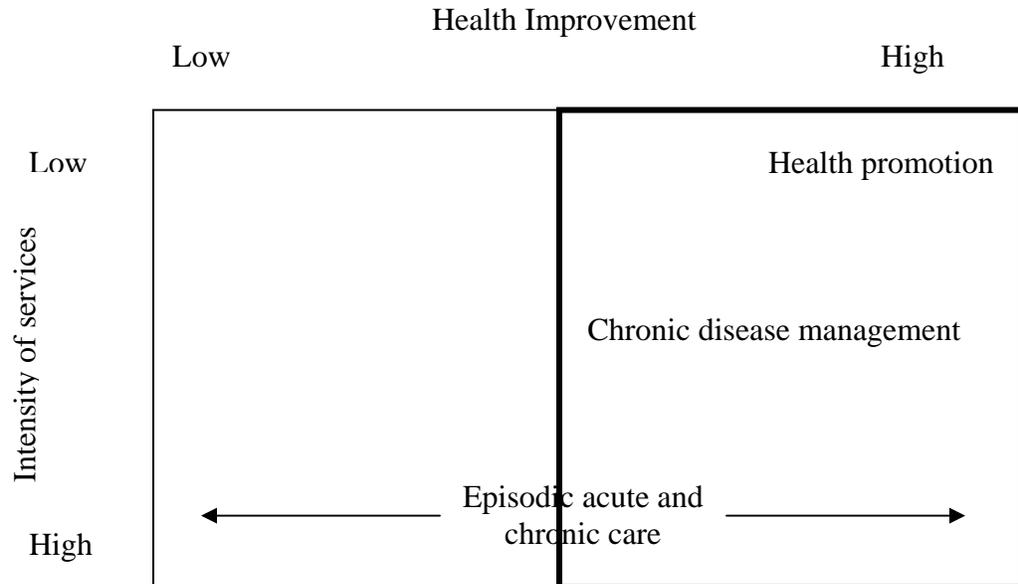
B. Performance-based Payments

The failure of both traditional payment systems and managed care shows the limits of paying for services based on quantity and intensity. In essence, both systems failed because they targeted the wrong goal. What patients care about is not the quantity of services they receive or how intensive those services are, but whether their health improves as a result of medical care. This suggests an entirely different form of payment: reimbursement for the quality of services performed. I define a pay-for-performance system as one that incorporates performance in reimbursement in an important way.

Figure 3 shows a pure pay-for-performance system. In this system, compensation is not based on what was done at all. Rather, providers are paid for the health improvement their patients realize—the more the patient benefits from care, the more money the provider receives. Thus, high-intensity care is not favored over less

intensive care, and care that does not materially improve patient health does not make sense economically.

Figure 3: Typology of Medical Care by Service Intensity and Health Improvement: Incentives under Pay for Performance



The idea of paying for performance is not new. “Evidence-based medicine” has been a goal of public and private organizations for several decades. Scottish epidemiologist Archie Cochrane pioneered the collection and dissemination of guidelines for common medical conditions (Cochrane, 1972). A collection of systematic reviews of randomized trials, the Cochrane Collaborative, still bears his name. Since few can quibble with using evidence to make care decisions, all organizations practice—to one degree or another—evidence-based medicine.

But just having guidelines does not guarantee appropriate care. The spur to move beyond guidelines came from the Institute of Medicine (IOM). In 2000 the IOM released a report, *To Err Is Human: Building a Safer Health System*, that documented the enormous harm from medical errors—estimating the figure noted earlier of 44,000 to 98,000 deaths annually from errors. It was evident that just noting good practice was not enough. This was followed the next year by an equally influential volume, *Crossing the Quality Chasm* (2001), that called for a national focus on improving health care quality. Paying for performance was an explicit recommendation of that report.

Of course, health care organizations have always used some performance-based payment. Services that were clearly not indicated were not reimbursed. But the call for using this in everyday practice is new. A payment system based entirely or even largely on performance would be a radical departure.

The most important element of a performance-based payment system is the measure of performance. Quality of care is the central aspect of performance—determining what is good care and what is not. How much of care can be evaluated is a subject of some debate. In many circumstances, we know about processes that physicians should follow in treating patients. For example, patients with diabetes should have their blood sugar measured several times per year (less than one-quarter do, however; McGlynn et al., 2003). Similarly, people over age 40 should be screened regularly for colorectal cancer (only one-third are). The Rand Appropriateness classification, discussed earlier, measures 439 specific indicators for 30 conditions and preventive care. These are largely measures designed for chronically ill patients in an office setting. Other chronic disease measures, developed by the National Committee on Quality Assurance (NCQA, 2005), could be used in performance assessment. For inpatient stays, the Joint Commission on Accreditations of Healthcare Organizations has developed National Hospital Quality Measures (JCAHO 2000), which are commonly accepted measures of quality.

In some circumstances, we can measure health outcomes directly. Mortality after a surgical operation is readily observable. New York pioneered the use of mortality measures more than 15 years ago, measuring hospital- and physician-specific mortality rates for bypass surgery and angioplasty (Hannan et al., 1994), and a number of states have since picked up the methodology. Quality of life is harder to measure, but a number of scales have been developed and could be applied (Miller, Robinson, and Lawrence, 2006).

Other dimensions of performance may be important as well. Patient experience is a key aspect of medical care. Patients can report their satisfaction with the medical care experience, the timeliness of care, and other attributes. A Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey has already been developed and validated as an instrument for measuring patient experience (Harris-Kojetin et al., 1999).

These measures of quality can be used independently or combined with costs to form a quality metric across providers. Standard economic criteria suggest paying on the basis of quality achieved per dollar spent, though difficulty in measurement suggests not weighting costs so highly, at least initially.

The issue with performance measurement is not whether there are any suitable metrics, but whether there are enough of them to span a large enough set of patients. Suppose we can observe measures of care for diabetes patients, but not for asthmatics. If we pay physicians extra for good diabetes care, physicians might take resources away from asthmatics and direct them toward diabetics—for example, scheduling more time with diabetic patients and less time with asthmatics. Substitution of effort reduces the benefits of performance-based payment.

But not all changes need be adverse. If physicians respond to the incentives for diabetes care by investing in new computer systems to manage chronic disease, or by scheduling more patient hours overall, the improved management process could benefit asthmatics as well as diabetics.

How much substitution would occur in actual payment systems is unknown. Indeed, since one can make theoretical arguments for substitution or positive spillovers, we cannot answer this question without experimentation. A reasonable step is to experiment with some—but not too much—performance-based pay. Some suggestions for doing this are presented below.

A second difficulty involves measurement of quality when patient differences affect outcomes. Process measures such as whether the right drug was prescribed are relatively straightforward to interpret. Outcome measures such as mortality raise more difficulties. Consider rating the performance of two physicians who perform bypass surgery on the same day. If the patient of one physician survives the operation and the patient of another does not, is it always the case that the first doctor provided higher-quality care than the second? It may be that the patient of the first physician was luckier than the patient of the second physician, or that the patient of the first physician was healthier.

To some extent, averaging over time helps. For example, payment could be based on mortality rates over the entire year. Since most surgeons who do bypass surgery operate frequently, the luck of the draw would tend to average out. But one still needs to account for systematic differences in patient severity across physicians. One surgeon may have a better record than another because his or her patients were less sick to begin with, not because the surgeon had any more technical skill. To compound the measurement error, paying more to the doctor with healthier patients creates incentives to avoid very sick patients.

The way to avoid this outcome is to adjust the observed mortality rates for the severity of the patients. Rather than grade actual mortality across surgeons, instead grade actual mortality relative to the expected level given how sick the patients were, as New York and other states do in their report cards for coronary bypass surgery and angioplasty. In health care, this grading is termed risk adjustment. In education, perhaps a more familiar example, it is standardizing the score for the difficulty of the exam.

The value of a pay-for-performance system is directly related to the adequacy of risk adjustment. A good risk-adjustment system lends confidence in outcome-based payment; if risk adjustment is poor, paying on health outcomes is not feasible (though measures of process are still valid quality measures). There has been substantial research on risk adjustment systems in health care (van de Ven and Ellis, 2000). Some risk-adjustment systems are being used in different settings, but these systems generally focus on predicting medical spending, not health outcomes. A new set of risk adjusters must be developed to predict mortality and other health outcomes. How well this can be done is an empirical question.

The lack of perfect measures has not hindered all experimentation with pay-for-performance systems; a number of pay-for-performance initiatives have been implemented in recent years (Rosenthal et al., 2004). In most of these cases, the systems are too new to have definitive results. In the few cases that have been analyzed, though, the results provide mild encouragement that quality improvement is possible through pay for performance, although the overall incentives provided have not been particularly strong (Rosenthal et al., 2005). Still, given our current knowledge, a complete performance-based payment system is too large a step.

But the goal in health care reform is not to design the optimal system and wait for its adoption. Rather, the goal is to make incremental changes that move us in the right direction and set a path for sustained transformation. Several moderate steps can be taken to provide incentives for high-quality care. In the next section I present specific instances where quality-based payment could be applied, recognizing that for some these steps will seem too small, while for others they will be too large. In addition, careful monitoring will be needed so that any adverse effects are mitigated via system redesign.

III. Applying the Lessons

Focusing on the quality of medical care suggests four directions to health reform. The first step is to link a part of provider reimbursement to currently observable measures of quality. It is easiest to envision this reform in Medicare, because that is what the federal government controls most directly. On top of the current Medicare payment (or instead of current payments, if one wishes to be spending neutral), one might add a modest supplement related to clinical quality.

As noted above, measures of quality are complex. The Centers for Medicare & Medicaid Services (CMS) might start with some or all of the metrics noted above. CMS has started to collect data on hospital and physician quality, although these efforts are still very preliminary. Along with their use in quality payment, these data would be disseminated to consumers.

Moving to some quality-based payment for physicians is particularly important in light of projected changes in Medicare payments in the next few years. Under a system called the Sustainable Growth Rate, Medicare payments to doctors are to be lowered if the volume of services provided exceeds expected levels. In the past few years, service provision has expanded greatly. As a result, current projections call for reductions in physician payments of at least 25 percent over the next few years (U.S. Government Accountability Office, 2005). It is clear that a reduction of this magnitude will not be allowed to occur, and that some “giveback” will occur. Providing giveback in the form of a quality-based payment is a natural way to provide budgetary relief and move Medicare in a better direction.

Quality can also be measured for health plans, and Medicare could reimburse health plans contracting with Medicare on the quality of their care. In the recent Medicare Modernization Act, additional funds were allocated to increase payment rates to managed care plans to encourage them to enroll Medicare beneficiaries. But these

payments were made without a quality contingency. A natural step is to restructure this payment and base at least part of the funds on the quality record of the plan. The Health Plan Employer Data and Information Set (HEDIS) measures of the NCQA are the natural measure to use. The private sector accepts these ratings as a good assessment of health plan quality, and these scores are widely monitored and compared. There is no current equivalent of HEDIS ratings for plans that provide prescription drug coverage only. Developing such measures is a clear research task.

Medicare reform is only one possibility. A second strategy is to encourage regional collaborations to encourage quality. In a typical big city, there might be three to five private insurance companies and two public insurers—Medicare and Medicaid—as well as a small set of major hospitals and physician groups. Those organizations could come together around the goal of quality improvement, including quality measurement and dissemination and performance-based reimbursement.

Federal and state governments needn't be the instigators of such a change, but they do need to be involved. Because Medicare and Medicaid account for nearly half of medical payments, no quality initiative is complete without involvement of public sector enrollees. In addition, governments might need to be flexible on antitrust issues to allow regional collaborations focused on quality improvement. There have been no firm rulings on the legality of these arrangements.

In fact, regional actions have been far more significant than have federal actions in the past decade. New initiatives such as the Pittsburgh Regional Healthcare Initiative and the Integrated Healthcare Association of California have joined established organizations such as the Buyers' Health Care Action Group to push for higher-quality health care (Rosenthal et al., 2004). The focus of these organizations differs somewhat—safety in some cases (e.g., Pittsburgh), payment reform in others (e.g., Northern California)—but quality is always the central goal.

Regional collaboratives could be inventive in ways that Medicare cannot. By law, Medicare payments use DRGs for hospitals and resource-based relative value scales (RBRVSS) for physicians. Regional collaboratives could experiment with different models of reimbursement entirely, for example, quality-based capitation at the level of a disease episode.

A third direction for reform is to invest in information technology—electronic medical records and decision support software. As noted above, underinvestment in information technology is one of the most conspicuous failures of the medical care system. Given the poor return on such investment currently, it is likely that investment in information technology will not become substantial without significant government subsidy.

While information technology is costly for any institution, it is not so costly that we cannot afford it in the medical system as a whole. Estimates of the cost of a national health information network, encompassing electronic medical records and in some models decision support software, range from \$115 billion to \$156 billion, or roughly 2

percent of medical spending for each of five years (Hillestad, et al., 2005; Kaushal et al., 2005). This does not include any efficiency savings that might result.

Financing this amount federally is not out of the question. Medicare spending is nearly \$350 billion annually, and the federal government contributes another \$150 billion annually for Medicaid. The information technology total is about one year of Medicaid spending (if it is an add-on; as noted above, the federal government could finance these costs by reducing payments through existing mechanisms). A more consequential comparison might be the Hill-Burton Act of 1946, which financed the growth of the modern hospital industry. Over its lifetime, the Hill-Burton Act amounted to about 20 percent of a year's medical spending (Halvorson, 2005). The equivalent in health information would be only half as much.

IV. The Demand Side

Much of this discussion has focused on the supply side, using provider payments to improve what is done. Empirically, a lot of health care is determined by payment rules, not just patient demand. But the demand side is important as well. In addition to using quality metrics for payment, quality data should be disseminated to consumers so it can influence treatment and provider choice. Almost all health reform proposals envision increased use of quality data by consumers. We do not have great data on how well this will work in practice, but most people suspect the ultimate value of good-quality information will be high.

Cost sharing is important, too, but the recommendations here are far less uniform. The most common demand-side proposals are to increase patient cost sharing, the consumer-directed health plan movement. The idea is that giving consumers better financial incentives will lead to more rational decisions. Unfortunately, this does not seem to be entirely true. When patient cost sharing is increased, consumers stop taking appropriate medications, even though the long-term benefits are high (Huskamp et al., 2003). Myopia is important here, as is complexity. Patients with chronic diseases effectively act as their own care manager, deciding when to take medications and when to stop.

Just as I have argued for supply-side incentives to focus on high-quality care, we should do the same on the demand side—setting cost sharing so that people are encouraged to do the things that improve their health. The idea behind such a plan dates from Avedis Donabedian in 1980 (Donabedian, 1980) and has recently been termed “value-based insurance design” or “benefit-based copayments” (Fendrick et al., 2001).

To be sure, there is variation in cost sharing in the current system, but it depends much more on the cost of the service than its benefit. The situation of pharmaceuticals is most notable. In most health plans, consumer payments for pharmaceuticals fall into one of three tiers: the lowest tier for generic medications, a middle tier for branded drugs that are preferred (generally those obtained at the lowest cost), and a higher tier for branded drugs that are not preferred. Studies show that when drugs are moved into higher tiered

plans, or when cost sharing is increased overall, fewer patients take medications (Huskamp et al., 2003).

In many settings, though, the clinical effectiveness of medication use varies across patients. In the case of cholesterol-lowering “statin” drugs, there is a high return for patients with a history of cardiovascular disease, but a lower return in patients without existing heart damage or significant other risk factors. The incentives provided to the former group of patients to avoid overuse should be much weaker than the incentives provided to the latter group. Indeed, Goldman, Joyce, and Karaca-Mandic (2006) show that in the case of statin drugs, reducing cost sharing for high- and moderate-risk patients and raising it for low-risk patients can reduce cardiovascular disease complications and their subsequent costs, with no concomitant increase in pharmaceutical spending. The same is true about use of ACE (angiotensin-converting enzyme) inhibitors for patients with diabetes (Rosen et al., 2005); in this setting, these medications are estimated to improve health and save money. One could imagine no cost sharing—or even a subsidy—for taking such medications.

Benefit-based copayments need not be restricted to pharmaceuticals. Physician visits for recommended screenings could have lower copayments than other visits. Many health savings accounts carve out preventive care in this fashion, but traditional insurance does not. In a more complex arrangement, a person with angina might face a low copayment for medical management of the disease, but a higher copayment for angioplasty.

As with performance-based payment generally, it is wise to move in this direction slowly. Pharmaceutical use is the clearest case where demand is strongly sensitive to price, and implementation would not be too difficult. In addition, there is likely to be ample opportunity to implement such changes. The Medicare drug benefit, which took effect January 1, 2006, seems likely to be amended in its first few years: the cost of the benefit is higher than many want, and the benefits are less generous than others think is desirable. In considering future reforms, one natural direction for reform is to adjust copayments at least partly to reflect the health impact and cost of the medication.

V. Some Reflections

Payment reform of the type considered here would certainly improve health. The magnitude of this improvement is difficult to estimate—not all responses can be predicted, and there are interactions across interventions to consider—but the change certainly would be positive.

The more important issue for adoption of these changes is what they would cost. In the short term, payment reform would cost money, largely for information technology. Using the estimates provided earlier, a plausible guess of the cost of IT is an increase in spending of perhaps 2 percent of spending per year in the first few years of the program—about \$100 per person per year. Costs might rise further as people received more of the monitoring and assessment services that currently are underprovided. If one thinks of adding \$100 per person per year to cover additional physician visits,

medications, and tests not already provided, the addition is another 2 percent of spending. The 2 percent due to increased service use would be lasting, while the spending on information technology would decline.

Over time, there would be cost savings. Some of these would be from fewer complications of chronic disease, but many more would come from reductions in overused care. As noted earlier, the literature suggests that savings of 20 to 30 percent are possible—perhaps \$1,000 for the typical person. A relatively conservative estimate might be that half that amount, 10 to 15 percent, could be saved. These savings would also be lasting. All told, a very rough guess is that after a few years, payment reform would lower medical spending by about 10 percent relative to baseline, or perhaps \$600 per person per year.

Against this savings is the trend of greater technological capability in medicine. We can do more over time, and we extend what we know to more people. While not true in all industries, technological change in medicine has historically led to higher costs, as people are willing to pay more for longer and healthier lives. There is little reason to expect this underlying trend to change in a performance-based payment system. Thus, one is faced with the unsettling prospect of making significant payment reform and still finding that the medical care system grows increasingly larger in the national budget.

Views about whether an underlying trend of increased costs is sustainable differ across analysts. In my work (Cutler, 2004), I argue that higher average incomes will enable us to afford greater spending on medical care, if we wish to do so. Others suggest that fiscal or social constraints will make increased costs untenable (Aaron, Schwartz, and Cox, 2005). If the latter view is right, we will face a situation where we need to ration—not because care is not worth it, but because we cannot afford all the care that is worth it.

The time for rationing may well come, and it is wise to think about what we might do beforehand. But the far more immediate goal is to fix what we know is broken. Payment reform may not lead us to the Promised Land, but it's better than wandering in the desert.

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