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Physician incentives in managed care organizations: Medical practice norms and the quality of care

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LEVY INSTITUTE

Public Policy Brief

PHYSICIAN INCENTIVES IN MANAGED CARE ORGANIZATIONS

Medical Practice Norms
and the Quality of Care

DAVID J. COOPER AND JAMES B. REBITZER

No. 70, 2002

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Preface



Annual health care costs in the United States currently total \$1.5 trillion and are heading into another year of double-digit percentage increases as other parts of the economy experience falling prices and profit margins. Health insurers and managed care organizations report sharply higher profits as premiums rise faster than underlying costs. Costs are passed along to purchasing employers who, in turn, shift the cost increases to workers in the form of higher deductibles, copayments, and premiums. “The losers are the patients,” is a common reaction to higher health care costs.

Efforts to control costs include a system of financial incentives that rewards physicians for limiting medical expenditures. A major concern is that these cost-control efforts require physicians to sacrifice the quality of medical care. Price competition, moreover, is expected to result in a “race to the bottom” in which physicians operate under severe cost controls and managed care plans offer minimum levels of care. These incentives, which are inherent in policies and practices that influence physician decision making, have been the subject of high-stakes litigation and intense public controversy as the common refrain is again, “The losers are the patients.”

This brief, by David J. Cooper and Research Associate James B. Rebitzer, considers the interaction between physician incentive systems and product market competition in the delivery of medical services via managed care organizations. At the center of the analysis is the process by which health maintenance organizations (HMOs) assemble physician networks and the role these networks play in the competition for customers. The authors propose a model of the managed care marketplace that solves for both physician incentive contracts and HMO product market strategies in an environment of extreme information asymmetry: physicians perceive the quality of care they offer perfectly and their patients do not perceive it at all.

Physicians are influenced by norms of medical practice that shape their attitudes and behavior. These norms also affect the operation of HMOs, which are constrained by the need to build large networks of physicians for consumers willing to pay more to ensure adequate physician choice. A key insight of this brief is that while managed care organizations compete for patients, they must also compete for physicians, and thus quality competition becomes important in attracting physicians to a network. The analysis therefore rests critically on the norms of medical practice prevailing among physicians.

Cooper and Rebitzer find that although physician practice styles respond to financial incentives, there is little evidence that HMO cost-containment incentives cause a discernable reduction in care quality. HMOs include stop-loss provisions to assure high-quality care and apply cost-containment pressures on elective medical services. Purchasers are much more responsive to premium levels and the number of physicians in a network than to assertions regarding quality.


The authors note that important aspects of health care may not be fully captured in the factors that constrain HMO behavior, such as physician practice norms, patient preference for choice of physician, and expected awards for malpractice. Their analysis shows that as a result of strong norms among physicians about minimal care quality and of patients' preferences for larger HMO networks, there is no "race to the bottom" in care quality.

An additional finding is that public policies limiting cost-containment incentives have the twin effects of increasing premiums and the number of uninsured. The authors therefore recommend that policies regulating HMO incentive systems should include actions to improve health care access for the uninsured. There is also a need, they say, for further investigation into the way norms of medical practice shape both physician behavior and the functioning of markets in the U.S. health care system.

As always, I welcome your comments.

Dimitri B. Papadimitriou, *President*
November 2002

Physician Incentives in Managed Care Organizations



A *New Yorker* cartoon from a few years ago shows a group of frightened young campers huddled around an evening campfire. In the caption the counselor says, “Very scary, Jennifer—does anyone else have an HMO horror story?”¹ The campers are not alone in their fear of health maintenance organizations (HMOs). Everywhere in the media, including movies and television, HMOs are the focus of popular frustration with the U.S. health care system.

In the current environment, it is hard to remember that HMOs were once viewed as a force for progress in U.S. medicine. Prior to the HMO revolution, physicians determined what medical care to deliver and insurers passively financed whatever procedures or prescriptions physicians ordered. Neither the patient nor the physician paid directly for these resources, so neither had the incentive to balance the costs against the expected benefits. This absence of incentives produced a gold-plated style of medical practice in which physicians could order costly tests, procedures, and prescriptions even if they were (from a clinical standpoint) of limited value.

Managed care was supposed to fix this problem. The idea was simple: create a new entity, a health maintenance organization, that bundled health insurance together with systems for limiting unnecessary medical expenditures. Consumers (primarily employers who paid insurance premiums for their staff) would flock to this arrangement because it would offer the promise of reasonable care at a reasonable price.

The earliest HMOs followed a closed-panel model, i.e., patients who had insurance from an HMO could see only those physicians who were employed by that HMO. Since the HMO was capitated (member physicians were paid a fixed fee per patient), this arrangement created built-in

incentives for a more cost-conscious (and prevention-oriented) approach to the practice of medicine. Later, other types of HMOs appeared that offered care through networks of physicians. The physicians in these networks were typically not employees of the HMO; rather they had independent practices and were reimbursed by the HMO for care delivered to its members according to contractually agreed terms. The ability of these new network HMOs to tap into independently employed physicians enabled them to offer patients a much broader range of physician choice than was possible under the old closed-panel model. Cost-conscious medical practice was encouraged through sophisticated financial and nonfinancial control systems as well as incentives built into physician contracts.²

As new technological innovations made health care both more effective and more costly, the systems that managed care organizations used to control expenditures were increasingly seen as schemes that profited insurers by degrading care quality. The common HMO practice of offering financial rewards to physicians who reduced medical expenditures reinforced public skepticism. Much of the disquiet about managed care has its roots in questions concerning the effects of incentive systems on physician behavior.

In this policy brief, we discuss physician incentive systems in managed care organizations. We focus our attention on three questions.

Do financial incentives influence physicians' medical decision making?

What effect do HMO incentive systems have on the quality of medical care?

Will competition among HMOs lead to a "race to the bottom" in the quality of medical care? If so, can this race be averted by public policy initiatives?

In a time when Federal Reserve President Alan Greenspan worries about corporate cultures blighted by "infectious greed," it is worth emphasizing that the answer to the first question is not self-evident. Physicians are highly trained professionals, most of whom are intensely concerned with the welfare of their patients. In addition, the legal system imposes substantial costs on physicians who are shown to be negligent in the provision of medical services. This combination of intrinsic motivation and legal sanctions would seem to leave little scope for the influence of incentive systems. Nevertheless, studies conducted in a variety of settings indicate that physicians *do* respond

to the incentives under which they work and that financial incentives to contain costs move physicians to adopt more cost-conscious styles of medical practice. (Gaynor, Rebitzer, and Taylor 2001; Barro and Beaulieu 2000; Kessler and McClellan 1996).

Given the influence of financial incentives on physicians' behavior, it is important to consider what effect HMO incentive systems may have on the quality of medical care. A small but growing body of econometric evidence (presented below) indicates that while HMO contracts shift surplus dollars from physicians to insurers, these contracts have little impact on measured medical outcomes. As we discuss below, the absence of a measurable HMO effect on quality should not be taken as the last word on the clinical consequences of managed care. The quality of medical care is notoriously difficult to measure, even for experts. It is quite plausible that HMOs and their incentive systems *are* degrading care quality along dimensions that are hard to observe or quantify. More important, even if we accept at face value the claim that HMOs do not *currently* degrade care outcomes, the difficulty of observing care quality raises questions about the *eventual* impact of managed care.

Understanding the effect of HMOs on the *eventual* level of care requires an appropriate model of the competitive environment in which HMOs operate. Suppose, for example, that HMOs attempt to reduce premiums at the expense of care quality by giving physicians very generous financial rewards for containing costs. In a typical economic setting, consumers would perceive such a decline in the quality of services and would "vote with their feet" by choosing another insurer and physician if quality fell below acceptable levels. Put differently, if health care were like other services, we might justifiably conclude that market forces would constrain the equilibrium level of quality from falling too far.

Health care is not, of course, like other services because patients *cannot* easily perceive the quality of care they are receiving. Taking this feature into account may overturn our confidence in the ability of markets to sustain care quality. An HMO that reduced premiums by ratcheting up its physician incentives might not lose members because those members might not be able to perceive the reduction in care quality. Since insurance premiums are easy to compare across plans, other HMOs would have to react in kind or risk losing members. In this way, competition among plans

might set off a “race to the bottom” in which HMOs provide an ever-lower quality of care. Assessing the likelihood of such a race requires a model of the ways in which managed care organizations compete for members when care quality is hard to observe. We have constructed such a model of the HMO marketplace and conclude that a race to the bottom is not the most likely outcome. As we discuss below, our model has additional important implications for public policy regarding HMOs.

This brief proceeds in three sections: first, we review some recent economic literature on physician incentives; second, we present a model of the influence that market forces have on HMOs’ physician incentive systems; and finally, we analyze the implications our model has for public policy initiatives aimed at preventing an HMO-led race to the bottom in the quality of medical care.

What Do Physician Incentives Do?

A Brief Tour of the Economics Literature³

A number of recent econometric studies find that physician practice style is influenced by explicit and implicit financial incentives. Kessler and McClellan (1996), for example, found that reforms in state malpractice laws have an economically and statistically significant effect on patient expenditures for the treatment of heart disease. Specifically, state-level initiatives that directly reduced plaintiffs’ expected damage awards were associated with a 5.3 percent reduction in hospital expenditures on acute myocardial infarctions and a 9.0 percent reduction in hospital expenditures on ischemic heart disease. Since there was virtually no change in clinical outcomes as a result of these cost reductions, the authors interpreted their results as evidence that doctors engage in “defensive” medical practices, i.e., the adoption of tests and procedures whose primary rationale is to reduce liability in the event of a malpractice suit.⁴

While Kessler and McClellan (1996) examined physician responses to changes in the expected cost of malpractice suits, Barro and Beaulieu (2000) studied the response of physicians to changes in the compensation formulas used in their practices. They examined the effect of a switch from fixed salaries to profit sharing at a set of physician practices owned by a

hospital chain. They found that the introduction of a performance-based pay plan increased profitability significantly, primarily because physicians increased the number of patients they saw. In addition to changed behavior, Barro and Beaulieu found that the new pay formula altered the composition of physician practices—the least productive doctors left the company, and new entrants proved to be more productive, on average, than the doctors they replaced.

The common conclusion of these studies is that physician choice of practice style *does* respond to financial incentives.⁵ It is reasonable to ask, then, whether incentives to reduce medical costs have an adverse effect on the quality of care patients receive. Increases in medical expenditures need not, of course, be associated with better medical care. For example, a medical error leading to an otherwise avoidable infection may cause an increase in medical expenditures, but these additional expenditures obviously are not the result of high-quality care. Similarly, a new drug that controls high blood pressure is probably much less expensive than the strokes it helps to avert. These exceptions should not, however, obscure the fact that the general trend has been for the cost and quality of medical care to increase over time.⁶

If a higher quality of medical care requires, on average, more money, and if physicians are responsive to financial incentives, we would expect the cost-containment incentives that characterize managed care to degrade medical outcomes. Analyzing the effect of managed care on clinical outcomes is difficult because the healthiest individuals are most likely to opt for managed care insurance with the lowest premiums. Nevertheless, careful studies directly examining the issue generally find that managed care has no influence on clinical outcomes. In a recent study of heart disease, Cutler, McClellan, and Newhouse (2000) compared the treatment received by HMO members with that received by those insured under traditional indemnity plans. They found that although HMOs have 30 to 40 percent lower expenditures than traditional plans, the actual treatment and health outcomes differed little across types of plans.

Similar results were found in a study of cost and treatment patterns for state and local government employees in Massachusetts (Altman, Cutler, and Zeckhauser 2000). For the 215,000 individuals under 65 years of age who were included in this study, the authors found that average HMO medical costs were 40 percent lower than those of an indemnity

plan offering insurance to the same pool of employees. We might explain this result on the basis of the sorting described above—healthier people choose HMOs because they prefer the lower premium rates made possible by incentive contracts. Focusing on a set of eight specific conditions, the study reported that roughly half of the HMO cost savings were due to the lower incidence of these diseases in the HMO population (Altman et al. 2000). Virtually all of the remaining savings were explained by the fact that HMOs paid lower prices for the same treatment than indemnity insurers. On the basis of this evidence, HMOs deliver lower costs not by curbing the use of expensive treatments but by attracting healthier patients and paying physicians less per procedure.

The results discussed above lead to a paradoxical conclusion: physician practice styles *do* respond to financial incentives, but there is little evidence that HMO cost-containment incentives cause a discernable reduction in care quality, at least for such serious and costly conditions as heart disease, cancer, and diabetes.

Learning about the Paradox of HMO Incentives from the Inside Out⁷

Most of the empirical literature on physician incentives and managed care organizations treats physician incentive systems as a black box whose internal operation is obscured from view. A recent case study by Gaynor, Rebitzer, and Taylor (2001), however, took a close look at the physician incentive system in one particular HMO, with results that shed some light on incentive systems in managed care organizations and the paradox of managed care incentives.

The HMO under study did not employ the physicians in its network. Rather, it followed the increasingly common strategy of building its network of doctors through contractual arrangements. Each of the contracts the HMO wrote with the roughly one thousand primary care physicians in its network had incentive provisions. During the period of study (1994 to 1997), the HMO used the common “gatekeeper” model, in which primary care physicians were held responsible for the medical utilization costs incurred by their patients. If these primary care gatekeepers kept costs below actuarially determined target levels, they received a sizeable bonus—roughly 20 percent of their fees. Common physician strategies for reducing utilization costs included discouraging specialty referrals and

“unnecessary” testing, reducing emergency room visits by offering patients extended office hours and sophisticated answering services, and teaching patients to better manage chronic diseases such as asthma and diabetes.

A surprising feature of the HMO’s incentive system was that it contained a “stop-loss” provision. Under this provision, no patient could “cost” the physician more than \$15,000 per year. Thus, a seriously ill patient who incurred medical expenses of \$100,000 in a year would add only \$15,000 to a physician’s annual utilization costs. Although the details of the HMO’s incentive contracts were complex, and incentive intensity varied over time and across individual physicians, the authors found that the incentive system provided physicians with substantial rewards for reducing costs and, critically, led to lower costs overall. A typical physician in the network gained \$0.10 in income for every \$1.00 reduction in medical utilization costs. This incentive resulted in a 5 percent reduction in utilization costs, relative to no cost-cutting incentives at all. Consistent with the HMO’s stop-loss provision, financial incentives had little or no effect on in-hospital costs. Rather, the cost reduction was concentrated in outpatient procedures and referrals to non-primary care physicians. The HMO’s stop-loss provision appeared to be effective in reducing incentives to cut costs for the most seriously ill patients, i.e., those in the hospital.

In 1997 the HMO introduced an additional patient-protection feature into the incentive system—payouts to physicians who met both cost and quality targets. The quality targets consisted of specialty-specific preventive care measures (e.g., for pediatricians the proportion of children immunized and for gynecologists the proportion of patients receiving mammograms) and other measures such as patient satisfaction, office inspections, and patient turnover. Analysis of the “quality” incentives suggested that physicians responded to financial incentives linked to quality measures just as they did to incentives linked to cost-containment measures. Indeed, physician groups who were best at keeping costs below “target” levels were also best at hitting their quality targets.⁸

Lessons from this case study help explain the paradox of HMO incentives. Offering physicians a financial incentive to reduce costs appears to lead to a reduction in costs. However, these reductions are not distributed evenly across different types of patients. The reductions occurred primarily in outpatient charges and specialty referrals, while in-hospital costs were

affected minimally. These differences reflect the structure of incentive contracts offered by the HMO, which were designed to reduce incentive pressures on physicians treating the most vulnerable patients.

This second lesson raises an important economic question: in the environment of rising health care costs in which this HMO was competing for new members, why did it write incentive contracts that so dramatically limited cost-cutting incentives for the most costly patients? A plausible answer is that at the same time this HMO was cutting prices to build market share, it was also trying to position itself as the high-quality care provider in the market. Stop-loss provisions were a way to assure high-quality care and still apply cost-containment pressures on elective medical services. This explanation may be correct, but it is also incomplete. Physician incentive contracts were not advertised, and even if these contracts had become common knowledge, they were so complex that only the most sophisticated buyers would have been able to understand the significance of the stop-loss provisions. In addition, the general impression at the HMO was that purchasers were much more responsive to premium levels and the number of physicians in its network than to assertions regarding quality. If the HMO was marketing itself as a high-quality provider and paying customers did not perceive quality (or the quality-preserving contractual provisions), to whom was it sending the message about quality?

Quality Competition When Customers Do Not Perceive Quality

The previous section summarized the key empirical findings concerning physician incentives: physicians *are* responsive to financial incentives, but incentives in managed care organizations do *not* lead to measurable degradation in clinical outcomes. One explanation for these paradoxical results is that HMOs are competing for customers on the basis of both care quality *and* cost. Consumers' willingness to pay for quality care limits the profitability of draconian incentive contracts, which induces firms to write less powerful cost-control incentives into their physician contracts.

A quality-based competitive strategy would be consistent with the HMO contracts reported in Gaynor, Rebitzer, and Taylor (2001), but it is hard to see how this strategy could work, given the pervasive information asym-

metries in health care. Patients lack not only the ability to judge the quality of most aspects of clinical care, but also information about their physicians' complex incentive contracts. Indeed, managers of the HMO studied in Gaynor et. al did *not* expect consumers (patients and employers) to be as responsive to care quality as to other features of the plan that are easier to track, such as premium costs and the breadth of the physician network.

In our view, it is the physician's perception of quality, not the consumer's, that matters in the HMO market. The physician perspective is key because managed care organizations must persuade physicians to join their networks. A larger network of physicians makes an HMO much more attractive to consumers. Network size increases the likelihood that patients will find physicians in a desirable location or with a congenial interpersonal style. If, for some reason, patients become dissatisfied with their physician, large networks also help assure them that they will find another suitable doctor. For these reasons, customers are willing to pay more for managed care organizations that offer a wider choice of physicians.

Quality competition is naturally important in attracting physicians to an HMO network. Physicians, after all, have the clinical knowledge and patient information required to understand the quality of care they provide, and they also have an intimate understanding of the terms of the incentive contracts they sign with insurers. Thus, the previously described stop-loss provisions have a clear and precise meaning to physicians, if not to most purchasers of health insurance.⁹

A Game Theoretic Model of Quality Competition

In a recent Levy Institute Working Paper (Cooper and Rebitzer 2002), we used a game theoretic model to examine the implications of quality-based competition for physicians on the kinds of incentive contracts written by HMOs. This model, like most economic models, rests on certain assumptions about the behavior of key actors—here, physicians and consumers.

Physician Behavior

Our analysis rests on the assumption that physicians are influenced by norms of medical practice, i.e., doctors dislike and resist financially induced adjustments to their practice style. This aversion to more cost-conscious medicine may be the result of moral or ethical commitments to provide

the best possible care. Norms may also be reinforced by less high-minded influences such as the fear of malpractice suits. We demonstrate that whatever their ultimate cause, norms of medical practice can have a profound effect on the ways in which HMOs compete for patients and doctors.

Our model assumes that two types of norms drive physicians' clinical decision making: the absolute and the relative level of patient care. Absolute norms determine the minimal level of patient care that physicians find acceptable. Physicians, we argue, will not join a network whose incentive contracts would induce them to violate their absolute practice norms. The minimally acceptable level of patient care varies from physician to physician, and is determined by factors that lie outside of the influence of an HMO, such as the state of medical technology. Whatever the factors' source, if an HMO wishes to attract physicians to its network, it cannot write an incentive contract that would lead them to violate their absolute practice norms.

In contrast to absolute practice norms, relative practice norms involve comparisons between the level of care that doctors deliver to their patients and the level of care received by other patients with similar medical conditions. These care comparisons make it difficult for physicians to adopt less expensive practice styles for patients who have less generous insurance. Similarly, relative practice norms make physicians uncomfortable with delivering low-cost care when other providers deliver high-cost care. From the viewpoint of patients, there is little difference between absolute and relative practice norms; both serve to protect patients from some of the adverse consequences of cost-containment incentives. From an economic perspective, however, doctors' concerns about relative and absolute practice norms differ fundamentally because relative norms are shaped by the actions of all the HMOs competing in the market.

To see the difference between absolute and relative practice norms, imagine that you are a physician deciding whether to offer test A to a patient. Imagine further that test B is a newer, more expensive, and *perhaps* more effective test than A.¹⁰ Relative practice norms imply that you would feel better about using A in a market in which everyone else used A than in a market where everyone else used B, the more expensive test. If the local market is dominated by HMO networks with high-powered cost-containment incentives, then relative norms would make it easy for you to join a network with an

incentive contract that makes use of B unprofitable for you. Conversely, if the market is dominated by HMO networks that exert little incentive pressure to contain costs, then joining a network whose incentives discourage you from using B would be difficult.

Norms of any sort are enormously difficult to study directly. In the case of medical practice norms, however, there is an abundance of indirect evidence that norms of appropriate care shape physician attitudes and behavior. For example, a recent survey of physician attitudes published in the *New England Journal of Medicine* concluded that, "... bonuses based on limitation of referrals and on productivity heighten physicians' 'performance anxiety' and their perceptions that care may be compromised in these areas" (Grumbach, et al. 1998; p. 1520). The same study also reported that when physicians perceived pressure to limit referrals or improve productivity in ways that compromised care, their satisfaction with their practice declined.

Much of the evidence for the relationship between practice norms and physicians' clinical actions comes from location-based differences in the style of medical care.¹¹ These "small area variations" in practice style are something of a mystery because they are not accounted for by variations in underlying clinical conditions, cost of treatment, or patient incomes. Some analysts have suggested that these geographic practice patterns are the result of physicians learning by observing the practice style and clinical decisions of other physicians in the vicinity (Phelps 1992). If so, then practice norms may be at least partially an endogenous result of the contracts that prevail elsewhere in the local market.

Consumer Behavior

To complete our model, we now turn attention from physician behavior to consumer behavior. Plan members (or the employers who purchase plans for their employees) have preferences about the cost of insurance and the size of the organization's physician network. All else being equal, consumers would, of course, prefer a cheaper insurance policy to a more expensive one. All else is rarely equal among competing plans, however, and some consumers would be willing to pay additional money for access to larger physician networks, where they are more likely to find a doctor they like. Indeed it is commonplace for HMOs to offer members access to a broader network of physicians (or even dispense with the network altogether) in exchange for higher premium payments. No doubt some consumers are

willing to pay a great deal of money to improve their odds of finding a desirable physician match, while others consider all physicians more or less alike.¹² This heterogeneity of consumers can lead to market segmentation, with some plans assembling large networks of physicians and charging high prices while others do not.

The Effect of Physician Practice Norms on HMO Networks

Given that practice norms cause physicians to dislike working under high-powered cost-containment incentives, an HMO would want to impose incentives strong enough to have a substantial effect on costs, but not so strong that it could not assemble its desired physician network. If physicians differ in how averse they are to medical cost-containment measures, i.e., if physicians differ in their absolute practice norms, then attracting large numbers of physicians to a particular network would require an HMO to write low-powered incentive contracts. Incentives that are tolerable to some physicians may not be tolerable to more incentive-averse physicians.

Thus, when HMOs try to differentiate themselves by the size of their physician networks, they end up engaging in something closely akin to quality-based competition. Customers who place a relatively high value on physician choice and a relatively low value on the cost of insurance will choose HMOs with large networks and low-powered incentives. Conversely, customers who place a high value on low-cost insurance will choose HMOs with small physician networks and high-powered incentives. Notice that quality-based product differentiation occurs not because consumers perceive and demand quality, but because physicians operate under the influence of powerful norms.

While physician practice norms introduce quality competition into the HMO marketplace, it is not obvious that such norms always support high-quality care. We might expect, for example, that relative practice norms would lead to an increase in physician incentive intensity throughout the market. After all, one HMO imposing high-powered incentives in the market makes it easier for all other HMOs to do the same. We find, however, that physicians' relative practice norms have the *opposite* effect. To understand this, remember that under relative practice norms physicians do not like to operate with less generous practice styles than others in their market.

Thus an increase in the intensity of relative practice norms forces low-cost HMOs to relax incentives in order to assemble a network of sufficient size to attract customers. These changes will increase the costs of operation for low-cost HMOs, which will, in turn, try to attract customers who are less price sensitive by building larger networks and charging higher prices. The higher-priced HMOs that dominate the upper end of the market will respond to this incursion by moving farther “upmarket” themselves. When the dust settles, the result is that increased strength of relative physician norms forces *all* HMOs in the market to operate with lower-powered incentives. This reduction in incentive intensity is most pronounced for HMOs that target the low-cost end of the HMO market.

Implications of Quality Competition among HMOs¹³

If patients cannot assess care quality, and if, as the economic evidence suggests, physicians respond to incentives, what prevents HMOs from engaging in a “race to the bottom” in which draconian incentive contracts drive care quality to minimally acceptable levels?

The answer is that HMOs are constrained by their need to build large networks of physicians. In this competition, the key factors are physician practice norms and the willingness of consumers to pay for large networks to ensure adequate physician choice. In our model, some HMOs target consumers with a high willingness to pay for physician choice by offering very large physician networks characterized by weak cost-containment incentives. Other HMOs, however, target price-sensitive customers by operating relatively small networks and offering substantial financial rewards to physicians practicing low-cost medicine.

From a policy perspective, there might be a legitimate concern that low-cost HMOs would drive medical care quality close to the “bottom” for the most cost-conscious consumers. The likelihood of this outcome depends on the importance of *relative* practice norms. If physicians are sufficiently concerned with relative levels of care, low-cost HMOs would have great difficulty in introducing incentives that radically degrade care. Indeed, if relative practice norms were sufficiently powerful motivators for physicians, then a “race to the bottom” would be less of a problem than a “race to the top” in which HMOs in all segments of the market employ only weak

measures to induce cost-conscious medical practices among physicians. The recent shift away from the “gatekeeper” model by United Healthcare and other large HMOs may reflect this competitive dynamic (Weber 2002; Cowley 1999).

A “race to the top” may appear to be good news for consumers and bad news for insurance companies, but the situation is not that simple. If low-cost HMOs find it increasingly difficult to differentiate themselves from their high-cost, big-network rivals, insurance costs will rise throughout the market. As a result, some patients will be priced out of the insurance market and opt for no health insurance coverage at all. These newly uninsured individuals, a group that will tend to include younger and lower-income workers, are clearly made worse off by the rise in insurance premiums. Employees at the other end of the spectrum, i.e., those who are willing to pay a lot of money for large networks and a high degree of physician choice, are likely to be made better off by a “race to the top.” The impact for workers in the middle is ambiguous: while some are made better off by the availability of larger networks, many will experience a welfare decline because of increased insurance premiums.

Implications for Public Policy

Concern over the adverse consequences of managed care has grown with the increasing importance of HMOs in the U.S. health care system. Although the managed care industry has always been subject to regulation at the federal and state levels (Robinson 1999), interest is growing in public policy that more directly influences HMO incentive systems (Gosfield 1997).

Two broad regulatory strategies for shaping physician incentives have received most of the public attention in this area: (1) imposing caps on the proportion of “at-risk” income allowed in physician contracts; and (2) making HMOs legally liable for the adverse medical consequences attributed to their cost-containment systems.

The first strategy is embodied in Physician Incentive Plan (PIP) regulations implemented in 1997 by the Health Care Financing Administration (Gosfield 1997). These regulations require that incentive contracts not place more than 25 percent of physician income “at risk,” i.e., no more than 25 percent of a physician’s income can be linked to performance objectives.¹⁴

The second strategy is embodied in proposals to modify the Employee Retirement and Income Security Act (ERISA) to make HMOs liable for damages linked to their cost-containment systems (Havighurst 2000).¹⁵ Some of the changes proposed for ERISA in recent years have been included in various proposals for “Patients’ Bill of Rights” or “Patient Protection Act” legislation (Pear 2002; Studdert, Sage, Gresenz, and Hensler 1999).¹⁶

In a setting in which HMOs compete by price and network size, the effects of capping physicians’ at-risk income are analogous to the “race-to-the-top” phenomenon discussed above. The low-cost managed care organizations must reduce the intensity of their physician incentive contracts. Having lost their ability to contain costs, these HMOs would move “upmarket” by increasing their premiums and the size of their physician networks. Companies in the upscale segment of the market would then protect their customer niche by taking similar actions. As a result, premiums would rise everywhere and the number of uninsured would increase. These newly uninsured would be made worse off by this change. Other consumers, however, would be made better off because they are happy to pay higher premiums in order to enjoy the benefits of larger HMO networks. Still others would remain insured but may be made worse off by the increase in prices.

Understanding the impact of increasing HMO liability for malpractice is a bit more complex. Strictly speaking, making HMOs liable should have no effect at all on the HMO market. Physicians, after all, are heavily insured against malpractice suits, and the cost of this insurance is already included in the compensation that HMOs must pay to attract physicians to their networks. Recent studies of jury behavior, however, suggest that large organizations with “deep pockets” are typically hit with higher punitive damage awards than smaller organizations (Kahneman, Schkade, and Sunstein 1998). These results suggest that making large organizations like HMOs defendants in malpractice suits will increase the size of jury awards. If this is so, then changing ERISA will have the same effect as increasing physicians’ relative practice norms. HMOs whose management and incentive practices pressured physicians to provide relatively lower-cost care will risk higher malpractice costs. As a result, low-cost HMOs will come to resemble their higher-cost counterparts, and premiums will rise throughout the marketplace. This rise in costs will have the now familiar effect of increasing the number of uninsured.

Is Intervention a Bad Idea?

We have argued that public policies limiting cost-containment incentives have the twin effects of increasing premiums and the number of uninsured. Given that the number of uninsured workers has been rising (Gruber and McKnight 2002), can we conclude that regulating physician incentive systems and, therefore, exacerbating this problem is necessarily bad policy? Our answer is no.

There are important externalities to health care that may not be fully captured in the factors that constrain HMO behavior: physician practice norms, customer preferences for physician choice, and expected awards for malpractice. Some of these externalities involve health outcomes—if more expensive treatments are also more effective, then financing these treatments may also improve the welfare of caregivers and family members who are not directly involved in the purchase of health care insurance. Other externalities involve the physician-patient relationship—the possibility of high-powered financial incentives anywhere in the health system can undermine a patient's willingness to listen to and trust in a doctor's advice.¹⁷ If the net social value of more expensive practice styles or restrictions on contracting exceeds their private value, a strong case remains for interventions that limit the ways HMOs regulate care.

The lesson of our analysis is *not* that policy interventions are necessarily a bad idea, but, rather, that they must be undertaken with an understanding of their cost, especially when they result in an increase in premiums and a potential increase in the number of uninsured. Policies that regulate HMO incentive systems can be made more effective and palatable if they are implemented in conjunction with policies that increase access to care for the uninsured.

Conclusion

In most economic settings, incentive systems are either ineffective or they work and you “get what you pay for.” Evidence suggests that physicians are not immune to financial incentives. Are patients getting what they pay for, or will the profound information asymmetries in medicine lead to a race to the bottom in care quality?

Our research has shown that under certain conditions, a race to the bottom need not occur. These conditions—that physicians have strong norms concerning the minimal quality of care they deliver, and that patients like the options offered by larger HMO networks—are broadly consistent with the realities of today’s managed care environment. Our model results are also consistent with the absence to date of strong evidence that care quality is lower for HMO patients.

If competition among managed care organizations takes the form we propose in this brief, then public policy regarding HMOs and their physician incentive systems needs to be carefully thought through. Intervention aimed at muting physician incentives would have the effect of increasing costs and reducing access to health care. Therefore, regulations and laws targeting the incentive systems of managed care organizations should also include mechanisms for improving access to health care.

Finally, our analysis of physician incentives and competition in the HMO marketplace rests critically on the norms of medical practice that prevail among physicians. Refining our understanding of public policy in this area would require a corresponding refinement in our understanding of the way norms shape both physician behavior and the functioning of markets.

Notes

1. This Nick Davies cartoon was in the July 19, 1999, issue of *The New Yorker*.
2. Today's health care marketplace has an "alphabet soup" of acronyms that describe some variation on the theme of the HMO. To keep the discussion simple, we refer only to HMOs and managed care organizations and use the terms interchangeably.
3. The review of the literature is drawn from "Managed Care, Physician Incentives, and Norms of Medical Practice: Racing to the Bottom or Pulling to the Top?" by Cooper and Rebitzer (2002).
4. The outcome measures included one-year mortality rates and readmission rates for either acute myocardial infarction or heart failure.
5. Robinson (2001) reaches similar conclusions in his review of the medical literature.
6. Indeed, if the quality of medical care were not positively correlated with its cost, the issue of physician cost-control incentives would not be controversial at all.
7. The material in this section is drawn from Gaynor, Rebitzer, and Taylor (2001) and from a summary published in the February 2002 issue of the National Bureau of Economic Research *Digest* (Certo 2002).
8. This finding does not necessarily mean that low-cost physicians provided higher-quality care. The quality measures used by the HMO, while standard in the industry, were relatively simple indicators of preventative care and patient satisfaction. Improvements in these measures need not have precluded declines along other, nonmeasured, aspects of quality.
9. One might object here that patients, if provided the information, would also make choices based on the physician incentive plans in their HMO. Pressure is growing on managed care organizations to describe physician incentive systems to their members, but there is little evidence that

members are able to understand this information (see Hall, Kid, and Dugan 2000; and Miller and Horowitz 2000).

10. In this mental exercise, we assume that the medical literature is undecided on the superiority of B to A.
11. For an excellent discussion of this large literature, see Phelps (1992).
12. Our assumption that HMO members cannot observe the quality of clinical care does not imply that patients are indifferent to the identity of their doctor. Many will have preferences about the nonclinical characteristics of individual physicians, e.g., location, age, gender, or communication style. Indeed, a large billboard in Cleveland announces that members of Kaiser Permanente, a large HMO, may switch providers any time. Clearly, the purchasers of this advertisement believe that enabling patient choice of physicians is something of value to potential HMO members.
13. The issues raised in this section are presented in detail in Cooper and Rebitzer (2002).
14. Gaynor, Rebitzer, and Taylor (2001) document a case in which these regulations substantially weakened an HMO's incentive contracts. They also present some evidence that these weaker contracts increased the HMO's medical utilization costs.
15. ERISA offers limited regulatory control over and remedies for health plans.
16. A third regulatory strategy would require HMOs to reveal the details of their physician incentive contracts to patients. Meaningful patient disclosure is limited by the complexity of incentive plans (Gaynor, Rebitzer, and Taylor 2001) and the limited ability of patients to understand even basic information about incentives (Hall, Kid, and Dugan 2000; Miller and Horowitz 2000).
17. Miller and Horowitz (2000) review the evidence relating to consumer knowledge of physician incentives and patient trust in physicians.

References

- Altman, Daniel, David M. Cutler, and Richard J. Zeckhauser. 2000. "Enrollee Mix, Treatment Intensity and Cost in Competing Indemnity and HMO Plans." Working Paper No. 7832. Cambridge, Mass.: National Bureau of Economic Research.
- Barro, Jason R., and Nancy Dean Beaulieu. 2000. "Selection and Improvement: Physician Responses to Financial Incentives." Working Paper. Cambridge, Mass.: Harvard Business School.
- Certo, Tracy. 2002. "Incentive Effects of HMO Contracts." National Bureau of Economic Research *Digest*: 2–3.
- Cooper, David J., and James B. Rebitzer. 2002. "Managed Care, Physician Incentives, and Norms of Medical Practice: Racing to the Bottom or Pulling to the Top?" Working Paper No. 353. Annandale-on-Hudson, N.Y.: The Levy Economics Institute.
- Cowley, Geoffrey. 1999. "A Huge Insurer Finds a Way to Control Costs." *Newsweek*, November 22.
- Cutler, David M., Mark McClellan, and Joseph P. Newhouse. 2000. "How Does Managed Care Do It?" *Rand Journal of Economics* 31:3: 526–548.
- Gaynor, Martin, James B. Rebitzer, and Lowell J. Taylor. 2001. "Incentives in HMOs." Working Paper No. 340. Annandale-on-Hudson, N.Y.: The Levy Economics Institute.
- Gosfield, Alice G. 1997. "Who is Holding Whom Accountable for Quality?" *Health Affairs* 16:3: 26–40.
- Gruber, Jonathan, and Robin McKnight. 2002. "Why Did Employee Health Insurance Premiums Rise?" Working Paper No. 8878. Cambridge, Mass.: National Bureau of Economic Research.
- Grumbach, K., D. Osmond, K. Vranizan, D. Jaffe, and A. Bindman. 1998. "Primary Care Physicians' Experience of Financial Incentives in Managed-Care Systems." *New England Journal of Medicine* 339:21: 1516–21.
- Hall, Mark A., Kristin E. Kidd, and Elizabeth Dugan. 2000. "Disclosure of Physician Incentives: Do Practices Satisfy Purposes?" *Health Affairs* 19:4: 156–64.
- Havighurst, Clark C. 2000. "American Health Care and the Law—We Need to Talk!" *Health Affairs* 19:4: 84–106.
- Kahneman, Daniel, David Schkade, and Cass R. Sunstein. 1998. "Shared Outrage and Erratic Awards: The Psychology of Punitive Damages." *Journal of Risk and Uncertainty*: 1–53.

- Kessler, Daniel, and Mark McClellan. 1996. "Do Doctors Practice Defensive Medicine?" *The Quarterly Journal of Economics* 111:2: 353–90.
- Miller, Tracy E., and Carol R. Horowitz. 2000. "Disclosing Doctors' Incentives: Will Consumers Understand and Value the Information?" *Health Affairs* 19:4: 149–55.
- Pear, Robert. 2002. "Bush Is Said to Be Set to Back Patients' Bill." *New York Times*, June 7.
- Phelps, Charles E. 1992. "Diffusion of Information in Medical Care." *Journal of Economic Perspectives* 6:3: 23–42.
- Robinson, James C. 1999. *The Corporate Practice of Medicine: Competition and Innovation in Health Care*. Berkeley and London: University of California.
- . 2001. "Theory and Practice in the Design of Physician Payment Incentives." *Milbank Quarterly* 79:2: 149–77.
- Studdert, David M., William Sage, Carole Roan Gresenz, and Deborah R. Hensler. 1999. "Expanded Managed Care Liability: What Impact on Employer Coverage?" *Health Affairs* 18:6: 7–27.
- Weber, Joseph. 2002. "The New Power Play in Health Care." *Business Week*, January 28.

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