

An Alternative Framework for Evaluating the Efficiency of Managed Care

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Abstract

The article introduces an economic model of "health production" to predict that health maintenance organizations and other managed care plans will underinvest in a patient's "health capital." Managed care plans will tend to substitute continuing medical care for other treatments that have high up-front costs when these alternative treatment options are available. The analysis also indicates a potential social inefficiency in treatment choice that is exacerbated by higher levels of competition among managed care plans. Various examples are provided and policy implications are discussed.

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The most fundamental change in the health services sector during the past two decades has been the expansion of private market reform through managed care. Although encompassing a wide variety of arrangements, the managed care industry is dominated by health maintenance organizations (HMOs) and similar entities that integrate health insurance with the provision of healthcare. In contrast, many traditional indemnity insurers still function mainly as third-party payers, reimbursing for fee-for-service care that both a patient and independent medical providers have agreed is necessary.

Currently, more than 50 million people are members of HMOs, and many more belong to other types of managed care plans. Furthermore, despite the demise of the Clinton national health proposal, the concept of health reform that is based on a system of competing managed care plans, or "managed competition," continues to generate considerable interest.^{1,2}

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It is therefore surprising that, despite extensive multidisciplinary research, few researchers have conducted theoretical work on HMOs and managed care. For the most part, published studies consist of empirical tests of intuitive propositions about HMO behavior. The studies have emphasized comparisons of utilization patterns, costs, and quality in the managed care and fee-for-service sectors.³⁻¹¹ The effects of competition among HMOs¹²⁻¹⁴ and the problem of selection bias (ie, whether HMOs gain their advantage by selectively "cream-skimming" from among the healthiest populations¹⁵⁻¹⁹) are other major research themes.

The primary purpose of this article is to introduce an economic model of the "production of health" to decision making under managed care as represented by a capitated HMO. The model distinguishes between healthcare services that provide primarily current benefits and other, substitute services or treatments with substantial up-front costs that represent long-term health investment. The model is used here to predict HMO behavior and to address issues of socially efficient utilization in the case of conditions that have multiple treatment options.

I will show that, although overinvestment in health capital is likely to occur under fee-for-service, HMOs lack incentives to invest sufficient amounts. Relative to socially efficient treatment decisions, HMOs will favor options consisting of continuing medical care and having low up-front costs. I will also show that—paradoxically—more intense competition among HMOs, as envisioned under managed competition, aggravates this inefficiency.

Above all, this article demonstrates that meaningful comparisons of managed care with other forms of healthcare delivery depend on the development of an appropriate theoretical framework. The framework proposed here can be extended to help analysts to understand the effects of alternative cost-containment strategies and other measures that may be proposed under health system reform.

... BACKGROUND AND RATIONALE FOR HMOs ...

The concept of paying for services on a capitated basis has existed throughout US medical history. However, the modern HMO emerged only during the 1940s, with the formation of the Health Insurance Plan in New York and of Kaiser-Permanente on the West Coast. Despite the success of these and a few other HMOs, organized medicine strongly opposed any healthcare system that was not built around fee-for-service and patients' complete freedom to choose their providers. Consequently, as recently as 1970, national HMO enrollment was only about 2 million.

The creation of Medicare and Medicaid legislation in 1965 inadvertently marked an important turning point for HMOs. National healthcare costs, driven by rapidly rising federal government obligations for Medicare and Medicaid, began to soar. This increase spurred a major shift from policies promoting access to care to those emphasizing cost containment. For reasons that I will discuss, as a result of passage of the HMO Act of 1973, the HMO quickly was adopted as a strategy for controlling costs. This legislation provided subsidies for the introduction of HMOs that met various requirements. More important, it enabled federally qualified HMOs to require that firms in the HMO's area with 25 or more employees offer an HMO option.

Ironically, even though HMOs had existed for many years, the term "HMO" did not appear until the early 1970s. It reflects the premise that an HMO will concentrate on health *maintenance* by covering routine and preventive services (which, typically, are excluded under traditional indemnity plans), but perhaps even more, the belief that the HMO has a financial motive in keeping patients healthy. Healthy patients do not use much care. Consequently, the HMO would profit by developing procedures that monitor, maintain, and improve their members' health.

In addition, the supposition that HMOs would curtail the overutilization and supplier-induced demand associated with fee-for-service reimbursement, owing to financial incentives to economize by adopting a gatekeeper strategy, fostered policy interest in these entities. These phenomena are associated with beliefs that patients are poorly informed, and that the traditional patient-provider relationship may be flawed to the point that providers fail to act in their patients' best interests, whereas treatment decisions under fee-for-service are influenced by profits derived by rendering more care.

Although contemporary economic research suggests that supplier-induced demand is a less serious

problem than was once believed,²⁰ the HMO appears to be an ideal vehicle for limiting overutilization. Public policy continues to emphasize cost containment, and managed care seems to have been successful in this area. Consequently, whether HMOs deliver efficient care in cases in which continued current spending or maintenance therapies are substitutes for treatments having much higher up-front costs is an issue that has evoked much less concern.

... HEALTH AS A CAPITAL GOOD ...

Grossman,^{21,22} building on Becker's pioneering work on human capital,²³ was the first to recognize explicitly that patients demand healthcare not for its own sake, but because healthcare is an input to health, which is what patients ultimately want. Furthermore, according to Grossman, health itself is conceptually treated as an economic "commodity" that the consumer "produces." Health is produced not only by medical inputs but also through activities, such as exercise and diet, that involve time and, sometimes, expenditures on other goods, such as exercise equipment.

More important, Grossman recognized that patients demand healthcare for both its current value, because it makes them feel better now, and its investment aspects, because it improves their productivity and provides a variety of benefits well into the future. One can characterize services with high up-front costs as representing large additions to health capital relative to continuing forms of care that have low up-front costs but that would likely have to be repeated in future periods.

The investment aspects of healthcare are not trivial, and a significant economics literature has evolved to investigate the effects of education, age, and other patient characteristics on the stock of health capital and, therefore, on healthcare-spending patterns.²⁰ For example, the Grossman theory explains, in part, why more highly educated and highly paid individuals tend to invest more in health and to maintain a higher stock of health capital than do their less highly educated and paid counterparts. Investments in health enable individuals to work longer and harder. These investments therefore provide a higher rate of return to those with higher wage rates and, consequently, are more desirable to these individuals.

Unfortunately, scholars have overlooked many potential applications and extensions of the Grossman model to the study of managed care. Consider the following as a simple illustration. To the extent that patients can substitute their own inputs for medical

inputs in order to produce health (or vice versa), insurance creates a "moral hazard" of the type associated with property and casualty insurance. That is, insurance encourages patients to take care of themselves less carefully than they would if they lacked insurance. Why should people use too much of their own time and money, which could be used to help to satisfy other wants, when "free" healthcare is available in the case of illness?

For obvious reasons, an HMO has a strong motive to reduce moral hazard by encouraging patients to use more of their own inputs to maintain health, rather than to draw on the HMO's resources as they become ill. (Copayments increasingly are being used to reduce both this type of moral hazard and a second type, specific to health insurance. The latter consists of the additional consumption of care when insurance reduces a patient's out-of-pocket costs. One recent study²⁴ showing the substantial reduction of HMO emergency department visits after a small copayment was introduced highlights the magnitude of this type of moral hazard.) Under fee-for-service, in contrast, providers receive no financial gain by having patients remain healthy; therefore, they are less likely to emphasize health maintenance and health promotion strategies that involve patient resources.

No rigorous study has compared the efforts of HMOs and of traditional plans to influence patients to use more patient time and money inputs, nor has the degree of success of those efforts been examined. However, evidence suggests that patients in capitated plans receive more preventive, screening, and counseling services than do those in other plans.^{10,25} Nevertheless, cost comparisons between HMOs and fee-for-service have not included the cost of patient resources and other personal costs, such as travel and waiting times. All these costs represent relevant personal and social costs of producing health and should be considered in comprehensive comparisons among alternative healthcare systems.

Current Versus Capital Healthcare Spending

A more important extension of the Grossman model involves trade-offs of continued medical care for healthcare capital, as represented by services with high up-front costs and lower continuing costs. To the extent that some treatment options may exist for which the two are substitutes, how do HMOs compare with fee-for-service arrangements?

Consider the following hypothetical situation. Suppose that both surgery and continuing medical care that relies heavily on drug therapy are treatment options for a patient with coronary artery disease. In

order to abstract from the many other aspects that bear on the treatment decision (eg, complications, risk, recurrence, and patient attitudes), and to focus solely on financial incentives, assume that the two interventions produce identical results during the next 10 years, that they have the same long-run costs, and that, except for financial consequences, the patient is indifferent as to which treatment is provided. For simplicity, assume that the surgery and related follow-up care cost \$40,000 in the current year (with no additional future costs), and that the present value of each year's continuing medical care costs, including drugs, for the alternative treatment is \$4,000, or \$40,000 over 10 years. From society's perspective, the two treatments are financially equivalent and equally cost-effective. (My analysis ignores the possible distinction between the rate of time preference, ie, discount rate, used by the patient, HMO, and society. However, the appropriate discount rate to achieve social efficiency remains a controversial issue even in the theoretical literature, and it is not necessary to make distinctions to illustrate the propositions developed below.)

Although the two treatments are equally socially efficient, under fee-for-service, the patient will choose surgery. Why? First, a (non-Medicare) patient may not be insured in the future or may not qualify for insurance if he or she loses coverage. Therefore, the extended-medical-care option carries a serious financial risk. Second, and perhaps more important, because the surgeon and other hospital-based providers benefit directly financially, they are likely to encourage the patient to undergo surgery. For personal financial reasons, both the patient's and providers' preferences may be so strong that the patient will choose surgery even in situations in which continued medical care is the socially efficient alternative (ie, when it is far less costly and/or more effective than surgery). Fee-for-service is inefficient because it creates a bias toward less-desired capital forms of healthcare spending.

Conversely, the HMO's incentive is materially different. Although the patient may continue to prefer surgery because of concerns about future insurance coverage, the HMO has an incentive to encourage the medical alternative because the patient might disenroll. Disenrollment is common, although often related more to involuntary employment-related and economic factors than to a patient's dissatisfaction with the HMO.²⁶⁻³¹ Estimates of annual turnover vary widely, but rates of 20% are not unusual. A comprehensive analysis by Long et al³² indicates that voluntary disenrollments, excluding the Medicare and

Medicaid populations, are on the order of 5%. These disenrollments are influenced heavily by changes in subscriber premiums and the number of plans available. Surprisingly, the likelihood of disenrollment does not appear to diminish as the member's enrollment period increases.

Thus, there is a good chance that a member will not remain with the same HMO for long. Many adverse consequences to an HMO result from high disenrollment rates.^{26,29,30} Among them are higher patient-recruitment costs, disruption of cash flows, and the effects on premiums for continuing members if lower-risk members are more likely to disenroll. However, the implications of disenrollment on efficient treatment choice have not been explored. The example I have introduced suggests that, even if surgery is less costly or more effective, the HMO may encourage the medical option because the immediate cost impact is much lower.

Higher disenrollment rates diminish the HMO's incentive to make health investments. Economists describe this situation as one in which disenrollments create an externality (spillover effect) in the sense that future costs (if there is no surgery) or future benefits (in the form of averted future healthcare costs if there is surgery) are passed on to another HMO or insurer.

The externality introduces a distortion that turns a decision that is rational from the perspective of the HMO into one that could be socially inefficient. This inefficiency also may not be detected in an analysis of current costs or of HMO quality because, as in our example, the quality of the two treatments may be equal.

Effects of Competition

An increase in the number of HMOs is likely to increase patient turnover, thereby exacerbating the externality problem. In this way, more competition might lead to greater social inefficiency. In contrast, if everyone belongs to a single HMO (and one can represent national health insurance in some countries as a giant HMO or managed care plan), this type of externality is eliminated; because the possibility of patient loss no longer exists, the HMO now has an appropriate incentive. The HMO's long-term interests coincide with those of the patient. Of course, other inefficiencies can result from an absence of competition, and I am not suggesting that having a single insurer, whether private or government, is the best solution to the externality problem.

Price competition among competing HMOs leads to underinvestment in health capital in other ways. As

employers try to offer their employees a menu of lower-cost plans, from which employees are financially motivated to select those with minimal cost-sharing features, HMOs face even greater pressure to promote treatments that minimize current costs in order to keep premiums low. As a result, HMOs force hospitals and other affiliated providers to similarly become "cost centers," driven by a focus on managing current costs and utilization levels. This situation is in sharp contrast to hospital "revenue centers," which are promoted by traditional insurance reimbursement.

In addition, HMOs may react to more intense competition by encouraging treatment therapies that have favorable short-term financial effects, with the aim of maintaining positive cash flows and ensuring the organization's survival. Although outright failures or mergers are not common in any one year, over time, many HMOs go out of business or merge.³³

... DISCUSSION ...

Our nation's concern with current healthcare spending has obscured some of the possible consequences of the incentives facing managed care plans. It is well known that HMOs have lower surgery and hospital-admission rates than do fee-for-service providers, even when differences in patient populations are taken into account. However, those rates may be inappropriately low if they reflect a bias against capital forms of healthcare.

Several patient conditions illustrate the issue at hand. For those with mental health problems, managed care has strongly favored drug treatment over more extensive counseling and therapy (*Wall Street Journal* December 1, 1995:1; and December 21, 1995:1). Counseling and therapy offer the potential for long-term recovery and can be viewed as representing more significant levels of health investment. Managed care tends to limit psychotherapy by reducing patient access to therapists, or by contracting with therapists who are "drug-friendly."

Another example of treatment options with very different up-front-cost impacts is the use of angioplasty, repeated if necessary, versus drug therapy to relieve angina and improve physical performance for some patients with coronary artery disease.³⁴ Increasingly, the media has claimed that managed care patients with various cardiac conditions tend to receive continuing medical care, rather than more expensive, capital-intensive alternatives with high up-front costs, because primary care gatekeepers limit access to specialists (*NBC Nightly News* April 8,

1996; and *Detroit Free Press* April 15, 1996:15A). Primary care physicians generally are less aware of treatment advances than are other types of physicians.³⁵ In some cases, "gag" rules may even forbid them to inform patients about options or specialists available outside the plan. It is possible that, when measured over long periods, the therapies promoted by managed care may be at least as effective as and less costly than the alternative. However, patient-outcomes studies have yet to provide clear evidence or guidelines for many conditions for which treatment alternatives are available.

Policy makers and the public must be aware that much remains to be understood about the behavior of managed care plans³⁶ and the possible consequences of managed competition.³⁷ Health systems should be structured so that treatment decisions are based on both long-term costs and long-term benefits. A managed care system dependent on employment-based health benefits is inherently vulnerable. A high degree of labor mobility, changes in health plans available to employees, and relative changes in employer contributions across plans can lead to significant voluntary and involuntary disenrollments. A shift from managed care to fee-for-service may be especially inefficient if a patient who previously had received continuing medical care is encouraged to undergo more extensive treatment.

Reforms that help to build or maintain longer-term relationships will promote a better coincidence among the patient's, provider's, and society's interests. Such relationships will enable managed care systems to become, as many hope, successful integrated networks that provide a continuum of services.

When significant information barriers and externalities exist, the effects of the competitive process must be examined carefully. Too many competing plans, each with limited geographic availability, will tend to produce higher disenrollment rates, make it more difficult for consumers to evaluate HMO quality, and create an environment in which organizations emphasize survival by managing current costs rather than by providing appropriate care as determined by meaningful cost-effectiveness criteria.

Apart from highlighting the issues of adequate levels of health investment and the role of competition under managed care, my objective is to show that theory can help to identify important effects that might otherwise be overlooked if a less systematic approach is taken. The specific model that needs to be constructed will depend on the specific objectives of the study. However, the preceding conceptual analysis indicates that a comparative efficiency evalu-

ation of managed care or any delivery system must consider (1) the lifetime costs associated with alternative treatments, and (2) the extent to which the delivery system under review incorporates all of these long-term costs in treatment choices.

The formulation of more comprehensive models could also be used to examine trade-offs and strategies other than those involving health capital. A recent article in this journal on managed care's tendency to limit prescriptions to an approved list of medications illustrates the need for such work.³⁸ The study found that more stringent restrictions produced unanticipated effects, which increased other costs. An appropriate conceptual model could make otherwise unexpected consequences more predictable and so help to promote more effective long-term cost-containment measures.

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