Assessment of the effectiveness of supply-side cost-containment measures

by Louis P. Garrison, Jr.

This article assesses the arguments and evidence concerning the likely effectiveness of four supply-side cost-containment measures. The health planning efforts of the 1970s, particularly certificate-of-need regulations, had very limited success in containing costs. The new and related tools of technology assessment and practice guidelines hold some promise for refining benefit packages, but they are inadequate for micromanaging complex medical practices. Payment policies, such as hospital ratesetting, have enjoyed some success in limiting hospital cost growth but are less effective at controlling total costs. None of these measures alone is likely to address fully the fundamental issues of equity and efficiency in health care resource allocation that underlie the problem of rising costs.

Introduction

As the share of our gross national product (GNP) that is devoted to health care continues to climb, policymakers and consumers alike increasingly question the desirability of this increase. Economists are quick to point out, as a theoretical matter, that the increase in the health share of GNP is not necessarily a bad thing. From the perspective of maximizing consumer welfare, consumers may choose to use more care over time if there are changes in their incomes, preferences, or the prices they face. Price changes can be the result of various changes on the supply side, such as technological change, changes in input prices, or changes in the number of suppliers.

The real problem with the rising share of GNP that is spent on health care is that the benefits of this additional spending do not seem to be commensurate with the costs. Several pieces of evidence support this widely held view. International comparisons across developed nations indicate that the United States is far above the curve that relates the level of real health spending to real income (Schieber and Poullier, 1989). Furthermore, there is little evidence to support the view that this additional spending results in significantly better health outcomes on average (particularly in terms of mortality rates). The evidence of substantial amounts of "inappropriate" or "unnecessary" care also contributes to public misgivings about the benefits of the increasing costs.

The continuing rise in health spending in the United States is, of course, not a new problem. For the past 20 years, we have been inventing and applying various kinds of public and private mechanisms and schemes in an effort to better control these costs. The purpose of this article is to summarize the arguments and evidence regarding selected "supply-side" measures and to assess their likely effectiveness in controlling health care costs.

Definitions and framework

The term "cost containment" itself carries a connotation of an objective that is broad and not very precise. It should be obvious that the objective of containing or controlling costs is not to reduce health care costs without regard to benefits nor simply to be able to predict costs more accurately. Rather, the objective is to achieve the appropriate balance or, at least, a more appropriate balance between the additional costs incurred and the benefits received.

Analysts often cite several characteristics of medical care markets (including informational asymmetry, product complexity, and equity concerns) that cause them to differ from other markets. A good case can be made that the central difference, especially with respect to cost control, is the problem of moral hazard. Once an individual has insurance, the marginal cost of additional services is usually less to the individual than it is to society. The individual consumer who usually has a physician as an advisor will have the incentive to use care to a point where the value of the marginal benefit of an additional service to the individual is less than its cost to society.

Other characteristics of the medical marketplace may also result in other cost-related distortions. Costs may be high or rising because of inefficiency in production, excessive profits paid to providers, or wasteful competition. Some cost-containment strategies also attempt to address these problems.

In thinking about the moral-hazard issue versus other possible motivations for cost containment, it is important to keep in mind distinctions among various types of efficiency—technical, cost, and economic. "Technical efficiency" refers to obtaining the maximum physical output from the physical inputs used. "Cost efficiency" refers to minimizing costs for a given set of input prices and a given output level. "Economic efficiency" assumes that technical and cost efficiency prevail and that markets work to provide the proper levels of outputs and appropriate market prices. Moral hazard is mainly an issue with respect to economic efficiency.

Pauly (1990) has argued persuasively that the central issue for rising costs in the United States is not increases in technical or cost inefficiency or increases in provider profits; rather, it is increases in the intensity of care. Hence, cost-containment strategies that attack cost inefficiencies are likely to achieve, at best, only a one-time savings unless they also address the fundamental forces that increase intensity of care.

Various types of cost-containment devices target different sources of the problem. Deductibles and

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copayments are the most common demand-side devices used to counter the incentive for overuse because of moral hazard. Prospective price setting for packages of services, such as diagnosis-related groups (DRGs), is a supply-side attempt to encourage providers to produce treatments at less cost per treatment. Health maintenance organizations (HMOs)—i.e., prepaid group practices—force consumers to limit beforehand the package of services to which they have access and encourage suppliers to choose the appropriate package of services to provide. Regulations on the number of suppliers (e.g., hospitals or nursing homes) attempt to reduce the cost of unused capacity or to limit wasteful competition on amenities and the like.

As defined here, supply-side measures are those that directly or indirectly affect the behavior or numbers of suppliers. Four types of supply-side measures are considered: health planning, technology assessment, practice guidelines, and payment policy. Health planning in this country has attempted to control the number of suppliers, the size of their physical plants, and the specific equipment they employ. Technology assessment aims to provide information to suppliers and consumers on the costs and benefits of particular technologies. The objective of practice guidelines is to alter practitioner behavior by providing clinical decision rules for treating particular medical conditions. Payment policies attempt to influence the behavior of providers indirectly by changing the structure and amount of payment for specific services. The arguments and evidence for each of these as cost controls are discussed in turn.

Health planning

Efforts in the United States to use governmental health planning to control suppliers of health services have been quite limited compared with other countries. The national health systems of countries such as the Soviet Union and Great Britain (until recently) represent extreme forms of health planning: The government owns and controls the number of hospitals and beds, and physicians are government employees. These systems have been quite successful in limiting aggregate health spending. Their success at matching spending with consumer needs and wants is much less clear. Moreover, recent or planned reforms of these systems are an indication of some dissatisfaction with their performance.

Bice (1988) describes well the history, rationale, and impact of health planning in the United States. The Hill-Burton Program, enacted in 1946, subsidized hospital construction in order to eliminate shortages of beds in rural and economically depressed areas. The program was so successful in stimulating hospital construction that, 25 years later, the focus was changed to concerns about an oversupply of beds. Federal planning legislation of the late 1960s and early 1970s created, encouraged, and/or subsidized various regional and State planning authorities.

Of most relevance here is that by the early 1970s, many States had enacted certificate-of-need (CON) legislation under which planned hospital construction or capital projects were subject to review and approval. Numerous analyses of these CON programs during the 1970s found that they were ineffective in limiting the overall growth in hospital costs, even though they seemed to have some impact on the composition of capital spending (Salkever and Bice, 1978; Steinwald and Sloan, 1981). Growing disenchantment with this regulatory approach under the Reagan Administration eventually resulted in the expiration of the Federal program in the mid-1980s. Although many States repealed their laws, others took it upon themselves to continue health planning.

According to a recent study by Lewin/ICF and the Alpha Center (1991), 38 States continue with some form of CON programs. In an econometric analysis of the experience of these States during the 1980s, the study yielded several important findings. First, in general, CON did not reduce the rate of increase in spending for acute hospital care. Second, in States with stringent controls, there was some restraint in the growth of such selected services as cardiac catheterization and open heart surgery. However, other services such as magnetic resonance imaging and computerized tomography have proliferated despite efforts to control them. Third, CON appears to have had some impact on controlling the supply of long-term care beds.

Some would argue that assessing the impact of CON and health planning is not a simple matter. First, cost control was not their only objective. They were generally mandated to consider access and quality of care, as well as cost. Second, there is recent evidence of the limited success of some CON programs in controlling costs, particularly for specific services and for nursing home investment (Friedland, 1990). Rice (1991) suggests that because States are at risk for some nursing home costs through Medicaid, there has been more "political wherewithal" to control these costs than to control hospital costs for which States are not the major payer.

Although most would agree that CON alone did not control total costs, they would also probably agree that this should have been expected given the economic and political environment. A number of factors probably contributed to this. First, the information requirements for adequate planning are substantial, and it is probably true that the designers of these programs did not fully appreciate the inadequacy of available information regarding health care utilization at the local level. In any case, the resources provided to develop such information were very limited. Second, modern theories of regulator-regulated interaction (i.e., among bureaucracies, political interests, and provider interests) indicate the complexity of these outcomes (Feldstein, 1983). In the absence of a strong political interest, provider interests will tend to heavily influence, if not dominate, the process. Third, even if cost containment had been the overall objective of these regulatory agencies, the incentives they faced would not support this objective. They would not receive greater rewards if total costs were controlled, nor would they be at risk in any way for cost increases.

The rationale for health planning as a supply-side cost-control mechanism derives from several perceived problems. Roemer's Law—the long-standing contention that the supply of health facilities generates use—is frequently cited as a prime motivation. In other words, an excessive supply of facilities leads to overuse. But there are also distinct but related problems of excessive capital

costs for a given facility (for example, due to expensive amenities) and of "duplicated" facilities competing on the availability of high technology rather than on price or quality of care.

Although the evidence in support of Roemer's Law is limited (U.S. General Accounting Office, 1991) and difficult to interpret causally, the experience of Canada and other countries in limiting health spending suggests that these supply-side measures could be more effective than they were previously in the United States, particularly if the regulators were at risk in some way. In addition, the regulators need to control not only the number and size of facilities but also the size of the budget for operating expenses. However, this tends to be cost containment in the broad sense of the term, with little attention given to linking benefits and costs of specific medical practices.

Another initiative deserving mention in the area of planning is the attempt to limit the number of providers who are eligible to provide a specific service. Examples of this are the Health Care Financing Administration's (HCFA's) regulations that control the number of renal and heart transplant centers and private insurer efforts at selective contracting and "centers of excellence" programs. The rationale for these efforts is rooted in observations of low volumes of specific procedures in many hospitals and evidence of an inverse relationship between outcome and volume. There are also reasons to believe that the duplication of facilities to perform these procedures results in higher costs (Finkler, 1979, 1981). These initiatives are not extensive, and as yet there is little analysis of their impact (Freeland, Hunt, and Luft, 1987).

The political climate that eliminated Federal health planning legislation has not changed substantially, and hence the likelihood of further attempts at these types of supply-side controls at a national level in the United States is low. Furthermore, although CON has shown limited success at reducing costs for specific services, it has generally not been successful at controlling the rate of growth in total costs. As illustrated by CON for nursing homes, this supply-side strategy can reduce costs especially if the regulator is backed by the political will to control costs. How well these controls perform in terms of targeting inappropriate or less cost-effective care for elimination is much less clear.

Technology assessment

Technology assessment as a potential supply-side mechanism for containing costs exhibits some elements of health planning if viewed primarily as a public-sector enterprise. Government could perform these assessments and disseminate the information as a public good. However, there is now considerable private-sector activity in this area. Technology assessment attempts to deal more with the moral-hazard problem than with the problems of cost inefficiency or excess profits; and at the moment, it tends to do this more through information dissemination than through direct controls on what services can be provided.

The debate about whether technological change is the "culprit" behind health cost inflation has been going on since the late 1970s (Altman and Blendon, 1979) and is continuing (Wilensky, 1990). In the early 1980s, there were calls (Bunker, Fowles, and Schaffarzick, 1982) for a greater national technology assessment effort as well as some governmental efforts that met with opposition (and eventually defeat) by providers and other suppliers of medical services and products. Rettig (1991) provides an excellent history of these developments.

Several developments in the 1980s have rekindled interest in this area. First and foremost, of course, the continuing growth in costs has been linked to the greater use of technologies in this country versus others (Rublee, 1989). The work of Wennberg (1984) on variations in treatment patterns and uncertainty about the outcomes of care underscored the need for further information. Also, methodological developments and training in decision analysis and cost-effectiveness analysis in the 1980s have led to a greater power of and appreciation for these tools.

Fuchs and Garber (1990) have recently described the "new technology assessment." It differs from the old primarily because it has been broadened beyond biomedical considerations of only safety and efficacy to include considerations of cost, effectiveness, and even ethics. The research teams have also broadened beyond physicians, as has the audience, which now includes consumers. Technology assessment is also being used to support practice guideline development as well as coverage decisions.

The difference between technology assessment and practice guidelines as potential supply-side cost-control devices may ultimately be somewhat artificial. There are, however, some differences as they are currently used. Technology assessment is generally used to refer to the analysis of specific procedures, drugs, and devices and is assumed to make some determination of their overall suitability for coverage under an insurance package. Practice guidelines, as currently being developed by the Federal Government, tend to focus on a set of disease conditions, are based on a review of the empirical evidence, and rely on a clinical consensus process. Although some weight is given to economic considerations, the focus is on giving providers better guidance on appropriate treatment protocols. Clearly, however, they could also be used by insurers for utilization review. Practice guidelines are discussed later.

Given the public good nature of information, a case can and has been made (Roper et al., 1988) for greater public support of technology assessment. Nonetheless, HCFA continues to debate whether to explicitly include cost-effectiveness analysis in its coverage decisions. The continuing opposition of providers of services and technologies to this is no doubt a factor in the delay. At the same time, private insurers are beginning to require evidence of cost effectiveness prior to their coverage decision.

How effective is technology assessment likely to be as a cost-containment tool? Aside from providing general information, the results of technology assessments could be used in two principal ways to affect resource allocation. First, they could be used to define insurance benefit packages (i.e., what is covered). Second, they could be used in utilization review (prior, concurrent, or retrospective) to either limit use or to deny payment.

There is some evidence that utilization review programs have reduced costs (Wickizer, Wheeler, and Feldstein, 1989).

Schwartz (1987) claims that cost-containment strategies, such as we have employed in the past, have attempted to eliminate "... care that is presumed to be of no medical value." He argues that at best this can provide a one-time savings because it does not deal with the underlying causes of cost growth—population growth and aging, rising input prices, and technological innovation and diffusion. This may, however, underestimate the potential long run saving from the application of a cost-effectiveness criterion. For example, if technology assessment could be used to eliminate care that was not cost effective, a broader criterion, then it would presumably increase the size of the one-time savings. Furthermore, if the developers of new technologies knew they would be subjected to a strict cost-effectiveness test, they might be more selective in the technologies they attempt to develop. This could reduce the rate of technological change and thus cost growth.

One of the major barriers to using technology assessment as a cost-containment measure is the sheer number of technologies involved in medical care. As described in Garrison and Brown (1991), analysts have at times assigned as much as one-half of the growth in health expenditures to a residual ("unknown") category, of which technological change is seen as the major component. Efforts to account for this residual in terms of the diffusion of specific major interventions explain only a small fraction of the change. This suggests both the complexity of technological change in medical care and the limitations of technology assessment as a tool for controlling costs in the aggregate.

As reviewed recently in Weisbrod (1991), there is an economics literature stressing the interdependence between the nature of the health insurance contract and the types of technological change. Some would argue that conventional insurance tends to encourage the adoption of cost-increasing, quality-enhancing technologies. On the other hand, if the growth of basic scientific knowledge favors certain types of technical changes (e.g., innovations for treating severe illnesses versus those that provide more "convenience"), then particular insurance forms, such as HMOs, might be better at reducing moral hazard (Baumgardner, 1991). Indeed, these insurance contracts can be seen as general rules that are necessary to deal with a wide range of technologies because the number of technologies is simply too large for comprehensive technology assessment to be feasible.

At this point, with technology assessment in its infancy, there is no direct evidence of its impact on controlling costs. Clearly, it can be used to support both utilization review activities and insurance benefit design. But its potential is limited both by the complexity of the medical technology and by the importance of incentives. Technology assessment as information alone, uncoupled from payment policy, would probably not have much impact on cost growth.

Practice guidelines

Practice guidelines are sets of decision rules designed to assist clinicians in recommending treatment regimens to patients with particular disease conditions. As part of his illuminating series of articles on clinical decisionmaking, Eddy (1990a) distinguishes among practice standards, guidelines, and options, depending on the flexibility afforded the decisionmaker. He classifies all of these under the general label "practice policies." Standards are the most rigid policies and would be specified when exceptions to the specified course of action would be extremely rare. Guidelines are more flexible, would be followed in most cases, but allow some adjustment to meet individual needs. Options do not recommend a specific course of treatment but instead describe the possible courses available.

The recent initiative at the Federal level to develop practice guidelines through the Agency for Health Care Policy and Research (AHCPR) can be traced to the calls since the early 1980s for more technology assessment and outcomes research. The impetus for much of this evolution was the early work of Wennberg on variations in health care utilization (Wennberg, Barnes, and Zubkoff, 1982) that led him to conclude that "practice uncertainty" was the major source of the variation. The medical literature was simply inadequate as a scientific basis for much of clinical decisionmaking.

An indicated earlier, practice guidelines as they are currently being developed in the public and private sectors differ from technology assessment in two ways. First, they are re-examining existing practice patterns or technologies for treating major sets of disease conditions (Raskin and Maklan, 1991). Technology assessment has tended to focus on new procedures, devices, and drugs. Second, the movement to include cost considerations has progressed much further in technology assessment than in practice guidelines.

Brook (1989) identifies numerous ways in which the development and diffusion of guidelines may affect medical practice. The potential impacts, all aiming to better match resources with medical needs, could occur through many channels: information provided to consumers, new medical textbooks, new professional certification and licensure requirements, utilization review and preferred provider selection by third-party payers, and the legal system in making malpractice determinations.

At this point, there is every reason to be optimistic about the potential benefits of practice guidelines in terms of reducing the practice variations resulting from medical uncertainty. But their potential effectiveness in terms of controlling the growth of costs is another matter. There are many examples, such as health promotion programs and disease screening, where providing information to consumers and patients appears to have increased costs on balance. The recent work and writings of Wennberg (1990) have emphasized the importance of patient preferences in making treatment choices: "... rational choices among treatments depend on attitudes about risks and benefits—on how patients view their predicaments." Coupling this with our limited knowledge about outcomes

suggests that, using Eddy's terminology, most practice policies are likely to be options, rather than guidelines or standards. As long as this is true, their usefulness for utilization review and insurance benefit design will be greatly circumscribed.

A further major shortcoming of practice guidelines, as they are currently being constructed, is the relative lack of attention to costs. Eddy (1990b) decries this and states that "... the resolution of the cost problem will require connecting value to costs." The major outcome studies of AHCPR generally have a cost component, which will be useful in the future for considering costs. But the initial guidelines development process has focused on narrowing the range of medical uncertainty, which is itself substantial.

As yet, there is obviously little experience on which to base an assessment of the impact of guidelines on either practice patterns or costs. Experiments with feedback to local practitioners have shown some promise in reducing variations (Wennberg, 1984). But Lomas et al. (1989) found that general dissemination of a consensus statement on cesarean section had little impact on actual practice. However, more targeted utilization review—comparing actual patterns with guidelines either retrospectively or prospectively—would certainly seem to have some potential for influencing resource use.

In terms of pure cost containment, there is nothing about guidelines that would necessarily imply lower aggregate spending on health care. They should help us to eliminate "unnecessary" and "inappropriate" care, but also they may help us to identify new unmet needs for which further expenditures would be desirable on a cost-benefit basis. The real challenge, again as Eddy (1990b) has elucidated, is how to use practice guidelines to connect value to costs.

Payment policy

At first glance, it may not be apparent that payment policies fall into the category of supply-side cost-containment measures. After all, aren't market prices supposed to adjust to equate demand and supply? In medical service markets, however, a distinction can often be made between the prices facing demanders and those facing suppliers. For example, under Medicare's prospective payment system (PPS), hospitals receive a fixed prospective payment for services rendered in a given DRG, and demanders (i.e., beneficiaries) face a deductible with no per diems or copayments initially. In some managed-care settings, patients pay a small copayment per visit, and physicians are paid a salary and do not receive an additional payment for supplying services to individual patients.

Ellis and McGuire (1990) analyze theoretically the incentives under payment systems with separate demand-side and supply-side pricing practices. As they see it, "[the] central problem in U.S. health policy is designing a payment system that protects patients against financial risk without inducing inefficiently high levels of health service use." By enriching a standard framework to incorporate conflict resolution, they are able to demonstrate that the hard choices required in allocating resources to health care necessarily require conflict. Patients will have to be denied services they would like to obtain when ill. Furthermore, they conclude that supply-side instruments are better (in the sense of maximizing consumer welfare) than is demand-side cost-sharing at achieving cost control. In part, this is because payment can be used to limit the provider's incentive to overprovide.

The available empirical evidence consistently indicates the success of rate regulation payment policies in slowing the rate of growth of hospital expenditures. The few States, mostly in the Northeast, that began mandatory hospital ratesetting in the 1970s were able to reduce the rate of cost growth (Steinwald and Sloan, 1981; Eby and Cohodes, 1985; Schramm, Renn, and Biles, 1986; Zuckerman, 1987; Davis et al., 1990). Medicare's hospital PPS appears to have slowed significantly the rate of growth in hospital spending; and despite a shift toward outpatient surgery, it has slowed the growth in overall Medicare spending (Russell, 1989; Christensen, 1991).

The evidence of the additional benefits of all-payer ratesetting systems in the United States is more mixed. For State programs, although all-payer systems have also limited cost growth (Schramm et al., 1987), they have not performed significantly better than more limited programs (Zuckerman, 1987). On the other hand, they can provide a mechanism for addressing broader policy objectives, such as equitable financing of uncompensated care, as Thorpe (1987) describes in New York.

The big unknowns with respect to ratesetting are whether it can be applied to significantly constrain the growth of overall spending and whether it can encourage the provision of the most cost-effective services. Although Medicare PPS appears to have reduced the growth in Medicare program spending in the 1980s compared with the 1970s, the growth in national total health spending has not abated (Long and Welch, 1988) and continues at a rate that many regard as alarming.

Based on his review of the empirical evidence, especially in Canada and Germany, Rice (1991) concludes that supply-side payment methods are likely to be the most effective approach to containing costs. And, in particular, he believes the evidence supports the effectiveness of all-payer systems, where all payers pay the same prices. He contends further that having only one payer, i.e., government, would enhance the effectiveness of this approach in containing costs.

Discussion

This article briefly reviews the arguments and evidence regarding the effectiveness of selected supply-side mechanisms in containing costs. Other approaches, such as managed care, also affect suppliers but are discussed elsewhere in this issue. To this point, it should be apparent that the approaches we have tried previously have not been very successful at containing costs. The health planning and payment policies of the 1970s and 1980s apparently did little to contain aggregate cost growth despite some success in slowing the growth of particular types of costs, such as hospital and nursing home costs. This does not preclude their potential effectiveness as part of a broader cost-control strategy with other components, such as global budgets.

Technology assessment and practice guidelines are the new strategies on the scene. They hold some promise, but the specifics of how they are implemented could make a difference. Clinically oriented practice guidelines, with little consideration of cost impacts, are not likely to be successful in controlling costs.

Proposed solutions should obviously depend on what one sees as the problem and its causes. The discussion here assumes that dealing with moral hazard is the central consideration in designing cost-containment approaches to deal with cost growth. Currently, as in the past, consumers with providers as their agents are, for the most part, not constrained in making choices among treatment options. To control costs, choices will have to be made at some point in the process: The subsidy to health insurance could be reduced; the number of suppliers could be limited; the services available could be limited; the benefit package could exclude certain treatments; or providers could refuse to provide certain services. Controls on the number of suppliers or aggregate expenditures are crude and blunt instruments. Certainly, if stringent enough, they could be made to limit aggregate cost growth, but they fail on the criterion of relating value to cost. And they ignore the importance of individual preferences.

A good case can be made that our reluctance or inability to deal with two fundamental sets of choices underlies our inability to control costs. First, as a society, we have generally avoided hard choices about health care spending. We have difficulty denying expensive treatments to identifiable ill persons, even if the treatment is not cost effective (in terms of expected dollar cost per quality-adjusted life year gained). A second, related difficulty is the problem of balancing equity and economic efficiency (value for dollar spent) concerns in the health care realm. The first problem would exist even if all persons in society had equal incomes and wealth. The second issue relates to our unwillingness or inability to recognize that poor persons might well choose and be better served by goods other than health care under certain circumstances. We sometimes deny them treatment implicitly by not providing insurance coverage or by making access difficult. But we are reluctant to make this an explicit choice.

In principle, if individuals had more or less the same preferences and financial constraints, and if we had information on the relative cost effectiveness of all possible treatments, we could define a health care benefit package that would include all treatments above a particular expected cost-effectiveness threshold. The level of that threshold would depend on the individual's willingness to forego health for other goods. But because individuals have different preferences, constraints, and limited information on even treatment effectiveness, it is very difficult to develop an operational approach to defining a detailed minimum benefit package, as is being attempted in Oregon (Fox and Leichter, 1991).

The choice would seem to be between (a) giving the poor an income transfer and letting the market (regulated somewhat) determine the set of available insurance package-cost tradeoffs and (b) attempting to define explicitly a set of minimum benefits that would be available to all citizens including the poor. Eddy (1991) outlines a method for operationalizing the latter by confronting average persons (i.e., with median incomes) with explicit choices about particular interventions.

The standard benefit description used now is quite general, specified in terms of all necessary hospital and physician care, with experimental procedures excluded. Third-party payers through prior authorization and utilization review have implemented systems to attempt to control the circumstances under which particular services are provided. For the foreseeable future, it seems likely that these packages will continue to be quite broad with a modest, but growing list of specific exceptions or specific indications for which specific services or technologies are covered or excluded. Outcomes research and the development of practice guidelines will help to expand the list of specific services defined in these packages.

Some of the other difficulties in defining benefit packages are less appreciated but should be apparent. Even if procedure X for condition Y is covered, what level of physician quality and hospital quality is covered? What amenities and waiting times are covered? These questions illustrate the difficulty of micromanaging service provision. At some point, such micromanagement becomes an extreme form of health planning, but with even greater informational requirements than previous facilities-oriented controls.

With our growing clinical knowledge and the substantial declines in the cost of information collection and processing, it is tempting to forecast quantum leaps in our ability to micromanage clinical care. Our experience with computer-assisted decisionmaking models suggests the complexity of the task. For over 20 years now, we have had numerous teams working with artificial intelligence models for specific diseases. As indicated by Schwartz, Patil, and Szolovits (1987), this technology has been more difficult to develop and slower to diffuse than many would have predicted.

Conclusion

This brief survey of selected supply-side cost-containment measures offers little reason to be optimistic about the short-term impact of greater use of these particular measures in terms of containing overall costs, especially if they are used in isolation. Health planning had very limited effectiveness and is not a major component of current reform proposals. Controls on the number of physicians and hospitals, if sufficiently stringent and comprehensive, would surely limit the growth in costs, but without much regard to placing health dollars where the payoff is greatest. Technology assessment and practice guidelines hold greater promise for the longer term as mechanisms for rationalizing our allocation of resources for health, but medical practice is too complex and uncertain for effective micromanagement. Payment policies, perhaps in conjunction with expenditure caps, may offer the most promise in the short term as methods for limiting cost growth. Among these policies, prospective package pricing and prepaid managed care have more theoretical appeal than simply setting provider prices and paying ex post on a fee-for-service basis. This is because of the inherent limitations and drawbacks of price controls,

particularly their inflexibility in the long run (Baumol, 1988), and the incentive under fee for service for providers to overprovide.

This review advances the argument that we will be unlikely to control costs with any of these methods unless and until we develop a socially acceptable approach to identifying and limiting medical care utilization that is beneficial but not cost effective. Furthermore, the challenge is not really to contain costs per se; rather, we need a better approach, in Eddy's words, for "connecting value and costs."

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