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Perspectives

A Payment Method For Health Insurance Purchasing Cooperatives

by James C. Robinson

Health insurance purchasing cooperatives (HIPCs) combine the resources of governmental entities, employers, and consumers to manage competition and motivate efficiency among health plans. They need incentive-conscious payment methods that fulfill three functions. First, health plans must be motivated to search continually for better methods of service delivery; the HIPC should not pay more to health plans that experience higher costs due to inefficiency. Second, health plans must be discouraged from selectively enrolling healthy individuals and avoiding the chronically ill; the HIPC should make larger payments to those plans serving a high-risk population. Third, health plans must be motivated to evaluate the cost-effectiveness of new technologies and procedures; the HIPC should rigorously negotiate health plan requests for premium increases over time.

Motivating Efficiency Through Fixed Contributions

Health plans must be motivated to innovate ceaselessly in search of higher quality and more cost-effective means of delivering services. This requires an evaluation of health plans and premiums for appropriateness, quality, and convenience. The health plan with the lowest premium does not necessarily offer the best value. Conversely, health plans with the highest premiums rarely offer the highest quality. Evaluating these three areas is a formidable task facing HIPCs and individual consumers alike.

The appropriateness and the technical quality of medical care services can only be ascertained in a statistical manner, focusing on patterns of use and outcomes rather than isolated anecdotes. The HIPC has the potential to gather data on appropriateness and quality, for evaluating the cost-effectiveness of services. While individual consumers lack the capacity to judge these criteria, they have an equally important role to play. Their perceptions and preferences regarding, first, convenience and other service amenities and, second, premiums, are important comparison factors.

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The basic payment structure embodies the principle that HIPC and consumers make different but equally important choices. The two sets of choices are made sequentially, not simultaneously. In the first step, the HIPC evaluates health plans that are interested in offering their services to enrollees and contracts with some but not necessarily all plans in the area. In the second step, consumers choose from among the plans that have contracted with the HIPC. Those who select high-premium plans must pay the full difference between the premium charged by the plan they select and the premium charged by the lowest-cost plan.

The role of the HIPC. The HIPC establishes specifications that all health plans must meet to be considered for contracting. At a minimum, these would include a definition of benefits, open enrollment, and a requirement that the health plan monitor the appropriateness and quality of the care it provides and share these data with the HIPC.¹ The HIPC then evaluates the premiums quoted by the health plans in terms of the characteristics of those plans and negotiates a premium with each plan. In this process the HIPC is acting like a large industrial purchaser of intermediate materials and components, actively negotiating the best value possible.

The HIPC does not seek to negotiate the same premium with all plans. As in other markets, there will be a range of products and prices. The HIPC does strive, however, to ensure that the reasons for higher prices are legitimate. If the HIPC is not convinced that the premium demanded by a particular plan is justified and if a lower rate cannot be negotiated, then the HIPC can refuse to contract with that plan.

After negotiating premiums with the local health plans, the HIPC must decide on the level of its contribution toward the premiums. The part of the premium not covered by the HIPC will be charged directly to the consumer. This distinction between health plan premium and HIPC contribution is important. The premium is negotiated between the HIPC and the health plan; it is not dictated by the HIPC. The HIPC does have unilateral control over its contribution, however.²

Two basic principles underlie the HIPC's contribution. First, the HIPC must contribute the same amount toward the premium of every plan.³ Second, the HIPC's contribution must not exceed the premium of the lowest-cost plan.⁴ The HIPC could set its contribution equal to the premium charged by the lowest-cost plan, implying that consumers who choose that plan would make no contribution. Or, the HIPC could set its contribution at 90 percent, requiring consumers who choose that plan to pay the remainder. If budgetary considerations necessitated a lower HIPC contribution, it could pay some lower percentage of the lowest-cost plan's premium. For low-income consumers, the HIPC would always set its contribution at 100 percent of the lowest-cost plan's premium.

The role of the consumer. Once the HIPC has negotiated premiums and established its contribution, consumers choose among the set of contracting plans during an annual open enrollment period on the basis of their comparison of premiums and other plan characteristics. As is the case in most consumer product markets, individual consumers do not negotiate with health plans over price and quality but “vote with their feet,” enrolling in the plan that offers the best value from their perspective.

Inclusion of consumer choice in the purchasing mechanism is key because it motivates health plans to hold down the premiums they quote to the HIPC. Given that the HIPC's contribution will be pegged to the premium of the lowest-cost plan, consumers will bear the full financial burden of choosing a plan with a higher premium. As is evident with other goods and services where consumer purchases are not subsidized, producers able to quote low prices are rewarded with a greater share of the market.

Adjusting For Biased Selection Across Health Plans

HIPCs place strong nonprice controls on risk selection through mandated open enrollment and bans on underwriting. There is no reason to assume, however, that even the most, sophisticated controls will allocate the same mix of high- and low-risk enrollees to all health plans. Chance alone will affect the risk mix of plans. Furthermore, some nonrandom selection is desirable. Some plans may offer particularly high-quality and efficient care for certain conditions; ideally, consumers suffering from those conditions will select the plans best able to treat them.

Exhibit 1 illustrates the potential for biased selection among competing health plans under contract with the Bank of America, a large financial

Exhibit 1
Risk Differences Among Health Plans Under Managed Competition: An Example From The Bank Of America In Northern California

Health plan	Number of enrollees	Predicted expenditures per enrollee	95 percent confidence interval	Relative risk index
Blue Shield (fee-for-service)	5,019	\$2,968	\$2,929-3,007	1.036
Kaiser Permanente	7,415	2,781	2,751-2,811	0.971
Foundation Health Plan	428	2,909	2,799-3,019	1.015
Take Care	624	2,893	2,739-3,047	1.010
Health Plan America	352	2,655	2,529-2,781	0.927
Qual-Med	739	2,989	2,903-3,075	1.043
Lifeguard	433	2,982	2,879-3,125	1.041
All plans	15,010	\$2,865	\$2,806-\$2,924	1.000

Source: Author's calculations based on data from the Bank of America.

corporation based in northern California. The bank operates an annual open enrollment season and prohibits underwriting of individual employees by contracting health plans. These data indicate how much the enrollees in each of the plans would have spent, on average, had they been enrolled in the bank's fee-for-service plan (administered by Blue Shield of California). They do not indicate how much those enrollees actually spent in each of the other plans. Actual expenditures are influenced by relative efficiency among plans and do not provide direct evidence on risk selection.

Predicted annual expenditures per enrollee indicated an overall 13 percent range in risk differences among plans. The single largest enrollment group was in Kaiser Permanente of Northern California, a major group-model health maintenance organization (HMO); average predicted expenditures for that group were 3 percent lower than for all bank employees. Enrollees in the bank's fee-for-service plan had predicted expenditures that were 4 percent higher than for all bank employees.

Risk weights. These predicted expenditures are used to risk-adjust the HIPC's premium contribution as follows.⁵ The HIPC first calculates a risk index for each plan, based on the characteristics of individual enrollees. Each plan's index is the ratio of the predicted expenditures per enrollee in that plan divided by overall predicted expenditures for all HIPC members. The HIPC's overall predicted expenditure is simply the average of predicted expenditures across all plans, weighted by enrollment in each plan. The risk index for each plan in Exhibit 1 is the ratio of its predicted expenditures per enrollee to this average, shown in the fourth column.

The HIPC first divides each health plan's premium by its risk index. These risk-adjusted premiums indicate how much each health plan would charge if each had an enrollee mix representative of the risk mix of the HIPC as a whole. They reflect differences among plans in efficiency and amenities but have been purged of differences in risk. The HIPC then sets its contribution as a percentage of the lowest risk-adjusted premium, not the lowest unadjusted premium.

The workings of this approach can be illustrated using actual spending data from the Bank of America's fee-for-service plan and Kaiser Permanente of Northern California. Actual expenditures per enrollee in the fee-for-service plan averaged \$2,968 in 1989, while actual expenditures per bank enrollee in the HMO averaged \$1,853.⁶ For purposes of illustration, I assume that these two plans set premiums equal to average spending per enrollee. Using the risk indices from Exhibit 1, this produces risk-adjusted premiums of \$2,862 and \$1,908 for the fee-for-service and HMO plans, respectively. Thus, while the unadjusted fee-for-service premium exceeded the unadjusted HMO premium by 60 percent, the adjusted premiums differed by only 50 percent. Nevertheless, the HMO offered by far the lower

risk-adjusted premium. If the HIPC contributed 90 percent of the (risk-adjusted) premium charged by the most efficient plan, it would pay \$1,717 per year (\$1,908 multiplied by 0.9). HIPC members joining the HMO would pay \$136 per year (\$1,853 less \$1,717). HIPC members joining the fee-for-service plan would pay \$1,251 per year (\$2,968 less \$1,717).⁷

These figures illustrate the dramatic differences in efficiency among health plans and the rationale for fixed, equal contributions by the HIPC to all plans. Although the HMO did enjoy a somewhat healthier mix of enrollees, efficiency accounted for by far the greatest proportion of the spending differences. If plans are to be encouraged to develop efficiency in delivering services, consumers must be required to pay the full difference between the efficient premium and the premium of the plan they actually select. The importance of risk-adjusting is also clear from these figures, however. If the HIPC had set its contribution at 90 percent of the lowest premium without first adjusting for risk, it would have paid \$1,668 per year instead of \$1,717. This would have resulted in a higher net consumer contribution of \$1,300 for the fee-for-service plan and \$185 for the HMO.

How are risk weights calculated? Three technical questions must be answered in developing a method for calculating risk weights. (1) Which variables will be used to predict expenditures across enrollee groups? (2) Which statistical model will be used to combine those variables into a single measure of risk for each enrollee group? (3) Which services will be included in the ultimate risk index, and which will be excluded from the basic health plan premium and reimbursed separately? The answers to these three questions involve trade-offs between predictive accuracy, administrative feasibility, and incentive attenuation.

Which variables? Core variables used in all models include basic demographic characteristics such as age, sex, number of dependents, and, where relevant, retiree status. These are easily available from health plans, employers, and other purchasers. Large employers can obtain additional variables from their personnel files, such as marital status, salary level, educational level, occupational grade, and employment tenure. Experience with the Bank of America data indicates that such variables contribute greatly to predictive ability; however, they are unlikely to be available to HIPCs.

Efforts to predict use and spending for the Medicare population have experimented extensively with measures of prior use of medical care, including prior-year expenditures, hospitalization, and nondiscretionary hospitalization.⁸ These variables boost the predictive power of the model for enrollees with chronic conditions, a matter of greater importance for the Medicare population than for healthier employed groups. However, they suffer from two disadvantages. First, prior-use variables are not available for new enrollees in any plan and are completely unavailable from some health

plans that do not rely on fee-for-service payment of claims, such as prepaid group practice HMOs. Second, prior-use variables pick up the influence of health plan efficiency as well as enrollee risk. Most obviously, measures of prior-year hospitalization will inevitably reward plans with weak hospital utilization review programs and punish health plans that rely extensively on outpatient and home health services.

A third set of possible variables is derived from surveys of enrollees in various plans, focusing on self-assessed health status and functional limitations.⁹ These survey data are collected from random samples of enrollees. As such, they can potentially improve the model's ability to characterize overall risk level of enrollment groups but will not capture the economic effects of the small number of high-cost enrollees.

A final possible variable is the geographic location of individual enrollees and enrollee groups, measured by ZIP code. As documented repeatedly in the research literature, patterns of utilization and expenditure vary widely across geographical areas in ways not explicable by epidemiology. These patterns are due to differences in the supply of hospital and physician resources and also to idiosyncratic differences in practice styles for medical conditions for which there is no unambiguously best treatment.

Inclusion of ZIP code variables in the predictive model will lead to high HIPC contributions to health plans whose enrollment is concentrated in areas with relatively aggressive physician practice styles. This is desirable to the extent that health plans are unable to influence practice styles; without geographic adjustment, plans will avoid high-cost areas. It is undesirable, however, because it leads to cross-subsidies from consumers and taxpayers living in areas with conservative medical practice patterns to those living in areas with inefficient practice patterns. It would be possible to use geographic adjusters initially and then phase them out over time.

Which statistical method? Most attempts to predict medical care expenditures have used a single equation, ordinary least squares (analysis of covariance) approach. This has the advantage of simplicity and interpretability. It ignores, however, the statistical distribution of medical care expenditures.

The pattern of expenditures among any group of enrollees is a mix of four basic subgroups with different epidemiological features. First, a large fraction of the population is very healthy and uses few if any medical care services in any given year. In typical fee-for-service plans, 30-40 percent of enrollees use no services or use only services costing less than their deductible. The second subgroup consists of relatively healthy persons who use ambulatory services but do not require hospitalization or other exceptional treatments. The third subgroup consists of those using the hospital, typically 10-15 percent of enrollees; many of these hospitalizations are routine and nonrecurrent admissions for maternity or elective surgery. A final,

small category consists of persons with truly exceptional and high-cost use of both inpatient and outpatient services.

Significant gains in predictive ability can be obtained by statistical methods that take into consideration the differences between these subgroups. The simplest version is to predict separately the probability that each enrollee will use any services during the year and the cost of services, if any are used. Predictions are then combined into one measure of predicted expenditure for each enrollee. For example, if a person has a 50 percent predicted likelihood of using services and a predicted expenditure of \$2,000 if that person uses services, the overall predicted risk is \$1,000.

This two-part model can be expanded into four parts to take into consideration the different utilization patterns of enrollees using the hospital versus ambulatory services.¹⁰ First, one predicts the probability that each enrollee will use any medical care services, given his or her characteristics. Second, one predicts the probability that each enrollee will use hospital services. Third, one predicts expenditures for enrollees using ambulatory services only. Fourth, one predicts expenditures for enrollees using both inpatient and outpatient services. These four sets of predictions are then combined into a single measure of total predicted expenditures. This basic model can be extended to six equations, to distinguish users of routine hospital services from users of high-cost inpatient services.¹¹

Which services are included? The statistical problems facing risk adjustment methods stem from the small number of enrollees with very high costs. It is impossible to predict involvement in a major automobile accident or new diagnosis of acquired immunodeficiency syndrome (AIDS) from the descriptive variables potentially available to HIPC's. The key feature of managed competition, in contrast to the prevailing indemnity insurance approach, is that health plans will not be able to underwrite individual enrollees but must rely on the averaging effects of large enrollment groups. This principle underlies open enrollment systems and is at the very core of group health insurance.

Nevertheless, health plans are legitimately worried about the possibility of enrolling by chance a disproportionate share of high-cost patients. If health plans are forced to accept the risk of enrolling these high-cost patients while being paid a premium that reflects the experiences of the majority, they will demand a particularly high premium for all enrollees. In effect, they will establish an internal reinsurance pool. Total costs to the HIPC can be reduced if it absorbs some of this statistical risk by promising health plans an extra payment above their regular premium for high-risk patients. Here, the HIPC establishes its own reinsurance pool.

This goal may be achieved in various ways. One possibility is to exclude from the prospectively determined premium those individuals with speci-

fied diagnoses; for these persons the health plans could be reimbursed on a fixed “episode-of-illness” basis. Alternatively, some inpatient treatments could be excluded from the risk pool, with health plans paid a fixed price per admission. In either case it would be important to set the fixed retrospective payment at a level no higher than the cost of treatment for the most efficient plans. It may be desirable to set the payment even below this level, to give the health plans incentives to develop methods for managing the cost of care. Conceptually, the high-cost diagnosis or admission would be removed only partially from the prospectively reimbursed risk pool. It would also be necessary to monitor upcoding of patient severity.¹²

This process of totally or partially removing patients or treatments from the risk pool can be generalized as follows. Each health plan could be paid a weighted average of a prospectively determined premium and the plan’s actual costs during the year. The premium would be risk-adjusted. This mixed prospective and retrospective payment system reduces the risk to the health plan of enrolling seriously ill patients without the need to identify those persons according to some rigidly specified list of diagnoses or admission criteria. The problem with this approach, needless to say, is that it weakens the health plan’s incentives to control costs. It offers advantages for a transition period, however, with the weight assigned to retrospective costs declining over time. It could also be used to ameliorate the difficulties posed by geographical differences in utilization patterns.

How are risk weights to be validated? Clearly there is no single best way to calculate weights for risk adjustment of contributions, just as there is no single best way to calculate relative value scales for physician procedures or hospital admissions. It is therefore important to be as explicit as possible in comparing and evaluating alternative statistical approaches.

Much of the existing literature on risk prediction has been quite concerned with the inability of the statistical models to predict future use for individual consumers. This hand wringing has been unfortunate, since it ignores the basic relationship of the HIPC to the health plans. It assumes that health plans will identify high-cost individuals one at a time and pressure them to disenroll. While this certainly occurs in the current indemnity insurance marketplace, it will be difficult within a managed competition structure. A health plan that engages in such illicit behavior will endanger its entire franchise with the HIPC. The HIPC will contract with only a few plans and will ensure that all plans selected receive a large number of enrollees. Plans will have to make considerable investments in developing relationships with physicians, hospitals, and other providers to manage the care of this large HIPC enrollment base. The value of these investments is at risk if the HIPC terminates the franchise, and therefore the investment constitutes a credible commitment by the health plans to

abstain from active risk selection strategies.¹³ Instead of dropping exceptionally high-cost enrollees, the HIPC will encourage plans to negotiate for episode-of-illness or other special reimbursements for these patients.

The alternative measure of predictive validity focuses on the experiences of enrollee groups, not on individual enrollees. The basic approach is to draw random samples of individuals from the larger enrollment base, aggregate the individuals into groups of various sizes, and compare actual expenditures with predicted expenditures for each randomly selected group rather than for each individual enrollee. Simulation experiments with the Bank of America data indicate that available statistical models can predict to a high degree of accuracy the average and total expenditures for large groups even without measures of prior medical care use.¹⁴

Controlling Health Plan Costs Over Time

The key issue in health care financing is not how to narrow cost differences among health plans at any one point in time but, rather, how to control the rate of increase in costs over time. The most important and most difficult challenge facing purchasers is to evaluate the cost-effectiveness of new medical care practices. The payment methods used by HIPCs necessarily play an important role in this process.

Each year HIPCs will renegotiate their health plan contracts, focusing inevitably on premiums. There is no reason to assume, however, that the health plans will request the same percentage increases. Cost pressures and the need for revenue increases stem from the relative success or failure of each plan's efforts to negotiate attractive fees with providers, to institute effective utilization review systems, to identify and correct quality problems, to streamline administrative mechanisms, and, most importantly in the long run, to evaluate and control the diffusion of new practice styles.

The main restraint on health plan requests for premium increases is their fear that consumers will leave the plan. Given that the HIPC's contribution is pegged to the lowest risk-adjusted premium in the area, plans that insist upon particularly high premium increases will force large increases in the consumer's contribution and thereby lose market share to plans holding down their premiums. This does not imply, however, that the HIPC can rely solely on cost/quality trade-offs by individual consumers to moderate health care cost inflation.

In principle, the HIPC's payment method embodies a "defined contribution" rather than a "defined benefit," with the consumer paying the difference between the HIPC's contribution and whatever premium the health plans charge. In practice, however, the HIPC will be under pressure from consumers to raise its contribution at approximately the same rate as the

premiums increase, at least for the low-cost plans. This is appropriate. The HIPC as well as the individual consumer must be cost-conscious and must see its expenditures rise when health plans negotiate higher premiums.

Long-term cost control in the health care system will be obtained only through informed comparisons by HIPCs and consumers of cost, quality, and service amenities. There are strong concerns in policy circles, however, that the contractual approach described here and in other managed competition proposals will fail to control health care inflation quickly enough.

The “single-sponsor” approach to health care reform offers a mechanism for subjecting the managed competition framework to a predictable, global budget.¹⁵ The HIPC is established as the sole purchaser of health plan services in the local area, covering all citizens, and has a powerful influence over health plan premiums. In economic parlance, the HIPC is a “price maker” rather than a “price taker.” As such, it can insist that at least one plan in each local area accept the HIPC contribution as payment in full and can regulate the extent of additional premiums charged by other plans. Overall expenditures will grow at approximately the same rate as the general economy, since payroll and other tax rates produce higher HIPC revenues as the tax base grows. If the citizenry desires health care expenditures to grow at a rate faster than the economy, it can pressure the legislature to raise tax rates or mandate higher employer premium contributions.

Direct global budgeting of this type is not possible in a multiple-sponsor system in which the HIPC covers only small employers and the self-employed. However, even a HIPC limited to firms with fewer than fifty employees will include 30 percent of all employed persons and thus will have substantial bargaining strength. The presence of a purchasing cooperative for small firms will motivate medium-size and large firms to develop purchasing cooperatives of their own, leading to a more concentrated market. Large and sophisticated purchasers negotiating with large and sophisticated managed care organizations can achieve through market contracting many of the same controls over cost inflation available to a single governmental payer.

Conclusion

The most effective methods of paying for health care support the most efficient methods for delivering health care. The financing systems being developed today must lay the organizational foundations of a high-quality and cost-effective health care system for the next century. The central insight of managed competition is that payment incentives can be located at various parts of the system and do not need to come solely from the top down or from the bottom up. Health plans are best situated to negotiate

with physicians, hospitals, and other service providers concerning fees, utilization review mechanisms, and quality assessment. The ultimate payers for health care, including governmental entities, employers, and individual citizens, have less expertise than managed care organizations in this respect. These ultimate purchasers bear the responsibility, however, for designing an incentive-conscious method for paying health plans. Through defined contributions, risk-adjusted capitation, and budget-sensitive negotiations of premium increases, HIPC's can manage competition and motivate efficiency among managed care organizations.

NOTES

1. A.C. Enthoven, "Managed Competition in Health Care and the Unfinished Agenda," *Health Care Financing Review* (1986 Annual Supplement): 105-119.
2. H.S. Luft, "Compensating for Biased Selection in Health Insurance," *The Milbank Quarterly* 64, no. 4 (1986): 566-591.
3. As discussed in the next section, the HIPC does pay a higher contribution toward high-premium plans to the extent that the high premiums reflect adverse risk selection.
4. For simplicity, this ignores risk differences across health plans, discussed below.
5. For a more detailed discussion of risk-adjusting methods, see B. Bowen and E. Slavin, "Adjusting Contributions to Address Selection Bias: Three Models for Employers," *Advances in Health Economics and Health Services Research* 12 (1991): 77-96.
6. Average actual expenditures equal average predicted expenditures (in Exhibit 1) for fee-for-service enrollees since the predicted expenditure figures were derived using fee-for-service claims data. Average predicted spending for Kaiser members in Exhibit 1 far exceeds actual Kaiser expenditures, because of the HMO's strong efficiencies.
7. Note that the risk adjusting of the plans' premiums affects the HIPC's contribution (which is the same to all plans) but not the amount of money each plan actually receives. Each plan is paid the premium it negotiates, not the risk-adjusted premium.
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