

HMO Enrollment: Who Joins What and Why: A Review of the Literature

S. E. BERKI and MARIE L. F. ASHCRAFT

*Department of Medical Care Organization,
School of Public Health,
University of Michigan;
Health Services Research and Development Program,
Ann Arbor Veterans Administration Medical Center,
Ann Arbor*

IF HEALTH MAINTENANCE ORGANIZATIONS (HMOS) are to be economically viable alternatives in the medical care market they must be able to attract providers and consumers. The quantity and quality of their enrollee base is a principal determinant of their ability to provide services at competitive prices. Hence the question of who enrolls and why is basic.

Enrollment may occur on an individual or a group basis. Individual enrollment, during open enrollment periods, is a voluntary exercise of choice. Group enrollment is also the result of choice by individual members. Although the decision to offer an HMO option may frequently be subject to collective bargaining or some other type of joint decision-making, once such a choice is offered, it must be one alternative between two or more plans from which consumers are individually free to choose.

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The requirement of free choice among alternative plans, with different benefit packages, costs, and provider systems, indicates that the decision to enroll in a given plan can best be considered in the framework of choice behavior. Models of choice behavior generally assume that the individual decision maker will select the alternative that, given his level of information, is expected to maximize his satisfaction or utility. This assumes that the individual, informed about the characteristics of available alternatives, is the best judge of which particular combination of such characteristics, as represented by a given plan, is the most suitable for him, or in other words, is likely to yield the highest level of satisfaction. This does not imply that individual decisions are not influenced by the choices of others or by group values and decisions.

The assumption of individual choice is an important one. The approach here presented is not applicable to situations where group members do not exercise individual choices, a long-standing objective of unions (Munts, 1967). Further, although in dual- and multiple-choice situations group members must *de jure* be free to exercise individual decisions, *de facto* they may not always be so where collective choice by a group, such as a union, is paramount. That possibility is also not encompassed here. Both of these situations would require a different framework for their understanding.

In the past, the choice, if any, was between a service benefit or indemnity health insurance plan, and a closed-panel, prepaid group practice—hence the studies of dual choice. Current alternatives often include a third model, the individual practice association with its open panel of physicians. The question of “Who joins HMOs?” is now, therefore, “Who joins what kind of HMO and why?”

Whatever framework is employed to analyze enrollment, the enrollment decision is clearly related to expected service use. Hence the issue should be viewed as a set of iterative, interrelated decisions, specifically, 1) the decision to enroll; 2) the decision to remain enrolled; and 3) the decision to utilize services. The development of a complete model of enrollment, retention, and utilization, each of crucial significance to HMO performance, is beyond the scope of this paper, and beyond the current state of the literature.

This paper sets out a framework for analyzing the enrollment decision and then summarizes the literature on it.

Enrollment Choice: An Analytic Framework

Choice among alternative plans with different benefit packages, costs, and provider systems results in the observable decision to enroll in a given health insurance plan. Concepts of risk, of expected costs and benefits, are applicable directly to situations involving service benefit or indemnity plans only. In such situations the purchase of health insurance is a transfer of the risk of financial losses incurred by the use of medical services. Selection of providers of services is a separate decision, subsequent in time to the choice of insurance coverage. Since the decision is between insurance plans only, and is independent of the choice of providers, it can be considered strictly in terms of *insurance characteristics*: 1) the benefit package covered; 2) premium cost to the enrollee; and 3) cost-sharing provisions such as deductibles, copayment, coinsurance, and benefit ceilings.

Enrollment in an HMO is a simultaneous choice of both insurance coverage of the cost of medical services and their system of delivery. Decision variables relating to aspects of the delivery system, the *delivery characteristics*, must also be considered. Principal dimensions that consumers may consider include 1) spatial, psychosocial, and temporal dimensions of access; 2) continuity of care; 3) comprehensiveness; 4) clinical quality, and 5) social quality. Individuals are likely to evaluate the importance of these delivery characteristics in terms of their relative attractiveness, relative among alternatives and relative to the system or plan in which they receive services at the time the decision is made.

The framework for the analysis of enrollment decisions is summarized in schematic form in Figure 1, with direct relationships shown in solid lines. The economic characteristics and risk factors of the decision unit (family or individual), modified by its beliefs about medicine, determine its expected volume and type of health services use, its utilization pattern.

The expected utilization patterns and their associated costs are the principal factors influencing choice among the insurance characteristics of alternative plans. Financial aspects of that choice are analyzed in terms of the financial vulnerability hypothesis. The effect of expected utilization patterns resulting from family risk factors is analyzed in terms of the risk perception hypothesis.

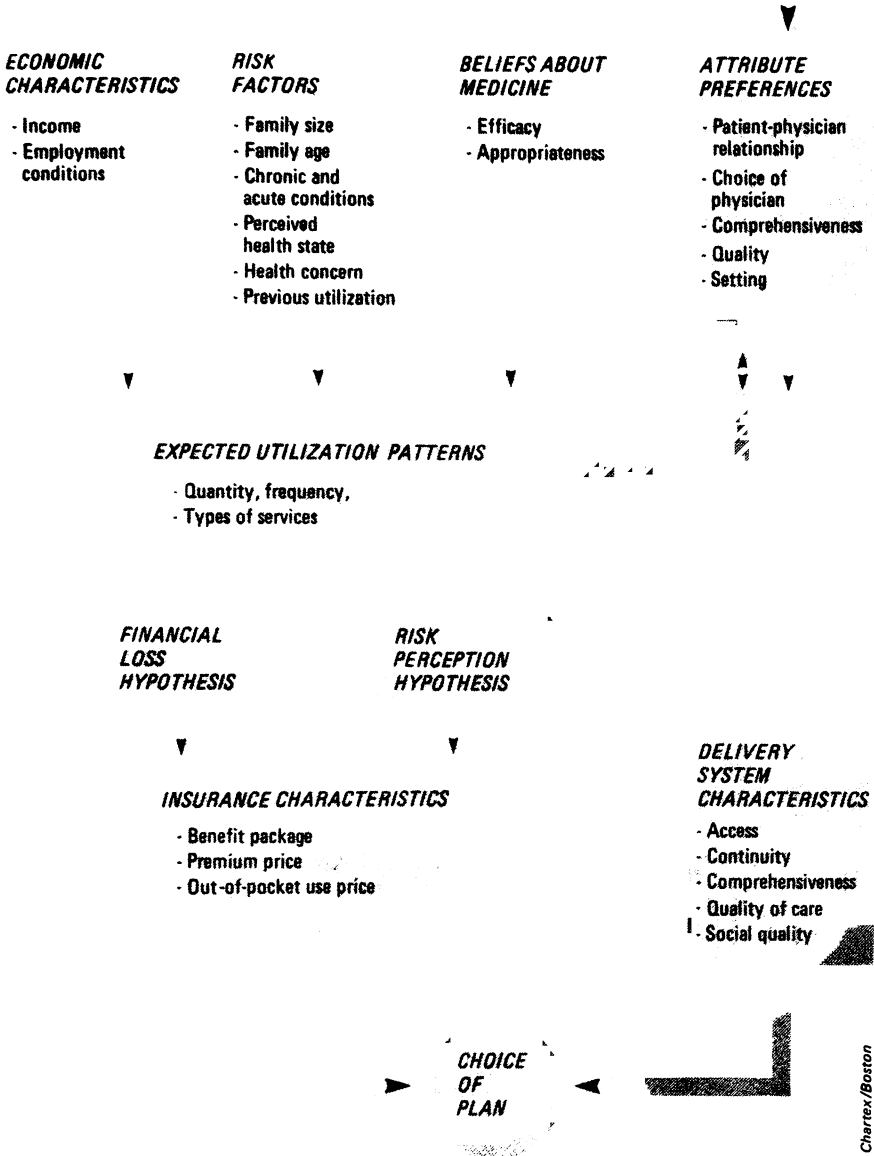


FIG. 1. Framework for analysis of enrollment decisions. Solid lines, direct relationships. Barred lines, indirect relationships.

Expected utilization patterns and the desirability of the delivery characteristics of alternative plans are the decision variables in the choice of delivery system. The decision unit's socioeconomic characteristics and its health risk factors influence its preferences over delivery characteristics, indicated in dotted lines.

The economic characteristics, risk factors, beliefs, and preferences for plan attributes are the variables describing potential enrollees. The insurance and delivery characteristics of the alternative plans are evaluated by the potential enrollees in terms of these variables. Given expected utilization patterns and attribute preferences on the one hand, and, on the other, the insurance and delivery characteristic bundles available, enrollment will represent the choice of plan whose dimensions are thought to best fit the potential enrollee's utilization and system preferences. The nature and extent of the trade-offs between insurance and delivery system characteristics, and their relation to such characteristics of alternate plans, are the basic issues to be considered in delivery system design, siting, and pricing.

Plan Characteristics, Perceived Characteristics, and Plan Valuation

Specific alternatives have objectively existing insurance and delivery characteristics. Each plan offers a defined set of covered services, specifying exclusions and/or the conditions under which the services are available, such as out-of-area coverage; indemnity plans similarly specify types of services and situations that will result in the payment of predetermined amounts. Among the attributes that define the plan are premium and cost-sharing provisions and rates, as well as delivery characteristics, such as the ability to choose a physician either from a specified and limited group or from a large number of individually located physicians, or, alternatively, the ability of a potential enrollee to retain an existing relationship with a physician. In their totality, these attributes comprise the plan. Hence they can be said to exist objectively. The extent to which they exist equally for all enrollees, and hence enrollees' experience with them, is principally related to the decision to remain enrolled and, to some extent, to the plan's "reputation" and its potential effect on enrollment decisions.

The enrollment decision, however, is based on information about

these objectively existing characteristics. To the extent that plan characteristics are considered in the decision to enroll, it is the decision makers' beliefs about them that become the deciding factors. It is the perceived attributes of plans, what potential enrollees believe them to be, and not necessarily what they actually are, upon which decisions are likely to be made. The degree of conformance between actual and perceived attributes and the role of information are principal marketing issues and will not be developed here. What is important to note, however, is that preferences are translated into choice based on attributes that decision makers believe to exist. The match between the state of the world that can be said to exist objectively, and what decision makers believe it to be, is not necessarily exact.

How objective attributes are perceived, their salience, is likely to be dependent on their relative valuations by decision makers. The principal issues in assessing the roles of perceived attributes in the enrollment decision are how these perceptions came about and how the attributes are valued.

The roles of insurance characteristics are best understood in terms of risk perception and financial vulnerability hypotheses.

Insurance Characteristics

The *risk perception* hypothesis states that the higher an individual's perceived likelihood of the occurrence of future events that will require the use of medical services, the more likely that individual is, other things being equal, to choose a more comprehensive benefit package and to pay the higher premium.

The *financial vulnerability* hypothesis argues that the larger the expected utility loss associated with a given level of expected financial loss, the more likely that the individual will purchase a plan that reduces the cost of utilization of medical services.

The risk perception hypothesis is derived from a formulation in which medical care services are single-purpose goods and yield satisfaction only when the consumer considers them to be needed for therapeutic, maintenance, or preventive purposes. They are not considered to be substitutes for other goods and services and hence do not yield satisfaction except in the case of perceived present or future need. Hence it is the individual's subjective probability estimate of

future events, illness, maintenance, or prevention—that is, his perception of risk—that assigns a value to medical services, the benefit package.

The level of perceived health risk is likely to be a function of the individual's health history, present state of perceived health, age, and experience in health services utilization. The magnitude of subjective risk is also likely to be influenced by attitudes toward risk, that is, risk avoidance or preference, as well as future orientation and perceptions of locus of control. Thus individuals who are not future-oriented and operate within relatively short time horizons, in the belief that they themselves are not in control of future events, are less likely to have high risk perceptions or assign high values to risk avoidance.

The health risk hypothesis is consistent with the concepts of adverse self-selection and moral hazard. Those who believe themselves, for whatever reason, more likely to be in need of future services are more likely to choose the more extensive coverage at the same price or even at a higher price. Further, once individuals with higher risk perceptions are able to utilize services at lower out-of-pocket prices, their use of services is likely to be highly price-elastic, resulting in large increases in utilization.

To the extent, therefore, that HMOs offer extended benefit packages at zero or nominal out-of-pocket prices, they are likely to be attractive to individuals whose level of perceived health risk is higher, and who then will use excessive services. From the perspective of the HMO, the self-selection, if it occurs, is adverse.

The role of insurance characteristics is complicated by the fact that coverage is traditionally available to dependents; hence the risk perception hypothesis, while applicable to individuals, may be even more so to families. When the decision maker considers not only his own health status but also the health status and welfare of eligible family members, it is the subjective health risk of the family unit that is the appropriate unit of analysis.

In economic models of insurance (Grossman, 1972), the demand for coverage originates in a perceived need to reduce losses from present or expected future health status, by the purchase of health care services. The economic models assume that the effects of such purchased health care services on health status are determined by some externally given production function. The effectiveness of health care services, in other words, is given by the state of the

medical arts. Although that may be the case objectively, individual attitudes, however acquired, toward the efficacy of medicine, and types of health care, are likely to vary. It would be expected that higher levels of belief in the efficacy of modern scientific medicine, for example, would lead to a higher valuation of the restorative function and hence, for a given level of subjective perception of health risk, to a higher demand for more extensive benefit packages. This concept is distinct from beliefs about the efficacy of the individual providers and the clinical quality dimensions of alternative plans. In fact, a certain degree of belief in the efficacy of medicine must exist for beliefs about the clinical quality of individual providers to be relevant. Clearly, at the extreme, disbelief in medicine renders moot the issue of the efficacy of its individual providers.

The health risk hypothesis, then, is the principal means of incorporating those individual, familial, experiential, and attitudinal factors that are likely to affect the decision-making unit's assessment of its subjective risk status and its evaluation of the appropriateness of the benefit packages available.

The financial vulnerability hypothesis, on the other hand, incorporates those financial aspects of the alternatives that are attendant on the use of services and the purchase of insurance. In this formulation there is no distinction between service benefit and capitated plans. From the perspective of the potential enrollee, they are both prepaid; what differ are the benefit packages and the rates and mechanisms of cost sharing. Particularly with the increasing availability of "riders" and "add-ons," from dental coverage to prescription drugs, and in the presence of comprehensive inpatient coverage in the service benefit plans, the major factor is likely to be cost-sharing rates. In this perspective, noncovered ambulatory services in service plans are seen as fully self-insured, with full cost-sharing. The extent to which financial factors are likely to play a role in the decision will depend on the expected level of total health care costs, premium and out-of-pocket, and its associated utility loss.

Utility loss arises from economic loss, reduction either of wealth or of consumption. The expected level of total health care costs, and thus its utility loss equivalent, is a function of expected service use. At one end of the spectrum, as Bice et al. (1974; 1975) have indicated, when the connection between expected utilization and financial cost is broken, as in the case of those eligible for Title XIX, the financial

vulnerability hypothesis is irrelevant. It may also be that at the other end of the spectrum, at high income levels, where even relatively large potential financial losses are associated with relatively low utility losses, the purchase of the insurance characteristics of the plan may not be attractive. The extent to which this is likely to be the case, or, alternatively, the extent to which large losses even with very small subjective probabilities lead to risk aversion, the fear of a "wipe-out," is debatable. The implications of the financial vulnerability hypothesis, however, are that lower-income decision units, for whom a given economic loss is a relatively larger utility loss, and relatively higher-income decision units (but still within the middle-income range), for whom large financial losses may represent an economic wipe-out, are more likely to choose the option with the better potential for reduction of economic loss, and at a higher premium price. The stress must be on premium price, since the *total* price of any given pattern of service use is the sum of premium payments and out-of-pocket costs. Out-of-pocket costs of service use are determined by the benefit package and the cost-sharing provisions. Inclusion of fully prepaid ambulatory service benefits, that is to say, zero cost-sharing, in a benefit package (x), offered at the same premium price as another benefit package (y) with identical coverage but with 50 percent cost-sharing, represents a lower *total* price. The lower total price (of x) may reflect that the actuarial value of the premium is greater than its price, or that service use will somehow be controlled. It may also be that the premium of the cost-sharing plan (y) is predicated on the existence of moral hazard, excessive use induced by the reduction of out-of-pocket price.

Choice of Delivery Characteristics

The delivery characteristics of health care plans are their organizational, locational, and social attributes. It is useful to consider them as 1) access; 2) continuity; 3) comprehensiveness; 4) quality; and 5) social quality or social organization.

Access. Access may be considered to have three dimensions: spatial, temporal, and psychosocial. *Spatial* access refers to the location of delivery sites in relation to the potential user's domicile or, where appropriate, domicile and workplace. It is assumed that potential enrollees, other things being held constant, prefer health care plans

whose delivery sites, in terms of distance or travel time, provide for greater ease of physical contact. The extent to which perceptions of spatial or physical access by potential enrollees might vary, based on their accustomed travel patterns, is not clear.

Spatial accessibility is important in both single site and multidelivery site systems. Furthermore, in multidelivery site systems offering a comprehensive set of services, the spatial distribution of specialized services, e.g., inpatient and therapeutic radiology, will necessarily differ from the spatial distribution of services used more often, e.g., primary adult and pediatric care. In such choice situations, the potential enrollee is likely to consider the spatial distribution of the totality of services, so that the formulation of hypotheses about its effect on the enrollment decision becomes more difficult.

How strongly consumers feel about spatial access is likely to be affected by their expected use patterns. In this instance the health risk hypothesis reinforces the potential significance of spatial accessibility. Those whose perceived health risk is higher and who, therefore, expect to be higher utilizers, are more likely to consider spatial access to be important than are those who expect to use few services, or specific services relatively infrequently.

The *temporal* dimension of access refers to the time lag between the patient's first attempt at establishing contact with a provider and its actualization. Under nonemergent conditions, waiting time required to get an appointment and waiting time in the office comprise the basic elements of temporal access.

The time required to contact a provider out of office hours and the time required to make physical contact during emergencies may also be considered relevant decision factors.

The relative importance of the temporal dimensions of access in the decision process is likely to be influenced by the potential enrollee's perceived health risk. As in the case of physical access, temporal access is likely to be considered more important to consumers whose perceived health risk is higher than for decision units who expect lower use rates.

An important element of both spatial and temporal dimensions of access is the enrollees' perception of whether contact with a physician can be readily obtained or not. Health care plans that deliver medical services on single or multispecialty group bases, with or without special emergency clinics, but with mechanisms that allow assured

contact with a provider with a short time lag in spatially easily accessible locations, can be said to provide "assured access." Although this feature is theoretically attainable by individual solo practice settings, through the establishment of emergency coverage during off-hours and formal patient-sharing and referral mechanisms in case of overload, in practice that is not likely to be the case. Assured access may be a particularly important decision variable for individuals new to the community or who do not perceive its existence within their former delivery setting.

One of the dimensions of temporal access has been considered by economists as the "time price" of services. To the extent that time prices vary by occupational and income levels, it is expected that those whose opportunity cost of time is higher will prefer delivery systems in which time price is minimized. Whether the time price concept fully captures time preference is unclear. Time preferences may be influenced by attitudinal and ecological factors, independent of the money price of time. Thus future-oriented "time-conscious" individuals for whom longer office waiting times involve social disruptions—the socially active homemaker, the proverbial "dependent"—may well prefer shorter waiting times, more than the higher-income wage earner paid on a yearly basis.

The temporal dimensions of access, then, may be considered more important by individuals with higher perceived health risk and, other things being equal, shorter temporal access may be considered better.

Psychosocial access refers to the potential enrollee's perceived social distance to providers. The ability to communicate freely and openly with providers, an assumed preference of patients, is influenced by patient-provider social class, ethnic, racial, and cultural differences. Particularly in multiethnic and multiracial settings, it is likely that health care plans, or their delivery sites that employ providers closely identified with a particular racial or ethnic group, are going to be a less favorable option to other, different, ethnic or racial groups. The obverse, however, may also be true.

Although the relative importance of the spatial, temporal, and psychosocial dimensions of access to the enrollment decision may not be the same, it is likely that all are important decision variables to the choice of plan.

Continuity. Continuity of care refers to the ability of the patient to

establish or to maintain a patient-physician relationship with a physician of choice, and having a given physician as the principal health care coordinator.

The essential elements are the ability to have a patient-physician relationship, the ability to choose that physician, and the definition of the set of physicians from which that choice may be made. This is the principal issue in the choice of closed-panel and open-panel HMOs. Closed-panel HMOs offer a choice of physician, always in theory and often in practice. But that choice is necessarily limited to a group whose size and composition are defined by the plan. Open-panel HMOs, on the other hand, generally include large proportions of the practicing physician population in their community, hence the choice of a physician, if one needs to be made, is less constrained.

Individuals, and/or decision units where that is the family, who have an established patient-physician relationship of some duration are more likely to want to maintain it. The choice of HMOs in which enrollment necessitates the severing of an existing satisfactory patient-physician relationship, other things being constant, is not likely. On the other hand, if enrollment in a health care plan provides for the maintenance of an already existing relationship, the usual feature of foundation or IPA models, enrollment (other things being the same) is more likely.

For decision units without such a relationship, or with a relationship that is unsatisfactory, the choice situation is different. For them, enrollment in a closed-panel HMO does not imply severing the familiarity of an established relationship. Here the reasons for the absence of such a relationship must be considered, however. If such a relationship does not exist because the decision maker is new to the community, or because attempts to establish such a relationship were made unsuccessfully in the past, choice of a plan that offers assured access and a choice of a physician, even if from a limited group, is more likely. If, however, the decision maker has no patient-physician relationship because there was no felt need for it, enrollment (other things being equal) is problematic. Hence it is not simply whether a patient-physician relationship exists but also, if it does not, why.

Patient-physician ratios, practice loads and practice patterns, all supply side factors, as well as community net migration patterns, are important determinants of the prevalence of the patient-physician

relationship and of perceived access to care. Where relationships are less prevalent, the likelihood of the choice of closed-panel HMOs is apt to be increased.

Professionals maintain the desirability of having one provider to orchestrate the provision of health care services, and some HMOs in fact attempt to provide for this, but the extent to which consumers prefer this is unclear. Thus even though such a system may be advantageous from the clinical, administrative, and economic perspectives, its role in the enrollment choice decision is unclear.

For enrollment choice analysis, therefore, the essential elements of continuity relate to the existence of the patient-physician relationship and the degree of physician choice.

Comprehensiveness. Comprehensiveness refers to the breadth of services that the patient may receive from the same set of providers or within the same physical setting. It is to be distinguished from the comprehensiveness of the benefit package, in that it refers not to the spectrum of services covered but to the system by which that spectrum of services is rendered.

Evolution of general consumption patterns, both facilitated by and encouraging "supermarket" retailing in a wide variety of fields, is thought to imply consumer preference for "one-door shopping." Physical aggregation of generalists, specialists, and ancillary services in health care may, therefore, be considered attractive in terms of service pattern preferences. It can also reduce service-connected travel time and facilitate more appropriate referral patterns, particularly intra-group referrals.

The extent to which these features are perceived and valued by decision makers in the enrollment choice situation is problematic.

Quality of care. The clinical quality of delivery characteristics encompasses the clinical appropriateness and effectiveness of the care pattern. The clinical competence of individual providers is a necessary but not a sufficient condition for the maximization of the clinical quality of the care pattern. The care pattern attains high levels of clinical quality when its individual elements, rendered by different providers, are most appropriately coordinated and are suited to the complex of clinical and psychosocial pathologies represented by the whole patient. It is a characteristic of the system, and not only of its individual elements. Even supposing that differences in these aspects of clinical quality are in fact systematically associated with types of

practice settings, whether patients perceive it that way is open to question.

A subset of clinical quality, however, the competence of the providers, is more likely to be a decision variable in enrollment choices. Few if any patients have sufficient experience and clinical information to assess for themselves the competence levels of various providers. They may therefore be influenced in their enrollment decisions by the reputation of provider plans and beliefs about the "appropriate" organization and management of medical practice. These are then used to derive associated beliefs about the competence of providers. Hence, if decision makers believe, whether based on their own experience or not, that physicians practicing in clinics do not have the same level of competence as those practicing in private settings, the HMO that offers a clinic-type delivery system may not be viewed with favor. An appropriately managed clinic-type setting may have high levels of temporal access, continuity, and comprehensiveness, yet, because of the nature of its organization, may be assumed to provide lower quality. Yet the lower levels of performance on these delivery aspects that might be found in solo settings may be associated with higher quality. Hence the role of perceived quality, not to mention its relation to actual quality, in the enrollment decision is unclear.

Another subset of clinical quality, and one that may be interdependent with psychosocial access, comprises the humaneness of providers and the dignity afforded patients, the "care" component of "cure and care." Enrollees can be assumed to prefer delivery settings in which the providers are expected to care more, to be more solicitous of patient complaints, to treat them more as individuals. It may well be that potential enrollees associate these characteristics more with individual office-based physicians than with larger-scale clinic-type settings. This may also be an important motive for the desire to establish a patient-physician relationship; hence it is unclear whether it is more appropriately considered as a dimension of that relationship or as a dimension of the quality of care. In either case, it is probably an important decision factor.

Social Quality. The concept of the social quality captures the elements of the delivery system that, although not objectively related to other delivery characteristics, are perceived by potential enrollees as relevant. The physical attractiveness and social location of delivery sites, the prestige and reputation of the plan in terms of "modernity,"

“innovativeness,” and humane concerns, are elements of an HMO’s perceived social quality or social attractiveness. For example, HMOs originating in inner cities, which then attempt to expand to middle-class suburban areas, sometimes may find it advantageous to change their names, to live down, as it were, their reputation. Alternatively, where competing HMOs exist, competitors may repeatedly refer to such plans by names designed to stigmatize them as socially less desirable, as in Rochester, where the Rochester Health Network is often referred to as the “Neighborhood Health Center Plan.”

Further, social quality may include perceptions of the clientele the HMO serves. Whom the patient shares the waiting room and clinical facilities with may be considered as a factor in the decision to select one plan over another, particularly in geographically and socially heterogeneous settings. Where the delivery site is located and who the site serves, and whether the HMO is identified with a given population subset may be important variables to some potential enrollees.

The effects of these aspects of social quality are important in enrollment decisions and their implications for the economic viability of HMOs. HMOs identified by potential enrollees with an ethnic or racial group may attract only members of that group, and particularly its members from the lower-income strata. If such enrollment “success” reduces the HMO’s chances of enrolling the higher-income members of other ethnic or racial groups, the economic composition of the enrollees may not ensure economic viability without subsidies. Increased reliance on subsidies directly, or indirectly by enrolling subsidized individuals, such as Title XIX beneficiaries, may further reduce the HMO’s relative attractiveness to other potential enrollees, particularly in dual or multichoice options offered to employed groups. Needless to say, this is likely to have an effect on the medical staff composition, thus starting a downward spiral whose termination is the “Medicaid mill,” an unattractive alternative, regardless of its geographic setting.

Social quality may be seen as an aspect of product differentiation, sometimes merely packaging. Its effect in the enrollment decision may be to segment enrollment by social class or along ethnic and racial lines. Its corollary is the drawing power of HMOs whose reputation and prestige are high.

When one of the options is a standard service benefit plan, such as Blue Cross/Blue Shield (BC-BS), that plan may enjoy several advan-

tages in terms of social quality. First of all, it has no delivery system; hence none of the location- and facility-related aspects of social quality apply to it. Second, it will usually be the plan used by the largest proportion of potential enrollees in other plans—the incumbent plan—and its present users are socially, demographically, and economically heterogeneous. It might also be associated in the minds of potential enrollees as the “mainstream,” “the American way.” The extent to which these potential advantages of plans such as BC-BS can be transferred to HMOs sponsored by them is unclear.

On balance, and other things being equal, it is likely that the social quality dimensions of HMOs play an important part in enrollment decisions, with higher perceived social quality an enrollment advantage.

State of the Art

Studies of enrollment choice attempt to determine individual and family characteristics that differentiate those who select an HMO from those who do not, and to differentiate between those who select a staff model HMO and those who choose an individual practice association (IPA). By determining the relative roles of these characteristics in the enrollment decision, one should be able to predict its outcome: who enrolls, in what, and why. The design and analytic plan of most studies, however, while responding to the first and occasionally the second question, have rarely provided answers to the third. Even when only the first question is asked, differences in the methodologies render the results essentially incomparable. It is not clear whether the differing results of various studies are due to differences in population characteristics, sample sizes, instrumentation, analytic design, and study timing, or whether the enrollment groups actually differ. Nor is it clear whether lack of significant differences between enrollment groups within any study is a generalizable finding, or the result of limited variation that occurs naturally in the sample. In addition, since bivariate analyses are used almost exclusively, determining the independent or relative effects of the more important factors, such as health risk and financial vulnerability, is virtually impossible. Those are the principal reasons why answers to the questions of who enrolls, in what, and why are at best tentative.

Tables 1 and 2, respectively, show the variation among empirical studies, in terms of design and methodology, and in setting and population characteristics, all of which affect the comparability and generalizability of their results. In the sections that follow the results of those studies are discussed.

Insurance Characteristics

As stated previously, the role of the insurance factors can best be understood in terms of characteristics that define individuals' level of risk, which derive primarily from two sources: individuals' perceived or actual health state and their perceived financial vulnerability.

Risk Perception Factors. Although the risk perception hypothesis has not been tested in the precise terms stated earlier, it has been closely approximated. On the reasonable assumption that future need for medical care is related to present need, although probably not linearly, studies have focused on those direct and indirect indicators of health risk that might be predictive of future use of services. The issue is one of adverse self-selection: Do "sicker" people join an HMO?

Health risk has variously been measured by previous utilization experience, both ambulatory and inpatient, by the number and kinds of acute and chronic illnesses, by the presence of disability and its duration, by attitudinal measures such as perceived health status and health concern, and by demographic characteristics as proxy indicators, used either independently or in combination. The evidence on adverse self-selection is mixed.

Demographic characteristics of individuals and families, such as age, marital status, family size, age of children, procreative age, and retirement status, may indicate a potential need for medical care as clearly as reports of present health or perceived health status (Andersen, 1968). These measures have been used singly as well as combined in a family life stage construct to test the risk perception hypothesis. In general, the results have supported it.

In studies of choice between an HMO and either a service benefit (such as BC-BS) or an indemnity health insurance plan, HMO enrollees are more likely to be married than single (Bashshur and Metzner, 1967; Jurgovan and Carpenter, 1974; Moustafa et al., 1971), with larger and younger families (Berki et al., 1977a; Juba et al., 1980; Roghmann et al., 1975; Wolfman, 1961), than those choosing less

Methodological Characteristics of Selected Studies of Enrollment Choice

Study	Study Date	Sample Characteristics	Months between Enrollment and Study	Method of Data Collection*	Number in Study Response Rate**	Respondents	Principal Type of Data Analysis
Bashshur and Metzner, 1967	1964	Stratified Random	36	S	1,201F 90%	Subscribers	Bivariate
Berki et al., 1977a	1974	Stratified Random	1-2	S	626F 83%	Employees	Bivariate
Berki et al., 1978	1974	Stratified Random	1-2	S	626F 83%	Employees	Multivariate
Bice, 1973	1971	Area Probability	Prospective	S (plus records)	826I 92%	All adults	Bivariate
Juba et al., 1980	1976	Stratified Random	‡	M	332F 46%	Employees	Multivariate
Jurgovan and Carpenter, 1974	1974	100%	1-2	M (plus records)	3,365F 57%	Employees	Bivariate
Moustafa et al., 1972	1967	100%	‡	M	271F 58%	Employees	Bivariate
Richardson et al., 1976	1976	100%	< 1	S	6,860F 90%	Adults	Bivariate
Roghmann et al., 1975	1973	Stratified Random	1-5	M	373F 30%	Subscribers	Bivariate
Scitovsky et al., 1978	1975	Stratified Random	1-4	M	471F 60%	Subscribers	Bivariate
Tessler and Mechanic, 1975	1973	100%	> 6	S	1,816F 59%	Subscribers	Multivariate
	1975	Stratified Random	‡	T	333F 89%	Female adults	Bivariate

*S, Personal interview; T, Telephone survey; M, Mail survey

**F, Families; I, Individuals

‡No information available

TABLE 2
Site and Plan Characteristics of Selected Studies of Enrollment Choice

Study	Age of HMO (Years)	Premium Cost to Enrollee for HMO?	Hospital Control by HMO?	Comparative Plans	Characteristics of Eligible Study Population
Bashhur and Metzner, 1967	4	Yes	Yes	PGP/BC-BS*	UAW members in automotive plants
Berki et al., 1977a	< 2	No	No	IPA/2 PGPs/BC-BS*	Employees of single manufacturing plant
Bice, 1973	< 1	**	No	PGP	Residents of low-income inner city area
Juba et al., 1980	"new"	Yes	No	PGP/BC-BS*	University employees
Jurgovan and Carpenter, 1974	1	Yes	No	IPA/PGP/Indemnity*	Employees of single company
Moustafa et al., 1972	> 10	Yes	Yes	2 PGPs/BC-BS/Indemnity*	New university employees
Richardson et al., 1976	> 10	**	Yes	PGP/BC-BS	Residents of low-income target area
Roghamann et al., 1975	< 1	Yes	No	IPA/2 PGPs/BC-BS*	Employees of single company
Scitovsky et al., 1978†	< 3	Yes	No	IPA/2 PGPs/BC-BS*	Employees of several companies
Tessler and Mechanic, 1975	> 10	Yes	Yes	2 PGPs	University employees
	< 3	Yes	No	PG/BC-BS*	Municipal employees

*Incumbent plan.

**Not applicable.

†This study focused on choice between two HMOs (Kaiser and Stanford Clinic Plan). For purposes of display on this table, Kaiser was arbitrarily selected as the HMO.

comprehensive (and less expensive) service benefit plans, usually favored by young, single individuals (Berki et al., 1977a; Roemer et al., 1972).

Although these results generally have prevailed, contrary findings have also been reported. In one study, married families selected BC-BS more often than an available HMO (Tessler and Mechanic, 1975); in two other studies, HMO enrollee families were somewhat older than families opting for BC-BS, although all were still within the middle-age range (Bashshur and Metzner, 1967; Moustafa et al., 1971); and no statistically significant differences in age and family size between the two enrollment groups were found in another (Tessler and Mechanic, 1975).

On balance, however, the evidence seems convincing that when employee groups are offered a choice between plans differing in their insurance characteristics, single individuals and families with few or older members seem to prefer the limited coverage of the insurance plan (with its usually lower premium cost), while HMOs attract families expected to exhibit the greater demand for care that is associated with a younger and expanding life stage. It is this evidence, in fact, that indicates that HMO enrollment is a function of a perceived future health need for care among younger families. It speaks also to the nature of the services the enrolled population may demand, particularly maternity (Hudes et al., 1979; Wersinger et al., 1976) and preventive health care benefits (Dutton, 1979; Luft, 1978; Perkoff et al., 1974; Tessler and Mechanic, 1975), and to the possible duration of their membership should their expectations be met.

It should be noted, however, that this evidence derives from studies of employed populations and does not hold for populations that are not employed, among whom, if covered by Title XIX, financial risk for the cost of medical care does not exist. In the few studies of enrollment decisions where enrollment neither entailed financial obligation nor protected against future financial loss (because of Medicaid eligibility or special study circumstances), the delivery characteristics (where and how services would be obtained) seemed to assume greater importance. This was evident among low-income participants in a demonstration project, who were offered the choice between an open-panel health plan, where an ongoing patient-physician relationship could be maintained, and a closed-panel plan that required a new provider relationship to be established. Families and individuals with

characteristics assumed to represent higher risk levels (e.g., larger families, older individuals, and females) preferred the open-panel arrangement over the group practice plan (Richardson et al., 1976). In another study of enrollment among low-income persons, Medicaid families exhibited similar behavior. Families who were higher utilizers of medical services, and whose family age and characteristics could be interpreted as representing higher levels of risk (e.g., presence of younger children), enrolled in the HMO less frequently than Medicaid families with lower levels of risk (Bice, 1975). Although there are important differences in these studies (see Tables 1 and 2), they support Bice's contention that where no financial vulnerability for care exists, the health risk factors that are usually predictive of enrollment become less salient to the enrollment decision than the characteristics of the delivery setting.

Further support for this proposition is found in two studies of employed populations whose enrollment choice included an IPA. Both sets of studies took place in Rochester, New York, where employee groups were given a choice between a long-standing, relatively comprehensive BC-BS plan, an IPA, and two group-practice HMOs. The insurance characteristics of the IPA and the closed-panel HMOs were essentially identical—they had similar benefit packages, copayment provisions, and service limitations and constraints—but both differed from BC-BS coverage, which did not provide for ambulatory care. The delivery characteristics of the alternative plans, however, were such that the IPA and BC-BS were identical—care provided in private practitioners' offices—with both differing from the group-practice HMOs. Berki et al. (1977a; 1978) studied enrollment choice in one large employment group; Roghmann et al. (1975) reported on two surveys, one of a single employment group and the other a sample of members in each of the four plans.

Berki et al. found that the IPA attracted significantly fewer single individuals than either BC-BS or the group practice HMOs and that IPA families were the youngest and largest. They demonstrated the role of family life stage in the decision between an open and a closed-panel HMO: "As the health risks inherent in family life stage and composition increase, the probability of joining the open-panel plan also increases" (Berki et al., 1978:693). On the other hand, the analysis of Roghmann et al. (1975), which excluded individuals, found that group practice plans appealed to young families and that those

who selected the IPA were more likely to be older couples. Although differences in their methods and measures prevent the direct comparison of these studies, both concluded that the delivery characteristics distinguishing the IPA from the group practice plans were as important as, if not more important than, the insurance characteristics of the HMOs.

Although not studies of enrollment choice directly, two studies have compared population demographic characteristics in defined areas with the characteristics of individuals from those populations who enrolled in HMOs. Hence they can be considered to address the enrollment predictive power of demographic characteristics. Gaus (1971), in his study of Columbia, Maryland, found HMO enrollees to have larger families and older heads of households than nonenrollees, although the mean age for both groups was under 40 years, but Nycz et al. (1976) found no significant differences in the Greater Marshfield, Wisconsin, area. The results are inconclusive, essentially because no information on the choice situation is available.

While the relatively standardized nature of demographic indicators makes it easier to interpret the results of studies in which they have been used, *health status measures* have no similar comparability. Attitudinal constructs and single items, number of chronic diseases or symptoms, disability days, and self-reported utilization measures have all been used to test the risk perception hypothesis. The results have been neither clear nor consistent.

When self-reports of utilization, occurring before the enrollment decision, have been used to examine the adverse selection issue, higher preenrollment hospitalization rates for HMO enrollees have been reported (Gaus, 1971; Roghmann et al., 1975), as well as rates that do not differ between the two groups (Berki et al., 1977a; Tessler and Mechanic, 1975). The same kind of varying findings have been reported for ambulatory utilization: more frequent among HMO enrollees (Roghmann et al., 1975); less frequent among enrollees in group practice plans, although IPA enrollees and BC-BS subscribers reported similar rates (Berki et al., 1977a); and similar rates for BC-BS subscribers and HMO enrollees (Tessler and Mechanic, 1975). In general, prior utilization of health services as a measure of health risk in dual-choice studies has not been predictive of HMO enrollment.

However, one study of a low-income population (Bice et al., 1974)

found that experiential measures, as indicators of health risk, as well as attitudinal and perceptual measures of health status, were positively associated with selection of the HMO for those who were also at financial risk. It should be noted that this was not a dual-choice situation, nor was the study population the employed middle-income population that is the object of most enrollment choice research. Rather, the population was composed predominantly of Medicaid recipients who had no out-of-pocket costs, no matter which alternative was chosen, and a small number of poor but not Medicaid-eligible families who were financially vulnerable for all medical costs unless the HMO was selected; and there was only one alternative health plan available—a hospital-based group practice HMO for which there was a complete premium subsidy for all eligible residents choosing to enroll, regardless of their Medicaid status. The alternative was to continue with existing resources of care and methods of payment. For Medicaid recipients, no relation between health risk and choice was found; rather, Bice et al. found that the choice was made on the relative attractiveness of the service attributes of the two alternative delivery systems. But for low-income families not eligible for Medicaid, with high levels of health risk, that is, previously high users of medical services, the attractiveness of no-cost medical care as an HMO enrollee was considerable. Although the generalizability of these findings, based on a very small sample, is limited, they suggest that there is a trade-off between the insurance and delivery characteristics of the alternative plans, and that the trade-off assumes a more or less salient position in an individual's decision as a function of his/her financial and health vulnerability.

When Bice et al.'s findings on low-income people not eligible for Medicaid are combined with the findings from Rochester studies (Berki et al., 1977a; 1978; Roghmann et al., 1975), they seem to confirm the hypothesis that within the middle-income range there is a trade-off between the insurance and delivery characteristics of plans or, more precisely, between expenditures and access to a familiar provider. Roghmann et al. found that IPA enrollees had pre-enrollment ambulatory utilization rates higher than enrollees in either the group practice HMOs or the BC-BS subscribers. If previous utilization is a good indicator of health risk and the expected future demand for health care, as has been suggested (Bice et al., 1974), IPA enrollees were in the highest health-risk group. It was further found by

Berki et al. that the IPA enrollees were at lower financial risk than the other enrollment groups, by virtue of their significantly higher per capita incomes. In other words, Bice's low-income noneligibles were at one end of the income spectrum and the IPA enrollees were approaching the other. At a subsequent enrollment period, the premium cost of the IPA was significantly increased (from zero out-of-pocket to \$25 per month), with the enrollee's contribution to the premium costs of the group practice HMOs and to BC-BS remaining at zero. The health risk hypothesis, since it stresses the importance of insurance characteristics, would predict that former IPA enrollees would switch to either of the group practice HMOs. But rather than enrolling in either of them, the majority of former IPA enrollees opted for BC-BS, with its much more limited ambulatory benefit packages (Ashcraft et al., 1978). Although this decision was likely to result in an increase in their out-of-pocket costs, given that their ambulatory use rates remained the same, the decision allowed them to retain the delivery characteristics that they found attractive (maintenance of a relationship with a private provider). Even though these results are not conclusive, they suggest that because of their lower financial vulnerability, these families opted for the delivery characteristic they preferred (particularly access to a known provider), regardless of the potential financial advantages of switching their enrollment to a group practice.

In addition to previous utilization rates, attitudinal measures of perceived health risk have been used in an attempt to differentiate HMO enrollees from BC-BS subscribers. Perceived health status of individuals and families has variously been measured by a single health-assessment questionnaire item (Anderson and Sheatsley, 1959; Bice, 1973; Juba et al., 1980; Richardson et al., 1976; Roghmann et al., 1975; Scitovsky et al., 1978; Tessler and Mechanic, 1975), a relative health rating item (Bice, 1973; Tessler and Mechanic, 1975), a constructed scale of several items (Berki et al., 1977a; 1977b; Gaus et al., 1976), and previously validated and tested indices of health and emotional status (Bice, 1973). Moreover, these measures, ascertained for individuals, are sometimes combined for all family members and either averaged (Juba et al., 1980), or formed into an index for the family unit (Scitovsky et al., 1978; Tessler and Mechanic, 1975), in order to obtain a family health-risk measure. Because of this diversity among research studies and the variations in instruments, there should

be very little comparability among the findings. But such is not the case. With only one exception, where lower family health status was associated with a lower probability of enrollment (Juba et al., 1980), no significant difference in perceived health status has been reported when enrollees in either type of HMO and nonenrollees are compared.

This obviously raises some questions. Are these attitudinal measures so nondiscriminatory that they don't elicit any variation in the response? Is the lack of variation due to methodology, some of which seems questionable, or is there really no difference in perceived health state between HMO enrollees and nonenrollees? Is it a "true" finding or does it only appear that there is no adverse self-selection into HMOs, at least in terms of reported health status? The answers are not obvious.

This is not to suggest that no attitudinal measures related to health discriminate between those who choose to enroll and those who do not. Health concern, measured by a multi-item construct intended to ascertain individuals' present and future concern for their health, was found to be a significant predictor of enrollment in a group practice HMO, but not of enrollment in an IPA (Berki et al., 1977b; 1978). This finding was in contrast to the lack of association in the same study between perceived health status measures and enrollment in any HMO. Berki et al. concluded that although enrollees in group practice HMOs do not consider themselves to be less healthy than others, they are more concerned about, or conscious of, their health, and thus are more likely to select the plans in which such concern can be translated into increased demand for preventive care. However, in order to be confident that these results were not idiosyncratic to the study site and population, other studies of the choice between IPA and staff model HMOs are needed.

The findings of studies using reported illnesses as indicators of health risk are ambiguous. Bice et al. (1974) found a greater number of reported symptoms of ill health among low-income enrollees in a group practice HMO but found no similar relation for Medicaid recipients. Gaus et al. (1976) also found no difference in number of illnesses between HMO enrollees and a control sample of Medicaid recipients. Richardson et al. (1976) found the "sickest" families (number of bed-disability days, chronic conditions, and signs/symptoms) more likely to choose an individual provider system.

Roemer et al. (1972), on the other hand, found more chronic illness among group practice HMO members than among subscribers to any other type of health insurance plan. Gaus (1971) also found that HMO enrollees reported greater frequency of medical conditions requiring follow-up care, when compared with nonenrollees in the same community. Taken together, the findings from these latter two studies might suggest that HMO enrollees were "sicker." However, in both instances the data were gathered in a postenrollment period. Hence it is not clear whether the illnesses were in existence before enrollment, and thus possibly predictors of it, or whether the illnesses and the need for follow-up care were identifiable because of HMO experience. Tessler and Mechanic (1975) also noted that HMO enrollees had more chronic illness than BC-BS subscribers, although neither that measure nor the number of bed-disability days and the presence of a major illness were found to differ significantly between the two enrollment groups. Juba et al.'s (1980) findings that the number of family members reporting a chronic illness increased the probability of HMO enrollment, while a lower family health status decreased it, is inconsistent and neither supports nor rejects the hypothesis that HMOs tend to attract sicker families.

On the other hand, when an IPA is included in the choice situation, and multivariate analysis permits the identification of the relative importance of illness history in the enrollment decision, the role of chronic illness becomes clearer. Berki et al. (1978) found that more chronic illness in a family (the number of chronic illnesses per family member) increased the likelihood of enrollment in an IPA but not in a group practice HMO. This finding was unambiguous, but illness histories were less powerful predictors of IPA enrollment than the pre-enrollment existence of a relationship with a physician. Thus, it was concluded that although the IPA may enroll "sicker" families, the reason was the families' attachment to a physician, rather than the health risk factors per se.

In summary, past research on the relation between risk perception and enrollment in an HMO indicates that, within employed populations, HMO enrollees are at somewhat higher risk levels for future services than nonenrollees, with IPA enrollees at greater risk than group practice HMO members. The higher risk level, however, cannot be inferred from earlier utilization of medical services, which has not been found to be consistently different in the two groups, nor can

it be derived from reports of lower perceived health status. Rather, HMO enrollees' higher risk levels are seen in their younger and larger families, which are in a procreative stage. The role of previous illness histories is ambiguous. Research results are sketchy, but there is reason to believe that if illness histories have led to the development of a satisfactory relationship with a physician, enrollment in an HMO may take place only if that physician is a member of the plan.

The literature based on empirical evidence provides scant support for the existence of adverse self-selection into HMOs, based on health risk. Although in its totality the evidence appears to indicate that those who enroll in HMOs are not sicker (nor do they report themselves to be so) than those who opt for the fee-for-service sector, there is no reason to believe that in fact they are healthier. The recently advanced "favorable" self-selection hypothesis suggests that relative HMO utilization performance can be read to indicate that those who select an HMO are likely to be at lower health risk (Luft, 1978). Blumberg (1980), in the only study that specifically discusses this issue, reports that there are no significant differences between HMO enrollees and others on a variety of health status measures. Although this study is based on individuals who have been HMO members for some (undefined) period, and hence the observed health risk levels may be the result of membership rather than a reason for joining, there is no direct evidence for "favorable" self-selection, or skimming. Direct studies of enrollment in well-established HMOs rather than developing ones, and of larger and more varied populations, must be undertaken before either the adverse or the favorable self-selection hypothesis can be validated.

Financial Vulnerability Factors. The financial vulnerability hypothesis posits a relation between expected financial loss due to future use of service and the propensity to enroll in an HMO. This is related to the risk perception hypothesis, since without perceived health risk and the expected future need for medical care, the financial vulnerability hypothesis may not hold. However, even in the absence of present health risk, fear of future economic jeopardy may exist. Thus, the insurance characteristics of the alternative plans may become salient in the enrollment decision.

It has long been held that the choice of an HMO is an economic decision, that "economic vulnerability is a primary basis for the choice of prepaid group practice" (Bashshur and Metzner, 1967:44). While

strictly health insurance plans generally cost less in terms of premium, total price to consumers may be greater than to those selecting HMO coverage (Roemer et al., 1972). HMO enrollment transfers most of the financial risk for the costs of a wide range of services to the provider, an attribute particularly attractive to those who are financially vulnerable.

Although there is general agreement that financial vulnerability may play an important role in the enrollment decision, the findings have not been consistent. Further, how vulnerability should be measured is unclear. Risk vulnerability, an aggregation of measures of income, age, and family size (Bashshur and Metzner, 1970), which occasionally includes indices of health status and previous utilization (Roghamann et al., 1975; Tessler and Mechanic, 1975), has been used in most studies to test the financial vulnerability hypothesis. The inconclusive results led to the suggestion that the concepts of health risk and economic vulnerability should be distinguished from each other: "Risk vulnerability refers to expectations about *needs* for services, economic vulnerability, to expectations about effects of *costs* of services" (Bice, 1975:698-699).

However, even when the two concepts are disaggregated, there has been no agreement on how financial vulnerability should be measured: family income, or per capita income. Studies employing family income as the measure of financial vulnerability have produced inconsistent results: higher-income families elect the HMO (Bashshur and Metzner, 1967; Gaus, 1971; Roemer et al., 1972); no statistically significant relation between family income and choice of plan could be elicited (Moustafa et al., 1971; Roghamann et al., 1975; Tessler and Mechanic, 1975); or that HMO enrollees had lower family income than BC-BS subscribers (Juba et al., 1980; Roghamann et al., 1975). However, in all these studies in which family size was also reported, HMO enrollees were found to have larger families than those selecting the less comprehensive insurance plan.

When per capita income was used to test the financial vulnerability hypothesis, lower per capita income was associated with HMO selection (Berki et al., 1977b). This result is compatible with studies employing family income uncorrected for family size, given that those studies found that HMO enrollees had larger families.

Although HMO enrollees may be at greater financial risk than others, there is evidence that IPA enrollees are less financially vulner-

able than enrollees in group practice HMOs: lower per capita income was associated with an increased probability of enrollment in a closed-panel plan, and higher per capita incomes increased the likelihood of enrollment in an IPA (Berki et al., 1978).

Financial vulnerability may also be indicated by expected future expenditures for medical care. If enrollment in an HMO is an action taken to protect against those expenditures, one would expect that higher pre-enrollment medical expenses would lead to selection of the HMO. In the few studies testing this hypothesis, however, the findings are either inconclusive, that is, no difference between enrollees and nonenrollees in previous out-of-pocket expenditures (Anderson and Sheatsley, 1959; Berki et al., 1977a; Roghmann et al., 1975), or suggest that an alternative hypothesis may be in order, one that relates to the relative importance of potential savings weighed against the maintenance of an existing provider relationship. Support for the notion of a trade-off between financial considerations and an ongoing physician-patient relationship is found in two studies, one in which BC-BS members reported higher expenditures but retained their coverage in preference to HMO enrollment (Juba et al., 1980), and the other in which IPA enrollment was preferred over the group practice HMO, although potential savings were possible through lower or no copayment provisions in the plans rejected (Berki et al., 1977a; Roghmann et al., 1975).

Although the magnitude of the potential savings that were exchanged for maintaining a physician relationship was estimated to be less than \$120 annually, and was possibly not obvious to the enrollees, there is evidence that consumers are aware of their share of the premium price associated with HMO enrollment. When the premium differential was in favor of BC-BS membership, as was the case in most of the studies reviewed, the expense associated with HMO enrollment, although not very large, was frequently cited as an important reason for rejecting it (Moustafa et al., 1971; Roghmann et al., 1975). On the other hand, in a more recent study in which the increasing costs of BC-BS premiums exceeded the premiums of the HMO alternative, Piontkowski and Butler (1980) found a dramatic and increasing trend toward selection of the group practice plan. They also suggest that, in addition to premium differentials, enrollees in the HMO were sensitive to the substantial BC-BS copy-

ment provisions for services whose prices rose rapidly during the study period (1969–1978).

This latter study lends support to the argument that it is total price (premium plus cost of utilization, whether through copayment or exclusions) that consumers consider in making their choice between HMO and plans offering less comprehensive coverage. When the total out-of-pocket price was likely to be lower with HMO enrollment, although many of the details of the benefit package were not fully understood, consumers consistently named one of these insurance characteristics as the HMO's most attractive feature. However, since each study asked the question and codified the answers somewhat differently, the results can be considered descriptive only. The comprehensiveness of the coverage (Gaus, 1971; Juba et al., 1980, Jurgovan and Carpenter, 1974; Moustafa et al., 1971; Roghmann et al., 1975; Tessler and Mechanic, 1975), combined with prepayment, "knowing medical costs in advance" (Tessler and Mechanic, 1975), as well as particular aspects of the benefit package such as immediate maternity coverage (Roghmann et al., 1975), preventive care (Juba et al., 1980; Roghmann et al., 1975; Tessler and Mechanic, 1975), and office visits (Tessler and Mechanic, 1975), were specifically named.

IPA enrollees view their plan's insurance attributes somewhat differently from group-practice HMO enrollees. Expected savings on medical costs and undefined financial reasons were named most frequently by IPA enrollees, and particular service attributes and the comprehensiveness of the benefits predominated in the choice of a group-practice HMO when the two types of plans were offered together (Ashcraft et al., 1978; Roghmann et al., 1975).

On the other hand, BC-BS subscribers were more inclined to name delivery aspects, rather than the plan's insurance characteristics, as the basis for their choice. With one exception, where enrollees in both BC-BS and alternative HMOs gave economic reasoning as decisive in their choice (Roghmann et al., 1975), selection of BC-BS was influenced both by the existence of patient-physician relationships that could be maintained (Juba et al., 1980) and by satisfaction and experience with BC-BS (Tessler and Mechanic, 1975).

Potential enrollees may ascribe more comprehensive coverage to one alternative plan and cite it as a salient reason in their enrollment decision, but it is not clear that other characteristics of the plans are sufficiently understood. Benefit ceilings, exclusions, deductibles, and

copayment provisions are complex matters to the ordinary consumer; yet it is precisely these details, plus the more obvious delivery dimensions, that distinguish the HMO from the alternative service or indemnity health insurance plans. Although some enrollees may report that they understand the choice and that the details about the plans are clear (Roghamm et al., 1975), there is contrary evidence that plan members are not aware of the services their plan offers even though they selected it over another alternative (Moustafa et al., 1971). Although an appreciation of the broad characteristics of an innovative plan may be sufficient to attract some enrollees, others prefer the status quo to making an uninformed choice. This reluctance to reject a familiar health insurance scheme for an innovation with unclear dimensions, the "incumbency effect" (Yedidia, 1959), is evident in the reports of lack of information about the alternatives (Tessler and Mechanic, 1975), failure to rank in importance the reasons for retaining BC-BS (Juba et al., 1980), and simply no consideration of unchosen alternatives (Ashcraft, 1978), which have all been given as reasons in making the choice. Although the complexity of some enrollment situations may lead to perceptions that insufficient information had been provided (Ashcraft, 1978), it is also likely that a search for alternatives is related to the perceived level of risk (Bashshur and Metzner, 1970): those who perceive themselves at risk may pay greater attention to the characteristics of the new plan, seriously considering whether it or the existing coverage offers the desired level of protection.

Delivery Characteristics

Unlike the choice between two health insurance plans that may vary in some of their insurance characteristics, such as their benefit packages or copayment provisions, the inclusion of a group-practice (staff) model HMO in the choice situation introduces variation in the delivery characteristics of the alternatives: 1) access; 2) continuity; 3) comprehensiveness; 4) clinical quality; and 5) social quality dimensions.

The effects of varying insurance characteristics fit within the concepts of risk perception and financial vulnerability, but there is no analogous scheme for determining the effects of delivery characteristics on enrollment behavior. Further, unlike demographic indicators

and reported utilization and costs, all of which are reasonably straightforward and require little interpretation, preferences for delivery characteristics frequently must be inferred from expressions of satisfaction or dissatisfaction with existing arrangements, or from those sociocultural characteristics that are assumed to affect such preferences (Metzner and Bashshur, 1967).

Sociocultural Characteristics Related to Perceptions. Sociocultural characteristics that have been investigated are education, race and/or ethnic group, religion, political party affiliation, union involvement, and various measures indicating formal and informal group involvement as well as general values.

On the assumption that the likelihood of adoption of an innovation, such as an HMO, would be positively related to educational attainment, several studies have pursued this issue. The results, however, while generally supporting the notion, should be carefully interpreted since they may only reflect the uniqueness of each study population (see Table 2). Significantly higher educational attainment among HMO enrollees has been noted (Berki et al., 1977a; Gaus et al., 1976; Juba et al., 1980; Roemer et al., 1972), with a greater percentage of heads of families with "some college" selecting the HMO over BC-BS (Tessler and Mechanic, 1975). Although no statistically significant differences in educational level between HMO enrollees and nonenrollees have also been found (Bashshur and Metzner, 1967; Moustafa et al., 1971), no studies reported that BC-BS subscribers had more education than HMO enrollees.

Although the results of these studies refute Wolfman's (1961) earlier suggestion that the "free choice" of physicians inherent in BC-BS membership may be more appealing to the more educated families in spite of the HMO's economic merits, the inconsistency may be due to the nature and size of the samples used. When insufficient variation in educational level is a natural characteristic of the employment group studied, as with the auto workers studied by Bashshur and Metzner, detection of differences between enrollment groups is not likely. When, however, the employment groups contain a range of occupations, such as the municipal workers included in Tessler and Mechanic's study, the chance of finding differences in education is increased. Moreover, when statistically significant differences are found, the substantive differences have no unambiguous meaning. For instance, Berki et al.'s (1977a) finding of a higher education level

among HMO enrollees passed the test of statistical significance, but the actual difference in years of education was less than one.

Investigations of other sociocultural characteristics have also produced mixed results. For instance, studies of racial and ethnic differences between enrollment groups have had contrary results. In some study sites, higher proportions of foreign-born whites and nonwhites selected HMO coverage over a service-benefit plan (Roemer et al., 1972), particularly when the HMO location was readily accessible to their residences (Bashshur and Metzner, 1967), but no racial or ethnic differences between enrollees and nonenrollees have also been noted (Moustafa et al., 1971; Tessler and Mechanic, 1975).

Neither religion (Bashshur and Metzner, 1967; Tessler and Mechanic, 1975), political party affiliation, formal organization attendance, nor other indicators of informal social organization distinguished between HMO enrollees and nonenrollees, although more active union members joined an HMO whose membership was composed predominately of union workers (Bashshur and Metzner, 1967).

Access. Access attributes generally associated with HMOs, both service and provider accessibility 24 hours a day, which are frequently ranked high as decision factors (Roghmann et al., 1975; Tessler and Mechanic, 1975), consistently ranked below expected lower costs and comprehensive benefits as the most important reasons for selecting an HMO. Other access issues have also been investigated and, as expected, easier physical access or convenience (Bashshur and Metzner, 1967; Gaus, 1971; Richardson et al., 1976; Scitovsky et al., 1978), and dissatisfaction with the convenience of previous sources of care (Bashshur and Metzner, 1967) were all associated with HMO enrollment; time-cost of travel to care was related to HMO enrollment in the expected negative direction, although the coefficient was not statistically significant (Juba et al., 1980). When the location of the HMO was viewed as a disadvantage (Tessler and Mechanic, 1975), or seen as inconvenient (Roghmann et al., 1975), the alternative plan was selected.

Temporal factors, such as waiting time for an appointment and in the office, and dissatisfaction with them (Ashcraft et al., 1978; Roghmann et al., 1975) have been named so often by HMO enrollees as influencing their choice that they must also be considered as decision variables.

Psychosocial factors, as a dimension of access, and their relation to the enrollment decision have received less systematic attention than distance, convenience, or temporal factors. Yet, when they have been investigated, it was found that an unsatisfactory interpersonal relationship with a previous physician led to increased probabilities that an HMO would be selected (Ashcraft et al., 1978; Bice, 1973).

In summary, empirical results suggest that access factors, especially those of time and distance, seem to affect an individual's choice of plan. Thus, the intuitive relation between access and enrollment seems to be confirmed.

Continuity. Almost every study of enrollment choice has investigated the desirability of the continuity dimension as a predictor of HMO enrollment. The considerable interest in the effect of having or not having an ongoing patient-physician relationship is understandable (Donabedian, 1965), since it is a critical factor especially for the development of closed-panel HMOs. Unlike developing IPAs, many of whose member physicians provide medical care to enrollees both before and after the enrollment decision, group practice HMOs must depend, for the most part, on consumer willingness to leave former arrangements and establish a relationship with a physician whom they frequently do not know. Although there are other routes for consumers to enter an HMO, most studies of enrollment choice have focused on whether an earlier patient-physician relationship existed and the nature of that relationship. Further, since the choice of an HMO physician is not as broad as it is, theoretically at least, in the fee-for-service sector, the studies have investigated consumers' attitudes toward accepting the limited choice of physician in a closed-panel HMO.

Free choice of physician has not always been mentioned spontaneously as a deciding enrollment factor, but it was named frequently enough to support the conclusion that many potential enrollees consider it a significant deterrent to HMO selection. It was given as the most important reason for selecting an open-panel plan (Anderson and Sheatsley, 1959), for choosing BC-BS (Bashshur and Metzner, 1967; Juba et al., 1980; Roghmann et al., 1975; Wolfman, 1961), and for selecting one HMO over another (Scitovsky et al., 1978), although in the latter instance it was actually possible in both.

Just as lack of free choice of physician seems to deter HMO enrollment, so also does the existence of a pre-enrollment relationship with

a physician (Anderson and Sheatsley, 1959; Berki et al., 1978; Jurgovan and Carpenter, 1974), except when that provider becomes part of the HMO's staff (Jurgovan and Carpenter, 1974), or when the HMO is an IPA (Berki et al., 1977a; Roghmann et al., 1975). Moreover, when that relationship is a satisfactory one, the likelihood of terminating it by HMO enrollment is further decreased (Juba et al., 1980; Tessler and Mechanic, 1975), even when the HMO is geographically more convenient (Gaus, 1971; Scitovsky et al., 1978). Conversely, it has consistently been found that the absence of a provider relationship increases the likelihood of selecting a plan that offers the opportunity for one to be established (Berki et al., 1977a, 1978; Juba et al., 1980; Richardson et al., 1976; Tessler and Mechanic, 1975). Having a regular source of care where an enduring relationship with a single physician was unlikely to be established, such as an outpatient department, clinic, or emergency room, also raised the probability of selecting an HMO (Anderson and Sheatsley, 1959; Ashcraft, 1978; Berki et al., 1977a; Roghmann et al., 1975).

Support of the continuity hypothesis seems clear. Other factors have also been identified, however, which, while not direct evidence, may be indicative of an attachment to the traditional form of private solo practice. Length of residence in the community (Bashshur and Metzner, 1967; Juba et al., 1980; Tessler and Mechanic, 1975) and duration of employment (Bashshur and Metzner, 1970; Scitovsky et al., 1978), have been inversely related to HMO enrollment. These factors may indicate a greater likelihood that a provider relationship exists.

Comprehensiveness. This delivery attribute refers to the scope of services available in one location, the spectrum of specialty and ancillary providers within the same physical settings, and the integration among those services and providers in rendering comprehensive care to the patient.

Since preference for group practice, where family doctors and specialists work together in the same place as a group (Metzner et al., 1972), was found in cities where HMOs did not exist, it has been hypothesized that such an arrangement would be a preferred attribute by those actually offered the choice. In general, the findings confirm it.

The desirability of an identifiable integrated organization (Richardson et al., 1976), the ability to obtain all necessary care in one place (Tessler and Mechanic, 1975), the availability of specialists in

the same place as family doctors (Anderson and Sheatsley, 1959), the "group" arrangement of closed-panel plans where family doctors and specialists work together (Metzner and Bashshur, 1967), and having physicians and records all in one place (Scitovsky et al., 1978), were frequently named by HMO enrollees as reasons for their decision. Not surprisingly, both BC-BS and IPA enrollees value this attribute less highly than those choosing a staff model HMO (Roghmann et al., 1975).

Quality of Care. It was long ago suggested that consumers view the technical quality of care in a formalized group practice to be higher than in individual practice settings (Freidson, 1961). However, since there has been little systematic investigation of whether quality of care perceptions affect enrollment decision, it is difficult to know whether variations in quality are perceived. When respondents were asked to give explicit reasons for choosing one plan over another, costs, comprehensiveness of benefits, and expected and existing physician relationships predominated, but there is some indication that differences in quality have been perceived. A prospective study of enrollment in a poverty population (designed to elicit perceptions of expected quality before actual utilization) found that potential enrollees expected the HMO to have "higher-quality care" than the "poor or fair" quality associated with present, pre-enrollment medical care experience (Bice, 1973). Previous experience was undoubtedly also the basis for evaluations of quality in another enrollment study using fixed-choice alternatives. The reputation of physicians in a long-standing and familiar plan, in terms of their competency and training, was the most frequently given reason for selecting that plan over the newer alternative (Scitovsky et al., 1978). In another study, quality of care was found to be a much preferred item, achieving, along with low costs, a consensus among all respondents, with no difference between enrollees and nonenrollees (Roghmann et al., 1975).

Clearly, this limited evidence is insufficient to decide whether quality plays a substantial part in the enrollment decision. Impressions of clinical quality may be imbedded in some other reasons given for selection of a health insurance plan, but they remain to be made explicit in a systematic fashion.

Social Quality. The social quality dimensions of the HMO's delivery characteristics have been captured variously by negative statements about the clinic atmosphere (Anderson and Sheatsley, 1959;

Tessler and Mechanic, 1975; Wolfman, 1961), type of patient seen there (Roghmann et al., 1975), the plan's perceived instability or inexperience (Jurgovan and Carpenter, 1974), and its reputation in general (Scitovsky et al., 1978). However, when asked to rank these impressions relative to other features of the HMOs (specific services and benefits), consumers have rated them as relatively unimportant (Metzner and Bashshur, 1967). It is not clear whether perceptions of these social-quality dimensions of the HMO's delivery characteristics derive from marketing techniques, particularly in employed groups where the marketing staff is not independent of the alternative plans, or whether they are ranked as unimportant only when judged relative to some of the financial considerations.

Positive perceptions of the plans' social quality can also be found in reports of friends' recommendations (Richardson et al., 1976; Scitovsky et al., 1978), or recommendations about the plans provided by physicians. Enrollees have also named as salient to their enrollment decision the relation of the HMOs to hospitals or institutions that are regarded favorably in the community (Gaus, 1971; Tessler and Mechanic, 1975).

While there is a generally accepted axiom among HMO developers that the difficulties encountered in enrollment and the slow growth of certain plans result from the plan's social quality dimensions, its location, clientele, and image, the literature on enrollment does not provide any definitive answers.

Conclusions

Current understanding of who enrolls in what kind of HMO is based on an extensive series of studies, characterized by lack of comparability, ad hoc theorizing, inconsistent and often poorly designed measures and methodologies. To the extent that their internal validity is accepted, their generalizable findings appear to indicate that an HMO's ability to attract enrollees depends on its ability to offer insurance and delivery system characteristics that consumers find desirable. Broad coverage, lower expected costs of utilization, and assured access are the principal features that individuals consider to be the advantages of HMOs. Limitations on the choice of provider, absence of information, uncertainty about new, unfamiliar, perhaps

innovative health care arrangements, as well as the spatial disadvantages of a centralized delivery organization, are the major factors that militate against enrollment. Of the negative factors, the most important is the cessation of an ongoing relationship with a provider, except in those instances where the provider is part of the plan—IPAs. When an IPA is not available and there seem to be potential cost advantages to HMO enrollment, preference for a continuous provider relationship is frequently expressed by retention of BC-BS membership. There is no strong evidence that potential enrollees prefer financial savings over existing health care arrangements, but the consistent finding in regard to enrollees' income level is supportive. As a measure of disposable income available for medical expenses, the family's per capita income indicates its financial vulnerability. That HMO enrollees have lower per capita income indicates either that they are willing to give up previous relationships for the protection against costs that the HMO will provide, or that they are less likely to have established a previous relationship. Further research is needed to determine the interrelations among these insurance and delivery characteristics.

The evidence so far appears to indicate that closed-panel HMOs are most likely to attract enrollees who do not have established patient-physician relationships, and who tend to be members of younger families with a larger number of smaller children. These characteristics are often found in areas with high population mobility. Individuals and families new to a community have not had the opportunity to establish a private patient-physician relationship and they also tend to be younger. The closed-panel HMO offers them assured access without their having to search for sources of routine care in a new and unfamiliar community. Having the option available through the workplace, and having the ability to gain at least some information about the delivery characteristics of the HMO, reduce the burden of searching for sources of care. The open-panel HMO, on the other hand, appears to be most appealing to those who already know the physicians within it and who can enroll and simultaneously maintain an already existing patient-physician relationship.

The concern about the quality of enrollees (their levels of risk and propensity to use services) and its cost implications is most often expressed in the concept of adverse self-selection. This issue is not clearly resolved in the literature. Although there seems to be ample

evidence that families with higher risk levels, by virtue of their age and life stages, choose HMOs for their comprehensive benefit packages and their guaranteed access to certain services and providers, there is little evidence that HMO enrollees are sicker than those choosing BC-BS. However, it should be remembered that most studies have focused on dual choice, involving employed workers and their families, which, by definition, excludes potentially higher users of services—the aged and the unemployed. Enrollment open to the general population may produce different results, but there is no unambiguous evidence that HMOs are chosen more frequently by those with high expected demand than plans where existing patient-physician relationships can be maintained. Nor is there convincing evidence that those who choose HMOs are healthier or potentially lower users of services. The current evidence is not sufficient to make definitive predictions of enrollment rates or enrollee quality.

The inability to make such predictions is particularly troublesome from a policy perspective. To design an effective HMO policy, one would like to be able to predict enrollment rates and patterns over time, on the basis of the attractiveness of different types of HMOs, the available alternatives, population characteristics, and relative costs. To develop valid HMO evaluation methodologies, to be able to assess HMO performance and potential cost savings attributable to lower utilization rates, it is necessary to separate population effects from HMO effects. Thus, whether those who enroll in HMOs are sicker, healthier, or about the same as the population in the fee-for-service sector, the base line, becomes a crucial evaluation parameter. The evidence so far is substantial that there is no adverse selection in terms of health risk, yet it is equally substantial that enrollees are likely to be higher users of ambulatory and maternity-related services by virtue of their life cycle stage. For the design and evaluation of policy, current knowledge based on past enrollment behavior offers, at best, only tentative indications as to what kinds of HMOs in what circumstances are likely to become economically viable.

Our ability to predict future performance in the longer term is also inhibited by the potential roles of several factors on which there is no information at all. The effects of improving coverage offered by service benefit and indemnity plans, and increasing copayment rates in HMOs, are predictable, from our understanding of the financial loss and health risk hypotheses. The effects of other factors are not. The

principal issues that might well affect future enrollment experience, and on which no information is available, are 1) HMO maturation and multi-HMO competition; 2) multiple, differentially priced benefit packages within an HMO; 3) increasing physician-population ratios; and 4) national health insurance.

Within the rubric of HMO maturation there are two separate issues: the effect of an HMO's length of experience on its enrollment, and the effect on enrollment of the diffusion of HMOs, their increasing image as part of the "mainstream." What little is known about HMO aging does not appear in the research literature, but seems to indicate that as an HMO ages, its enrollee profile begins to approach that of the population in its service area, with greater representation of the aged among its members. Open enrollment, continuation of employment-based health benefits into the retirement period, usually as supplements to Title XVIII, and the increasing numbers of aged in the population may well mean that the relatively high utilizing portion of HMOs' enrolled population will increase.

The second aspect of maturation becomes relevant when the HMO is no longer seen as "the new boy on the block." The assumed attractiveness of the "innovative" plan, as well as its opposite, the "let's wait and see if it works" attitude, will become irrelevant when HMOs have sufficiently diffused so that they no longer will be considered as either new or major departures from the dominant system of providing care. Whether, when they lose their innovative image, they will be selected by persons at greater risk than those selecting them now, remains to be seen. Should that happen, however, issues of service utilization and service capacity planning and, ultimately, costs are involved. We can speculate about the premium and copayment implications and their effects on marketing and marketing costs for the future, but little is known about them now.

Equally little is known about the enrollment effects of multi-HMO competition. The handful of studies on enrollment in multi-HMO settings, while interesting, may not have much predictive value. The methods of intra-HMO competition, whether by access, premium, copayment prices, benefit package, or some combination of these factors, are important for their enrollment effects and, of course, go to the heart of marketing strategies. Marketing strategies will also be affected by limitations on employer health-benefit contributions resulting, for example, from proposals to alter the advantageous tax

treatment such contributions currently receive, but their long-run effect on subsequent enrollment is not now known.

A related issue is found in the development of variously priced benefit packages within the same HMO, or across HMOs. Increased flexibility in coverage would imply potentially increased attractiveness to larger population slices, but if the "high-priced package" means increased out-of-pocket premium payments, the beneficial effects of the coverage spread may be negated. Some plans have long offered multiple benefit packages, but little is known about their enrollment effects.

Increases in the supply of physicians and of physician services, and the expected increase in the proportion of physicians providing primary care, do not augur well for HMOs. Increases in the number and capacity of medical schools, as well as federal manpower policies, indicate that the supply of physicians will continue to increase. As the number of physicians increases, more of them, even though trained in the specialties, are likely to be shifted into rendering primary care services, as at least part of their practice. The chances, therefore, of establishing contact by would-be patients should improve. Once access in the solo office sector is improved, the assured access offered by HMOs will have less attraction. Further, areas with current physician shortage, rural and inner city, are likely to remain so in the future, since they offer the least attractive location alternatives to entering physicians. These are also the areas with the least potential for the development of economically viable HMOs, since they provide neither the manageable service area nor the economic base for maintaining self-sustaining HMO operations. Hence HMOs are most likely to develop precisely in areas where future increases in private physician supply are also most likely to take place. While one can speculate about the dynamics and effects of such a development, their effects on HMO enrollment cannot be predicted since no systematic studies exist of the effects of physician supply on HMO enrollment.

Perhaps the most important issue for future HMO enrollment and development is related to national health insurance, NHI. If NHI essentially removes the link between utilization and out-of-pocket costs, the distinguishing insurance characteristics of HMOs will become irrelevant and delivery characteristics will become the dominant decision variables. If, as currently proposed, NHI is implemented with substantial first-dollar exclusions, copayment and coinsurance

provisions, and provided that the private insurance industry does not develop supplemental coverage for such provisions, HMOs may experience a beneficial enrollment effect. Should HMOs receive favorable treatment in payment schemes, groups of physicians may form HMOs and develop them on the basis of their current patient loads. Since those who are at higher risk and who are older and sicker are more likely to have established a patient-physician relationship, the initial membership of such an HMO is likely to be composed of high utilizers, high-cost members. What this implies for the viability of the organization and its attractiveness to other segments of the population is unclear.

The establishment of an enrollee base of a size required to attain economies in the provision of services is the fundamental requirement of HMO survival. The quality of that enrollee base and the time required to attain it are the two basic building blocks of HMO planning. Hence, who enrolls and why are the first questions the future research agenda should be designed to answer.

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Address correspondence to: Prof. S.E. Berki, Chairman, Department of Medical Care Organization, School of Public Health, The University of Michigan, 109 Observatory Street, Ann Arbor, MI 48109.