Toward New Typologies for HMOs

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The GOAL OF A TYPOLOGY OF HEALTH MAINTENANCE organizations (HMOs) is to define subgroups in which the constituent HMOs have similar characteristics. A successful typology would facilitate the dialogue among managers, patients, providers, and scholars as they seek to understand how HMOs operate and which factors are critical to the industry. For example, there is common understanding that a "staff-model" HMO refers to an organization that employs and controls physicians directly and pays them salary. Thus, the "staff model" is a useful term for a group of HMOs with certain common characteristics. Unfortunately, there is little agreement about the rest of the prevailing typology of HMOs-group models, network models, and independent practice association (IPA) models. Because these terms mean different things to different people, the current typology may contribute to people's misunderstanding of the industry, rather than clarify it.

We believe that alternative ways to classify HMOs better reflect fundamental differences among HMO incentives and organizational structures as they have evolved. These basic differences among HMOs are reflected in the contractual agreements between the legal HMO entity and the primary-care physician, who delivers or authorizes the delivery

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of most medical services. At the center of these contractual agreements are financial incentives, including the organization of a risk pool (that is, a group of physicians who share rewards from any referral fund surplus or the burden of any deficit). In this article, we will discuss a conceptual framework for developing new typologies and assess certain examples of alternative typologies based on this framework. Our goal is not to propose acceptance of a specific new typology, but rather to show why one is needed and how it might be constructed. In the long run, as HMOs and HMO-like organizations grow and assume an increasingly important place in the American health care system, it is crucial that consistent and valid typologies be developed.

Problems with the Prevailing Terminology

In the 1970s, the conventional taxonomy described three types of HMOs: staff models, which hire physicians directly; group models, which contract with a single physician group practice; and IPA models, which contract directly with individual physicians in private practices. In 1981, *InterStudy*, a firm that takes an annual census of HMOs, added a fourth type, the network model, to describe an HMO that contracts with two or more group practices. The Group Health Association of America (GHAA), the trade organization of HMOs, has acknowledged the need to modify this typology:

Current definitions do not appear to consider explicitly such important variables and influences on performance as the extent of physician commitment to the plan in terms of share of practice, whether delivery is through a multi-specialty group practice or not, and the type of contractual arrangement between the plan and the physicians (1989, 7).

The network and IPA categories present the most serious problems because they have evolved in ways that make them heterogeneous in terms of the characteristics that GHAA identified.

This heterogeneity undermines effectiveness research, policy analysis, regulation, and consumer choice. For example, one concern has been expressed that physicians who practice alone may be more susceptible to the possible negative consequences of financial incentives in HMOs

than physicians who practice in groups (Physician Payment Review Commission 1989). According to InterStudy's original designation, the more appropriate target for this concern would be the IPA-model HMOs. However, many HMOs characterized by InterStudy as IPAmodel HMOs actually consist of group practices whose physicians see both HMO patients and patients covered by traditional fee-for-service insurance. Policy makers who are unaware of this phenomenon, however, may call for regulation of IPA-model HMOs to address the impact of financial incentives on individual doctors. Researchers testing the hypothesis of greater susceptibility may not distinguish among different forms of IPA-model HMOs. Treating all IPA-model HMOs as alike would be a disservice to the models that actually consist of group practices. Time and effort would be required to educate the policy makers and to collect data for researchers in order to determine which subgroup of IPA-model HMOs was of true interest. In fact, there is a long-standing debate concerning the advantages of group relative to solo practice, quite distinct from HMOs. Groups may have in place the advantages of both formal structures to review cost and quality and an informal structure due to the physicians practicing in close proximity: these factors may have an impact on cost and quality of care (e.g., Eisenberg and Kabcenell 1988).

In reality, it might be more suitable to focus on the situations within IPA-model HMOs in which physicians share financial risk with only a small number of physicians and not simply on whether they practice alone or as members of group practices. (Physicians practicing alone can be members of large risk pools, and physicians in group practices can be placed in risk pools consisting only of themselves.) HMOs with these characteristics should be easily identified by a proper appellation.

Even consumers, who ought to be assisted in making rational choices among HMOs, can be confused by the current terminology. If one wants to choose an HMO whose doctors compete with each other, then one might find that an "independent practice" model consists of doctors all in the same group practice; they are independent only of the HMO, not of each other. If one wants to join an HMO in which doctors do not have a strong incentive to deny service, the consumer cannot tell whether the doctors in a network model are capitated or receive fee for service (FFS), or whether they receive financial penalties when they make referrals for care.

Conceptual Framework

We suggest that HMOs can be distinguished by five characteristics:

1. The basic method by which physicians are paid for primary-care services (salary, capitation, or fee-for-service)

2. Whether HMO physicians see only HMO patients or whether they also see FFS patients covered by traditional indemnity insurance

3. The nature of the HMO's financial contract with its middle tier, if any

4. The nature of the risk or reward to primary-care physicians, in addition to the basic payment method

5. The size and nature of the risk pool used to share the risk or reward

Method of Payment to Primary-care Physicians

In most HMOs, the primary-care physician is the coordinator of an HMO enrollee's care and, therefore, the gatekeeper of expenditures on medical services. Authorizing and controlling the amount of specialist care, like the amount of other services, is included in this gatekeeper function. Primary-care physicians are paid three ways (Glaser 1970): salary, fee for service, and capitation. HMOs use all three methods. HMOs focus their major cost-control efforts on primary-care physicians and an important characteristic of how HMOs choose to approach cost containment is the way they choose to pay these physicians. Hence, the method of paying primary-care physicians should be considered as a characteristic in a typology.

The financial incentives differ by the method of payment. Under FFS a physician can increase his or her gross income by providing more services. Under salary and capitation, additional services entail more work but no additional income. Under capitation, the physician receives a fixed monthly payment per enrollee and is responsible for providing (or paying other physicians for) all primary-care physician services. This arrangement should be distinguished from the premium (i.e., capitation payment) that a consumer or employer makes to the HMO in that the premium covers the cost of most medical care, including hospital services. Capitated physicians have the financial incentive to increase the number of patients in their panels, whereas salaried physicians do not. When the capitation payment to the physician also covers outpatient tests or specialty referral services, the primary-care physician is completely at risk for these services; that is, an additional dollar of cost of these services translates into a dollar less income. The capitated physician has a strong incentive to control costs of those services, whereas the salaried physician has no such incentive.

Needless to say, these differences among incentives under FFS, capitation, and salary are mitigated by other factors. For example, capitated physicians' incentive to contain costs is mitigated by the incentive to attract patients, and salaried physicians' lack of explicit incentives to increase panel size and contain costs is mitigated by how their organizations hire and supervise physicians. Other financial arrangements or organizational characteristics also modify the basic incentives of these three types of payments.

Whether the Physician Sees Patients Covered by Traditional FFS Insurance

A potentially important distinction among HMOs is whether HMO physicians see a substantial number of patients covered by traditional indemnity insurance as well as HMO patients, or whether they see only HMO patients. A system under which a physician sees both types of patients entails fewer impediments to switching insurance types for both physician and patient. The physician can join an HMO without losing his or her current patients. Some patients can join an HMO without having to break ties with their physicians, which has been a major impediment to HMO enrollment (Berki and Ashcraft 1980). An HMO that permits physicians to see non-HMO patients presumably can recruit physicians and consumers more rapidly than other HMOs. However, a physician who treats only HMO patients may be more responsive to financial incentives offered by the HMO than one who treats both types of patients because he or she may be unwilling to treat the small fraction of HMO patients differently from patients with traditional insurance. More generally, the percentage of HMO patients in a physician's panel may correlate with a physician's responsiveness to

financial incentives. Therefore, this distinction may be an important characteristic by which to differentiate HMOs.

The HMO Contract with Its Middle Tier (If Any)

HMOs can contract directly with their primary-care physicians (a twotier system) or they can contract with another organization (a middle tier), which in turn contracts with physicians (a three-tier system). The middle tier may be a hospital medical staff, a physician group, or one of several entities formed by an HMO for payment purposes (often misleadingly called IPAs). In addition to HMOs (e.g., Kaiser) that contract with a single physician group, the middle tier is typically a medical group that is organized separately from the HMO, practices as a group in a single location, and treats FFS patients under traditional insurance as well as HMO patients. The HMO may share risk with the medical group *as an organization*. The medical group then makes its own payment arrangements with its individual physicians. The HMO is not necessarily involved in these arrangements and sometimes is ignorant of their provisions.

Distinguishing two- and three-tier HMOs does more than improve the precision of measuring the incentives to individual physicians; it may also describe differences in *organizational* incentives that affect outcome. Compare, for example, an HMO that pays salary directly to its physicians with an HMO that capitates a middle tier, which then pays salary. The three-tiered HMO offers incentives to its middle-tier management to control physicians' use of services, which may lead the middle tier to provide some nonfinancial incentives or other oversight of its primary-care physicians in an attempt to control costs. Although the two-tiered HMO has similar goals, it may elect methods to control its primary-care physicians (with different results) because of its different organizational relationship with them.

The Nature of the Risk or Reward

Primary-care physicians in HMOs are often given incentives to control the costs of specialty physicians and hospital care as well as their own costs. HMOs may withhold a certain percentage of the payment (often 20 percent) due to the physician. The amount withheld (the "withhold") is returned to the primary-care physician if, at the end of the year, costs of referral and hospital services are on or below target. If they are above target, the withhold is used to finance the difference between actual costs and the target. The withhold represents the maximum downside risk for the physician in most HMOs, although up to one-third of HMOs levy an additional penalty for higher costs (Hillman 1987).

If actual costs are lower than the target, primary-care physicians may be rewarded by sharing in the surplus in addition to receiving the withheld income. These incentives may apply to referral services only, hospital services only, or both. How the HMOs choose to use or combine risks and rewards may reflect their overall organizational philosophy of cost and quality of medical care, and thus may differentiate HMOs in important ways.

The Size and Nature of the Risk Pool

The characteristics of the risk pool to which a given physician belongs may have an important effect on the incentive for that physician to control costs. The smaller the risk pool and the more aware the physician is of the activities of other physicians in the pool, the stronger the incentive to control costs. The effect of the number of physicians is termed the "size principle" (Newhouse 1973). A pool can contain few physicians (even a single physician) or many (even all physicians in the HMO). And physicians can be assigned to risk pools in various ways (such as by geographic area or hospital affiliation).

It is important to note that a middle tier (in a three-tier HMO), a risk pool, and a group practice are independent concepts. A two-tiered HMO may contract directly with physicians but subdivide them into separate risk pools. Such an HMO has no middle tier but multiple risk pools. Another HMO may contract with a number of medical groups rather than individual physicians, but may spread the financial risks over all the physicians in the HMO, regardless of their medical group. Such an HMO has one risk pool that includes all the groups in the middle tier. These characteristics of HMOs reflect basic differences in organization that may affect physicians' responsiveness to incentives and the costs and quality of medical care.

Applicability of These Concepts to Other Types of Managed Care

Although HMOs are the best-known form of managed care, the parameters used here to define typologies can be used to characterize other types of managed care as well. Surveys of preferred provider organizations (PPOs) (deLissovoy et al. 1987), for example, enable us to describe them in terms of the concepts discussed in this section:

- Payment. Most physicians in PPOs are paid discounted FFS; a few are paid capitation.
- Other types of patients. PPO physicians typically see FFS patients covered by traditional indemnity insurance, as well as PPO patients.
- Number of tiers. PPOs typically contract directly with physicians, but sometimes a hospital's medical staff serves as a middle tier.
- Nature of risk or reward. PPO physicians typically are given no risk or reward except that the PPO itself may be experience rated.
- Size and nature of the risk pool. There is no risk pool for PPO physicians.

In sum, these concepts appear applicable to managed-care arrangements other than HMOs.

In addition, it should be kept in mind that HMOs are not exclusively an American phenomenon. They are prominent in Uruguay (Solari 1985) and are under consideration in The Netherlands (Kirkman-Liff and van de Ven 1989). A valid typology will have applicability to HMOs outside of the United States.

Methodology

In order to suggest a methodology for devising new typologies based on these characteristics, we used data from a survey of HMOs reported in detail elsewhere (Welch, Hillman, and Pauly 1989). In general, the survey instrument was designed to collect information about all five characteristics defined above. We use the survey results here to show how HMOs might be grouped on the basis of meaningful characteristics.

We mailed the survey to the 643 active HMOs listed by InterStudy

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as in existence in mid-1988. Usable responses were supplied by 260 (40 percent) HMOs. However, because larger HMOs are overrepresented in our sample, our data represent 53 percent of overall HMO enrollment. Summary results corresponding to our five parameters are reported here. Respondents were promised confidentiality; when we illustrate by reference to specific HMOs, it is with information available publicly and not obtained through our survey.

Method of Payment to Primary-care Physicians

Consistent with prior surveys, HMOs use all three types of basic payment to their primary-care physicians. However, the frequency of salary, FFS, or capitation varies by whether or not there is a middle tier that processes the payment from the HMO, by the size of the HMO, by the type of risk and reward offered to primary-care physicians, and by the size of the risk pool.

Whether the Physician Sees Patients Covered by Traditional FFS Insurance

In all surveyed HMOs whose physicians receive FFS or capitation, physicians see both HMO patients and FFS patients covered by traditional insurance. Most of the enrollment in HMOs whose physicians receive salary, in contrast, is in HMOs whose physicians see only HMO patients. Whether physicians see traditional FFS patients in addition to HMO patients is an important conceptual distinction. Empirically, seeing FFS patients is highly correlated with method of payment.

The HMO Contract with Its Middle Tier (If Any)

Three-tiered HMOs have approximately half of total HMO enrollment and they utilize all three forms of payment to primary-care physicians. Some three-tiered HMOs are so decentralized that although the HMO could report how it paid the middle tier, it did not know how the middle tier paid its physicians. These arrangements may involve middle tiers that serve as fiscal intermediaries only, without substantial involvement in medical care. Thus, the number of tiers reflects important information about how HMOs are organized and about the oversight of primary-care physicians that some HMOs are willing to give up.

The Nature of the Risk or Reward

Incentives to physicians to control cost can involve both risk and reward. With risk, physicians stand to lose some income (relative to a baseline amount); the mechanism for this is usually a withhold. With reward, physicians can gain income; the mechanism for this is usually a bonus that involves surpluses in referral funds. Our survey shows that the use of risk or reward varies according to the basic method of payment. For example, physicians receiving capitation are much more likely to face both risk and reward than are physicians receiving FFS.

The Size and Nature of the Risk Pool

Risk pools consisting of subgroups of physicians in the HMO average 34 primary-care physicians per pool, whereas pools consisting of all the physicians in an HMO have an average membership more than 15 times larger (even when prepaid group practices are excluded). Relatively few HMOs (less than 20 percent) place individual physicians at risk. The size of the risk pool varies less by method of payment per se than by whether or not there are multiple risk groups.

What difference is the size of the risk pool likely to make? In an HMO-wide cost risk pool, the individual physician bears an infinitesimally small portion of any additional cost he or she causes. In a subgroup risk pool, the physician is somewhat more at risk, but the additional risk is not very great. In the average subgroup risk pool of 34 physicians, the physician is at risk for one-thirty-fourth, or 3 percent, of the additional costs he or she causes. This small increase in individual risk might not be expected to have a major effect on physician behavior, but putting a subgroup of physicians at risk might cause the subgroup to try to change its members' behavior. Peer pressure and incentives internal to the subgroup may change physician behavior depending on how the group is organized and how much opportunity for interaction there is.

The survey also asked IPAs what they call their subgroup risk pools to find out the industry's terms for this type of risk pool. There is no generally agreed-upon term. Of the HMOs with a subgroup risk pool, Other names

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 Term	Percent	
IPAs	26	
Primary-care groups	9	
Medical groups	24	
Both IPAs and medical groups	9	
Risk (or incentive) pools	6	
Networks	9	

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these terms were used with the following frequencies (weighted by enrollment):

(The first three terms appear most frequently because the survey offered respondents those terms and allowed others to be written in.) Not only does the industry use a diversity of terms to describe subgroup risk pools, but it also uses the term "IPA" ambiguously, to mean either the HMO as an entity or a subgroup within an HMO.

Toward New Typologies

We wish to devise a methodology that ultimately will produce a typology that facilitates public discussion of the HMO industry. To serve that purpose, the theoretical underpinnings of the typology must reflect characteristics that can be collected by an annual census of HMOs. In addition, a new typology should have the following characteristics:

- It should be defined in terms of reasonably accessible, objective characteristics. For an HMO census to use a typology on a regular basis, the typology must rely on information that is easy to obtain for virtually all HMOs.
- It should be parsimonious in its types of HMOs. The typology must be simple enough to facilitate general discussion of HMOs. One way to do so is to distinguish only types that have a substantial proportion of HMO enrollment.
- It should define categories, each with clusters of characteristics besides those used to define the category.
- It should predict performance measures such as enrollment growth, cost, and quality (cf. Tiryakian 1986; Sokal 1974).

In practice, devising a typology involves tradeoffs between these criteria. It requires that we simplify some of the characteristics of our defined HMOs and that we drop others. Moreover, consumers, researchers, policy makers, and HMO managers all may have different goals for a valid typology, perhaps requiring that more than one be developed. Deciding which characteristics to simplify or drop depends on one's purpose. We will present three examples of how a typology might be constructed. Of course, other constituencies may wish to consider different classification schemes. Once again, these examples are offered to illustrate the appropriate methodology for creating a typology, not necessarily to suggest that they be implemented as designed. In devising terminology, one faces a choice between creating new terms, of which the HMO industry already has too many, and using established terms, which may not have the precise meaning that we need. We use established terms when possible.

A key characteristic of an HMO's structure is whether its physicians maintain a substantial proportion of FFS patients under traditional FFS insurance. We therefore define prepaid group practices (PGPs) to be HMOs whose physicians do not accept traditional FFS patients and we define IPAs to be HMOs whose physicians do see such patients. PGPs include most staff and group models under the InterStudy typology. We will continue to use this term because it describes a fairly homogeneous group of HMOs. In devising a typology for the remainder of HMOs (what InterStudy calls network and IPA models), four remaining characteristics might be used: the method of physician payment (salary, capitation, FFS), the nature of the risk and reward (the use of one, the other, both, or neither), the nature of the risk pool (self, HMO subgroup, or all physicians in the HMO), and the number of tiers used to make the payment (two or three). If all categories of all characteristics were included in the typology, there would be 72 possible types of HMOs (in addition to PGPs). Although it is theoretically possible to make use of all possible types, practicality requires a more parsimonious taxonomy.

Thus, we must consider different ways to collapse HMOs into fewer types. Table 1 shows three alternative-example typologies, each of which makes use of two characteristics to divide IPAs into similar clusters. An incentive-based typology might distinguish HMOs by method of payment and size of risk pool. A typology that distinguished HMOs based on the characteristics of their structural organiza١

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	Typology					
Characteristics	Incentive- based	Organizational- structure	Payment based			
Method of payment	×		×			
Whether physicians see traditional FFS patients	* ²	*	*			
Number of tiers		×				
Nature of risk or reward			×			
Size and nature of risk pool	×	×				

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Characteristics	on	Which	to	Base	a	New	Typology

^a This characteristic is used to distinguish PGPs, which are a separate category in each typology.

tion might use the number of tiers and the size of the risk pool. A payment-based typology might combine method of payment and nature of risk and reward. Each classification scheme would produce different clusters of HMOs reflecting a different philosophical concept about what is important about HMOs. By limiting the basis of the IPA classification to two characteristics, we have significantly reduced the overall number of types in each typology. We do not pursue further the payment-based typology because whether there are risks, rewards, or both seems less important than whether they are shared among many, few, or no other physicians. We will discuss the first two alternatives in detail.

Incentive-based Typology

This typology would reflect a strategic decision to base the classification solely on direct financial incentives as reflected by two variables (in addition to whether physicians see traditional FFS patients): method of payment and risk pool. This typology involves dropping number of tiers and nature of risk and reward as defining variables. The implicit assumption is that physician behavior depends most on the basic financial incentive, and less on some of the specific methods that modify these incentives.

Although one might distinguish HMOs with "self" as the risk pool, collecting the data to implement a typology using risk pools composed of individual physicians would be difficult. Because of the strong incentive to limit referrals under such an arrangement, we suspect that some HMOs might not be willing to be identified publicly as having risk pools made up of individuals. Thus, we collapse self risk pools with subgroup risk pools. This approach yields seven types (including PGPs). The results of our survey allow us to collapse these types further. Because there is little enrollment in IPAs whose physicians receive salary, we combine those into a single type regardless of risk-pool size. Similarly, there is little enrollment in IPAs whose physicians receive capitation and whose risk pools are HMO-wide, so we combine those with other IPAs whose physicians receive capitation. These modifications result in a typology with five types:

- Prepaid group practice: HMOs whose physicians see only HMO patients. In all of these HMOs, physicians receive salary. (36 percent of enrollment)
- Salary IPA: IPAs in which physicians receive salary. Most of these HMOs have HMO-wide risk pools. In all of these HMOs, physicians also see FFS patients. (4 percent of enrollment)
- Capitation IPA: IPAs in which physicians receive capitation. Most of these IPAs have risk pools that are subgroups. In all of these HMOs, physicians also see FFS patients. (19 percent of enrollment)
- FFS IPA with subgroup risk pools: IPAs in which physicians receive FFS and have self or subgroups as the risk pool. In all of these HMOs, physicians also see FFS patients. (14 percent of enrollment)
- Foundation-type IPA: IPAs in which physicians receive FFS and have all physicians as the risk pool. In all of these HMOs, physicians also see FFS patients. (14 percent of enrollment)
- Missing in our sample: (12 percent of enrollment)

An example of each of these types follows:

Prepaid Group Practice. Harvard Community Health Plan (Fox and Heinen 1987, 217) pays its physicians a salary and a bonus that relates to planwide financial success. Budgeted bonuses are 6 percent of salaries; actual bonuses have varied from zero to 10 percent of salaries. þ

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ł: In 1983, Maxicare of Texas (Kulkarni et al. 1989) con-Salarv IPA. tracted with the Kelsey-Seybold Clinic (established in the 1950s) to esia tablish Maxicare of Texas. Prior to its contract with Maxicare, the clinic iQ. saw only FFS patients under traditional insurance, but paid its physi-12 cians a salary. Maxicare pays the clinic capitation for all physician ser-Ū vices. (Surpluses and deficits in a separate hospital fund are split 50-50 μų between the clinic and Maxicare.) Thus, primary-care physicians at the 13 Kelsey-Seybold Clinic are paid salary but treat both traditional FFS and HMO patients. The Greater Marshfield Community Health Plan is anŝ other example of an HMO whose physicians are paid a salary but who 82 27 see FFS patients (Luft 1981). It has been renamed Security Health Plan of Wisconsin (InterStudy 1988). Z.

Capitation IPA. HMO of PA (Fox and Heinen 1987, 128) pays its 87 physicians capitation that is age-sex adjusted. Each physician has a Ē referral fund. Deficits are covered with the 20 percent withhold and 23 "taxing" of referral funds that have a surplus. Each physician has a hospital fund; the HMO absorbs all losses but splits surpluses 50-50 with the physician. **T**5

FFS IPA with Subgroup Risk Pool. Maxicare of Southern California (Fox and Heinen 1987, 87) contracts with medical groups, which typically pay their physicians FFS. Maxicare capitates the groups for physi-1 cian services: both primary and referral. The groups are completely at .® risk for physician services. Maxicare is at risk for hospital services, but each group receives half of the surplus in its hospital fund. حبقا

Foundation-type IPA. Lifeguard (Fox and Heinen, 1987, 167) pays its physicians FFS with a 15 percent withhold. All physicians are in the single risk pool. Any deficit in the physician-services account is covered by the withhold; the HMO is at risk for any deficit beyond the withhold and keeps any surplus. Physicians are not at risk for either surpluses or deficits in the hospital account.

Organizational-structure Typology

A second possible typology would reflect a strategic decision to exclude the method of paying physicians as a defining variable in favor of the number of tiers. The resulting typology is more heavily influenced by the organizational design of the HMO. The typology would also distinguish HMOs whose physicians see only HMO patients (PGPs). The remaining HMOs (IPAs) would be distinguished by only two variables: the number of tiers and the size of the risk pool, yielding a total of five types:

- Prepaid group practice: HMOs whose physicians see only HMO patients. (36 percent of enrollment)
- Two-tiered IPA with subgroup risk pools: IPAs contract directly with physicians and subdivide them into risk pools. Physicians also see FFS patients. (18 percent of enrollment)
- Two-tiered IPA with a single risk pool: IPAs contract directly with physicians and place them into a single risk pool. Physicians also see FFS patients. (14 percent of enrollment)
- Three-tiered IPA with subgroup risk pools: IPAs pay (usually) medical groups, which in turn pay physicians. The physicians are subdivided into risk pools. Physicians also see FFS patients. (20 percent of enrollment)
- Three-tiered IPA with a single risk pool: IPAs pay (usually) medical groups, which in turn pay physicians. All physicians are in a single risk pool. Physicians also see FFS patients. (6 percent of enrollment)
- Missing in our sample: (6 percent of enrollment)

The Health Insurance Plan (HIP) of Greater New York is a wellknown example of a three-tier HMO. HIP contracts with eight medical groups, which have 51 medical centers (HIP 1988). On average each medical group has 100 primary-care physicians. HIP pays capitation to each medical group, which then pays a salary to the HIP physicians, who see only HMO patients. The capitation covers virtually all physician services. HIP relies on utilization review to control hospital costs.

Comparison of Typologies

Table 2 shows enrollment data by the two new typologies compared with InterStudy's typology (1988). In both new typologies, PGPs closely correspond to InterStudy's staff and group models. A few of InterStudy's group models are considered salary IPAs in the incentivebased typology. Network models are spread over at least three of the incentive-based types: PGP, capitation IPA, and FFS IPA with subgroup, indicating far more diversity in incentive structure than sug-

	InterStudy typology						
New typology	Staff	Group	Network	IPA	All HMOs		
ncentive based							
Prepaid group practice	12.8	21.3	1.5	0.0	35.7		
Salary IPA	0.2	3.5	0.6	0.1	4.4		
Capitation IPA	0.5	0.3	4.8	13.9	19.4		
FFS IPA with subgroup	0.0	0.0	3.2	11.1	14.4		
Foundation-type IPA	0.0	0.3	0.0	13.4	13.7		
Missing	0.0	0.2	7.9	4.3	12.3		
TOTAL	13.5	25 .7	18.0	42.8	100.0		
Organizational structure							
Prepaid group practice Two-tiered IPA with	12.8	21.3	1.5	0.0	35.7		
subgroup risk pools	0.0	0.0	0.7	17.7	18.4		
a single risk pool	0.1	0.1	0.7	12.8	13.6		
Three-tiered IPA with subgroup risk pools	0.5	0.5	13.7	5.6	20.2		
Three-tiered IPA with							
a single risk pool	0.0	2.9	0.2	2.6	5.7		
Missing	0.0	1.0	1.2	4.2	6.4		
TOTAL	13.5	25.7	18.0	42.8	100.0		

TABLE 2 New Typologies Compared with InterStudy's (percent of HMO enrollment)

gested by InterStudy's typology. Interstudy's IPA model is spread between three of the incentive-based types: capitation IPA, FFS IPA with subgroup, and foundation-type IPA. Again, there is more diversity than suggested by the InterStudy typology.

Considering the organizational-structure typology, we find close correspondence between InterStudy's network and our three-tiered IPA with subgroup. Interstudy's IPAs, however, are spread over three of our types: two-tiered IPAs with subgroups, two-tiered IPAs with a single risk pool, and three-tiered IPAs with subgroup. Thus, both the incentive-based and organizational-structure typologies highlight diversity that the InterStudy typology obscures.

We now review the two new typologies in terms of the criteria stated

above. First, both typologies are based on obtainable information. HMOs would have to answer only a few questions: do their physicians see traditional FFS patients; do they pay their physicians directly or through a middle tier; does the HMO have more than one risk pool; and how are the primary-care physicians paid. (This last question is not necessary for the organizational-structure typology.) Second, each of the new typologies is parsimonious, with only five types. Third, the typologies include structural characteristics other than those used to define the types. For example, the organizational-structure typology captures important information about the philosophy of the HMO through the tiering variable.

Finally, we consider several performance measures arrayed across typologies (table 3): hospital days per 1,000 enrollees, referrals to special-

Typology	Hospital days/1,000	Specialty visits	Whether profitable	Enrollment growth (%)	Plan age	N
InterStudy						
Staff	376	1.53	.48	3.9	16.2	27
Group	373	1.41	.94	7 .7	35.6	29
Network	309	1.66	.53	16.6	10.3	39
IPA	359	1.82	.68	21.9	6.7	165
Incentive based						
Prepaid group practice	375	1.44	.75	5.8	31.0	41
Salary IPA	375	1.46	.77	18.2	8.2	18
Capitation IPA	359	1.75	.58	22.7	7.5	92
FFS IPA with subgroup	343	1.58	.86	29.3	7.1	34
Foundation-type IPA	369	2.01	.75	19.5	7.1	4 7
Organizational structure						
Prepaid group practice Two-tiered IPA with	375	1.44	.75	5.8	31.0	41
subgroup risk pools	357	1.51	.74	29.7	6.7	69
Two-tiered IPA with						
a single risk pool	373	1.79	.65	20.9	6.8	64
Three-tiered IPA with						
subgroup risk pools	312	1.72	.62	12.2	10.0	40
Three-tiered IPA with						
a single risk pool	360	1.96	.84	23.2	7.5	22

TABLE 3 Comparison of Typologies in Terms of Performance Measures

ists per enrollee, profitability of the HMO during the prior year, and enrollment growth. The age of the plan is added as an implicit control variable. In the InterStudy typology, network and IPA models are similar in most measures: for instance, the specialty visits per person are 1.66 and 1.82, respectively. The range is greater for IPAs under the new typologies: specialty visits range from 1.46 to 2.01 under the incentive-based typology, and from 1.51 to 1.96 under the organizational-structure typology. The most rapid expenditure growth in Medicare, for example, is among specialists (Mitchell, Wedig, and Cromwell 1989). Limiting referrals to specialists will be a key aspect of cost containment for HMOs in the future. Similarly, enrollment growth differs somewhat between InterStudy's network and IPA: 16.6 percent versus 21.9 percent. For IPAs under the new incentive-based typology, enrollment growth ranges from 18.2 percent for salary IPAs to 29.3 percent for FFS IPAs with a subgroup risk pool. Under the organizationalstructure typology, it ranges from 12.2 percent for three-tiered IPAs with subgroup risk pool to 29.7 percent for two-tiered IPAs with a subgroup risk pool. The ability of typologies to distinguish differences in performance varies among the performance measures. But the new typologies both appear superior to InterStudy's typology.

Of our two typologies, the organizational-structure typology is probably the more appealing to HMO managers because of its simplicity. This typology is simpler, because it subdivides IPAs by number of tiers and then subdivides *both* two- and three-tiered IPAs by nature of the risk pool. In contrast, the incentive-based typology subdivides IPAs by payment to physicians and then further subdivides *only* those IPAs whose physicians are paid FFS.

Future Directions

All interests cannot be served by a single typology and some will find deficiencies in all the alternatives we have described. For example, some observers may feel that the policies by which HMOs select and train new physicians reflect important differences in the organizational design, philosophy, culture, and goals that should be included in a new typology. Although these policies may be crucial to understanding the HMO industry, they are subtle concepts that are difficult to elicit. Therefore, we believe that they would not facilitate the development or implementation of a new typology. In addition, we may have overlooked other characteristics that merit inclusion.

Whether or not the characteristics identified here are all of the appropriate ones for a new typology, the next step is for consumers, policy makers, managers, researchers, and others to consider the dimensions we offer for a new typology and the specific examples that these dimensions create. These constituencies may wish to devote some discussion at their annual meetings or other forums to the virtues of our approach. Then additional methodologies may be tested and a new typology could be accepted. The American Psychiatric Association recently went through such a process in order to refine its methodology for the diagnosis of psychiatric disorders, called DSM-III (American Psychiatric Association 1987). The general acceptance and use of this new manual suggest that practitioners have found it a more satisfactory tool for classifying disorders than earlier versions afforded.

Similarly, although we have intentionally avoided some characteristics, they may merit further evaluation. For example, we have avoided the sensitive topic of self risk pools. However, this information could be obtained from the contracts that an HMO signs with its physicians. Alternatively, regulators (such as the Federal Office of Prepaid Health Care) or employment-based health insurance programs (such as the Federal Employees Health Benefit Program) could require that this information be provided.

Many HMOs have multiple arrangements with physicians and some might best be labeled hybrid HMOs. GHAA (1989) found that 37 percent of established plans were hybrid HMOs. An HMO census could footnote those HMOs with more than, say, one-fifth of their enrollment in another HMO type. An important issue for future research is to recognize hybrid HMOs and to determine how they function. For instance, early on, the Johns Hopkins Health Plan had four clinics capitated for Medicaid and physicians were paid salary (Richard Hegner, Johns Hopkins Health Plan, personal communication, June 16, 1989). In order to grow, the HMO had begun in 1985 to contract with FFS physicians or groups. By 1989 it had 38 other sites, ranging from practices with one or two physicians to multispecialty group practices.

The impact of different types of HMOs on cost and quality deserves further investigation and a valid typology would facilitate this type of research. Clancy and Hillner (1989) investigated the ordering of diagnostic tests by physicians who saw HMO patients and FFS patients under traditional insurance. The HMO capitated its primary-care physicians for the HMO patients and placed them in a HMO-wide risk pool. This arrangement produced fewer discretionary tests for HMO patients but the same number of preventive tests as their FFS counterparts. In addition, Hillman, Pauly, and Kerstein (1989) regressed hospital days per 1,000 and physician visits per enrollee on financial incentives, controlling for HMO and market characteristics. They found that paying primary-care physicians salary or capitation lowered the hospitalization rate compared with paying FFS, and placing physicians in self risk pools lowered the frequency of physician visits.

We argue, in short, that the prevailing typology of HMOs does not adequately distinguish among HMOs with regard to incentives and organizational structure. Better typologies can be devised to deal with these key characteristics and two such examples were offered in detail. Of course, the actual design of a typology may be made by the organization – be it GHAA, InterStudy, the Office of Prepaid Health Care of the federal government, or some other organization – that decides to apply its typology when periodically conducting a census of HMOs. A potential pitfall is the development and use of too many typologies. We should avoid substituting many valid typologies for the prevailing imprecise one. Only when a valid typology is accepted widely will it serve its purpose of facilitating discussion, analysis, and administration of the dynamic managed-care industry.

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