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**HEALTH MAINTENANCE ORGANIZATION (HMO):  
PRICING TECHNIQUES**

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- o   Development of medical cost estimates (e.g., utilization and average charge estimates)
- o   Differences between indemnity and HMO techniques
- o   Relationship of premiums and capitations
- o   HMO organizational structures (e.g., individual practice associations, group, staff and network models)
- o   Community rating and community rating by class

MR. HARVEY SOBEL: Hardly a day goes by without some insurer or HMO announcing the introduction of some new managed care product, which is to be offered to employers in some local market using a network of selected providers. This frenzy of activity has kept actuaries in the health care industry busy, if not extremely overworked.

I'd like to discuss HMO pricing from the perspective of a consulting actuary at Peat Marwick. While my home base is New York City, I've had the opportunity to work with a number of our health care professionals in other areas of the country. So the perspective is not strictly local, nor are our concerns strictly actuarial. In fact, many of our clients are hospitals and physicians, whose interests lie in the health care field and not in insurance at all.

\* Mr. Little, not a member of the Society, is Development Manager for Complete Health Inc. in Birmingham, Alabama.

## PANEL DISCUSSION

When discussing HMO pricing, it's helpful to distinguish the problems based upon where the HMO falls within a 2-by-3 matrix. The first dimension of this matrix is whether the HMO's program is currently in operation or whether it's new. If you're pricing an existing HMO's products, then you're generally going to have some track record -- and associated data -- to work with. Obviously, if the program or the HMO is new, there's considerably less to work with and more judgment is needed.

The second dimension of this matrix is the HMO's marketplace -- the commercial employer, and Medicare or Medicaid. Most people in this room probably think in terms of the commercial employer marketplace, but there are many HMOs that require pricing assistance in filing for a Health Care Finance Administration (HCFA) risk contract or a state Medicaid contract. You have considerably less freedom in pricing the Medicare and Medicaid business, if pricing is the right word at all. The government is usually establishing a rate ceiling, and you end up jumping through a lot of hoops. But even where there are these rate constraints, you need to alert management as to what set of assumptions must be achieved in order for the HMO to operate profitably.

Perhaps a third dimension to my matrix is the type of HMO -- staff model versus individual practice association (IPA) versus group. My comments today will pertain primarily to IPAs, although many comments will apply to the other types of HMOs.

Most of us come from a commercial insurance background. If you compare pricing HMO products to pricing indemnity contracts, you'll be struck by certain outward differences. For example, instead of pricing products on a per contract basis, you'll usually look at costs per member per month, and convert these per capita costs to rates per contract at the very end. You'll also find yourself pricing products at a very detailed level, by specialty, such as inpatient (IP) surgery versus outpatient (OP) surgery versus obstetrics. At a commercial insurer, you're usually lucky to be able to look at hospital separately from medical/surgical or major medical.

However, after you get by the surface differences, you realize that the real difference is in the dynamics. In pricing an HMO product, you must work more closely with other members of the organization to make sure your pricing takes

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everything into account. I'm not just talking about the need to listen to marketing, which is a good idea even if you're pricing an indemnity product. Rather, you need to talk to the executive director, the medical director and the others responsible for setting up the delivery system, to make sure that you're properly reflecting their proposed changes in your rates. I don't know of a single HMO where the actuary can just take some base period data and trend it without further adjustment.

What are the critical rating elements the actuary needs to address in pricing an HMO's product? The first and perhaps the most important is utilization. *Everyone focuses on hospital inpatient days per 1,000, but primary care visits and emergency room visits are also important.* When setting utilization assumptions, you must make sure the assumptions match up with the delivery system and that system's controls. Otherwise your rates will be based on incorrect assumptions, since the delivery system can't deliver the needed controls.

Let me illustrate with an example. Recently, two different providers asked for our help in filing an application with their state health department. It was in the same state to receive capitation payments for insuring the Medicaid population. The fee-for-service (FFS) data which was available indicated high inpatient utilization -- over 1,000 days per 1,000, with high emergency room (ER) visits as well. In order to operate profitably, the providers would have to reign in utilization. The first provider, which was a clinic, intended to set up tight utilization review (UR) and pre-admission review, encourage pregnant women to come in for regular prenatal care and establish physician risk pools. Based on the experience of other Medicaid HMOs, we felt comfortable projecting significant reductions in inpatient and emergency room (ER) utilization, with increases in primary care visits.

The other provider, a hospital, had no plans whatsoever to change the status quo, other than hiring a medical director. It's almost as if they believed that just calling themselves an HMO was enough to change utilization patterns. We felt uncomfortable projecting more than a nominal decrease in hospital utilization compared to FFS. So the structure of the delivery system should be a critical element in your rating process.

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In this example, the prospective HMOs had FFS data available, and we projected the impact of managing the care. In other situations, the HMO may be up and running, with some data to work with. Then you're going to need to factor in trends, similar to pricing a Blue Cross/Blue Shield plan or a commercial product. And, like all rating, you'll need to temper the past experience to reflect the future, especially if you're trying to build up your rates by detailed specialty which may not be fully credible.

If, on the other hand, the HMO is entirely new and you don't even have FFS data, then you have to look at other sources such as other HMOs in the area or other HMOs of the same type model. Your guestimates of utilization, and they are only guestimates, will only be valid to the extent your client or employer is able to duplicate the success of others. Of course, if you assume he cannot duplicate that success pattern, your rates are going to be uncompetitive.

The second critical rating element is the other side of the equation -- cost. If you are pricing an existing HMO, you will usually have historical average costs per day or costs per service which you can trend, as with an indemnity product. You will have to measure the effect of any proposed changes, such as an increase in the physician fee schedule.

If you are pricing a new HMO, you will need to spend quite a bit of time estimating the average cost of service based on either surveys or indemnity data. Frequently the HMO is negotiating with a limited number of hospitals, so estimating the average per diem should not be too difficult. It's the medical/surgical fee schedule that will consume the time, and you'll find yourself learning the relative frequencies of procedures by (current procedural terminology) CPT-4 codes.

If you're pricing coverage under a HCFA risk contract or state Medicaid contract, you'll need to know whether the providers will accept the government allowances as payment in full. Medicare and Medicaid generally pay hospitals a lower per diem than indemnity, and physicians' fees may be a fraction of usual, customary and reasonable (UCR). If the providers are willing to accept the allowances, then you can directly work with the FFS average costs. Frequently, the physicians want more, say 75% of UCR, which the HMO will have to pay for

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out of the savings from inpatient utilization. In that case, you will have to measure the added cost of sweetening the fee schedule.

Yet a third critical rating element is administrative expenses. Many HMOs are in a growth phase, and the administrative expense component of the premium does not, by design, cover their actual administrative expenses. You might have initially priced the HMO to be in balance when the membership reaches enough "critical mass" in year 3, 4, or 5. If the HMO is in this category, you must constantly be apprising management of how well the HMO is doing in meeting its targets, in terms of both enrollment and expense levels. Frequently, the new HMO experiences better claim costs per member than initially projected, but far worse administrative expenses.

Fourth is statistical fluctuations. Even existing HMOs are usually not large enough to absorb one or two large neonatal claims. As with indemnity pricing, you must decide to what extent the fluctuation may recur.

The HMO will probably have some sort of reinsurance, either with a commercial insurer or, if Medicaid, with the state. As with indemnity products, you need to evaluate the appropriateness of the reinsurance retention levels and the reinsurance costs. When you sit down to price the HMO product, you'll need to build in the reinsurance costs into your rates, either with or without recoveries. Some actuaries prefer to show no recoveries and have an added margin in their rate.

I've talked about utilization, cost, administrative expenses and reinsurance. What's left is profit. Now this is not a dirty word. It's the reward for successfully taking on risk. Usually profit is market driven, despite regulations to the contrary. Some HMOs target to make an underwriting gain of some percentage of premium, plus whatever net investment income they earn. Others try to achieve a target return on investment, and yet others target their profit to maintain or achieve a desired surplus level. However you develop your profit assumptions, you're going to need to assess the competitive environment to determine what the market can bear because, bottom line, it's going to be the market that will determine whether your overall rate level is reasonable.

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I have touched upon all of the rating elements you'll need to address in pricing your products. You will also need to consider some other critical areas which will affect your rates. One such area is underwriting. In order to be competitive, you have probably rated the HMO's products assuming a good spread of risks. You probably assumed the HMO would attract a good cross section of members from large employer groups with 100 or more. However, you may be unpleasantly surprised to come back a few months later and find the HMO has enrolled small groups. The HMO may have even waived the preexisting condition clause.

If you had known ahead of time to whom the HMO planned on marketing, you could have loaded up the rates. But then if you did that, the executive director would have complained that his rates are uncompetitive. So you are almost forced to rate assuming good group underwriting and qualify your rating assumptions.

Another critical actuarial concern is capitations. Many HMOs capitate providers for some or all of the medical risk. The most common is the primary care physician, who will probably be capitated based upon the age and sex of the members under his care. You may be asked to develop the capitations, and hopefully this is at the same time you're developing the HMO's rates. Unfortunately, the two are not always done at the same time, and the capitations and the premium rates may be mismatched. You're going to want to make sure, as much as possible, that on the average the HMO is paying out in capitations exactly what it takes in from that component of its premium.

This is easier said than done. Even if you are working on both areas at the same time, you may not be able to accurately forecast the HMO's demographics. If the HMO is paying out capitations which vary by age and sex, but the premium rates do not, then how accurately you can forecast the demographics can make or lose money for the HMO. Of course, if the HMO is community rating by class or experience rating, then it should be protected to some extent against changes in demographics.

In new HMOs, you may also find yourself developing capitations and premium rates based on an initial set of benefits and structure of the delivery system. Both benefits and delivery systems always change. After the HMO goes out into

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the marketplace to negotiate with the hospitals and doctors, the HMO may come back to you and ask you a question such as, "Where is obstetrical services? Is it a primary care or a secondary care service?" Or the HMO may come back and say "Pull out diagnostic lab from the primary care capitation and treat it as if it's paid fee-for-service." Now at first glance, you might think that you're just moving dollars from one bucket to the other and that could be true. But moving services around may change your average cost per service on what's left and may cause you to rethink your utilization assumptions. So moving one service from capitated to noncapitated may change your overall rate level.

The last area I'd like to address is risk sharing. There's no doubt that incentives can influence utilization. You'd expect lower utilization, all other things being equal, if physicians are fully capitated or if they are subject to strong risk sharing arrangements, than if they just receive FFS. You must understand how the risk sharing works in order to effectively price the product.

In addition, actuaries can play a major role in fashioning these risk sharing arrangements. Such arrangements require many of the skills you might use to establish retrospective refund formulas for large groups. In fact, we are frequently asked about how to structure the physician stop loss arrangement, which is similar to the individual and aggregate medical care write-offs.

Let me conclude. The consulting actuary is frequently accused of answering the question, "What are the rates?" with "What do you want the rates to be?" Yet pricing an HMO product requires the actuary to ask, "What utilization can you achieve, Mr. HMO, and at what level of membership?" The process is dynamic and the actuary needs to communicate with the rest of the organization and needs to refine his pricing assumptions as the products, benefits, marketing assumptions and delivery system evolve.

MR. JAMES B. LITTLE III: I have worked with Complete Health in Birmingham, Alabama for about two and a half years, since we started the plan. I have worked in almost every aspect of our IPA type HMO operation, most extensively in our underwriting/rating area and new product design. Mr. Ogden has asked me to discuss our underwriting and experience rating system.

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Complete Health is an HMO which provides broader services than most HMOs. We have a Medicare supplement, we provide third-party administrator (TPA) services to self-insured employers, and we offer an insured product option and other services. We would be classified a little bit differently than most traditional HMOs.

Our sponsorship is the Medical Advancement Foundation (which is affiliated with the University of Alabama Medical Center), Torchmark Corporation, and some business leaders in Birmingham.

This sponsorship has helped us a great deal: the University adds credibility to our plan, Torchmark has financial strength, and the business leaders have contacts with industry which has helped us get a number of accounts.

We are a network model plan with eight hospitals and over 900 physicians, representing about half the physicians and hospitals in the Birmingham area. We compensate our physicians on a fee-for-service basis less a 15% withhold. This withhold can be adjusted up to 50% if physicians have quality or utilization problems. We pay out of capitated pools which are appropriate for the services. Therefore, primary care services are paid out of primary pool, and hospital services are paid out of hospital pool. These pools are funded on an age/sex experience-rated capitation basis. This method is different from most HMOs, who fund these pools on either age/sex or a fixed payment basis. So we actually take the group's experience into consideration when we capitate the pools.

Our general philosophy in underwriting is that strict underwriting guidelines will result in more favorable groups (and subscribers) and allow lower premiums in the long term. We also believe that underwriting guidelines should act as a guide to determine under what circumstance the group should be written coverage and to help avoid adverse selection.

We have taken many of the guidelines used in the health insurance industry, added other guidelines due to a dual choice situation, and have come up with our own underwriting guidelines. It is important for HMOs to think about the impact that the dual choice offering is going to have on them. We have some general group guidelines which we look at: (1) financial soundness of the



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group, (2) stability of employment, (3) long-term relationship with an HMO, and (4) representation of a reasonable health care risk.

We believe the large fluctuations in employment usually will imply large fluctuations in the claims. We hope the employer is seeking a long-term relationship with an HMO. We sell our program based on our ability to provide good, long-term value. If the employer is shopping price and benefits every year, we are really not interested in writing them, because of the effect on our gross margins. We probably won't have that group more than one or two years before somebody else comes in with a lower price. We also have a list of industries like most health insurance companies do, industries which we believe represent an unreasonable health care risk. So, we will not write just anybody.

One of our general guidelines for subscribers is a waiting period for preexisting conditions on employees who are not presently covered by one of the group's health benefits carriers. Most of the HMOs in Birmingham do not have any waiting period for new employees or employees who are not presently covered. Since the traditional health package does have a waiting period, these HMOs tend to get adversely selected by those people that need immediate care. So we have put a waiting period for new employees and we think that provision helps a lot.

Our premium contribution requirements are as follows:

1. The employer must contribute 50% of the single premium, and
2. The HMO premium differential, or the contribution by the employee, cannot exceed the competition's employee contribution by more than \$10.00 on a single premium and \$25.00 on a family premium.

Our benefit requirements state that we will not offer significantly better benefits than the competition on inpatient services, mental health and substance abuse, prescription drugs, maternity services, and dental services. I knew of an HMO that included prescription drugs for a 5,000 employee group, in order to get a large penetration on the account. This group account had not had prescription drug coverage before. The HMO achieved a large penetration but lost \$2 million on that account, because all the employees of the group that had large drug bills also had serious underlying medical conditions and enrolled in the HMO. It

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is important that you do not offer better benefits than the competition on certain services, because in a dual choice environment you can get adversely selected. So we are careful with our benefit design.

Our underwriting guidelines have had a significant impact on our organization. The system has been modified to handle the waiting period, and our reps have to understand these guidelines and follow them. We have had to go through an educational program internally so that these guidelines will be followed.

Our philosophy is that a group rate should reflect a group's or an industry's expected health care costs. The rating process should include an evaluation of product design, to determine the likely impact on selection and health care costs. If adverse selection is likely to occur, how is it going to affect our premiums?

The first step when we quote a group is to project the group's health care costs based on their demographics, benefits, and industry. We try to fit each industry into one of nine risk categories, from a superior risk with a 20% discount to a very bad risk with a 20% load. We project our standard rate based on the group's demographics and benefits. Then we project the group's utilization and experience. We combine both projected costs to come up with what we consider the estimated health care costs of the group.

Simultaneously, we look at the position of the product relative to the competition. We want to compare the benefit package and the premium to the competition, to see if adverse selection will occur. If adverse selection will occur, we want to adjust our rate. So the projected or estimated health care cost, modified by the impact of the product design, is used to come up with our final rate (or our final risk category).

At renewal time we take the total experience, adjust for demographics and for benefits, and compare to our community health care experience. We determine the effect of industry on the claims, and come up with our final risk category again.

Our experience rating approach has had a significant impact on our organization structure. Our management information system (MIS) has had to be modified

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extensively: a community rated system uses fairly generic data, and an experience rated system has to assess how the experience rating methodology has impacted utilization levels. You cannot just look at 400 days per 1,000 on an inpatient basis and say that that looks good; you have to apply that experience to what you actually quoted for the group.

The reps have to be educated about the experience rating system, but as they become more educated they figure out ways to try to beat this system. The reps are now starting to place the groups that have bad experience in our federally qualified subsidiary, which has community rates. We have to make sure that the groups really want the federally qualified product.

We worked up a case study to show you how the experience rating works in reality. XYZ employer is a university, which has had a decrease in employment over the last few years. XYZ has 500 employees and the total number of covered lives is 1,075. Therefore, XYZ has a small average family size or average contract size. The demographic adjustment factor was 114%, the industry factor was 120%. The hospital utilization experience from their claims was 750 days per 1,000. Table 1 summarizes the experience of this self-funded employer:

Table 1  
XYZ Employer  
Claims History

Policy Year	Claims	Total Lives
1983-84	\$760,752	1,200
1984-85	801,918	1,150
1985-86	824,568	1,075

We determined that the benefit value of XYZ's benefit plan is 75%. The plan has a \$200 deductible, 80/20% coinsurance, out-of-pocket maximum of \$1,000, and 50% payment on mental health/substance abuse.

The next thing we want to know is XYZ's contribution by contract category. If the contribution is a percentage of total premium, we are not usually as concerned about adverse selection, because there can be a greater premium differential than if there is a fixed contribution. In this example, we have a fixed employer contribution equal to \$75 single, \$120 two-party, and \$141 family.

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First of all, we determine our standard rate for XYZ by taking our community health care costs, adjusting for industry, for demographics and for our standard benefit value. The level of this standard rate indicates that XYZ would go into the 120% risk category (Table 2).

Table 2  
XYZ Employer  
Adjusted Health Care Costs

	PMPM
Community health care cost	\$ 57.21
Industry factor	x 1.20
Demographic adjustment factor	x 1.14
HMO benefits value	<u>x 0.95</u>
Adjusted health care costs	\$ 74.35
Risk category -- 120% (+20% load)	

We then adjust XYZ's claims experience for demographics and for benefits to come up with an adjusted claims per member per month (Table 3).

Table 3  
XYZ Employer  
Actual Claims Adjusted to Community Level

Policy Year	XYZ Claims PMPM	Demographic Adjustment Factor	Benefit Value	Adjusted Claims PMPM
1983-84	\$52.83	÷ 1.14	÷ 0.75	= \$61.79
1984-85	\$58.11	1.14	0.75	\$67.96
1985-86	\$63.92	1.14	0.75	\$74.76
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Projected 1987	\$70.31	1.14	0.75	\$82.24

We then determine what impact we can have on that claims experience, and adjust for benefits and demographics. In this situation we believed we could use a risk category of 115%. Our standard rate indicated a 120% risk category. However, XYZ's claims indicated that a 115% load would be adequate (Table 4).

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Table 4  
XYZ Employer  
Health Care Costs Analysis

	PMPM
XYZ self-insured plan (actual claims, adjusted to community level Table 3 Risk category -- assume 115% load	\$82.24
XYZ projected health care costs, if in HMO environment (\$57.21 x 1.15)	\$65.79
HMO plan (adjusted health care costs): \$74.35 (from Table 2) x 1.15 - 1.20	\$71.25

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Hospital inpatient utilization for XYZ had been 750 days per 1,000. When utilization is that high, we know we can make reductions of about 40% based on our experience. Therefore, we estimated 450 days per thousand for XYZ, compared to our community utilization for 400, which would give us a risk category of 112.5%. So we are starting to narrow in on where our rates should be. In summary, we have the standard factor of 120%, claims experience of 112.5%, and utilization of 112%.

We next look at what impact the employee premium contribution will have on our rate. Table 5 shows that the employee contribution for the HMO plan will be less than the self-insured plan. Therefore, we do not believe that we will be adversely selected.

Table 5  
XYZ Employer  
Premium Comparison of Employee Contribution

Contract Category	HMO	Self-Insured Plan	Differential
Single	\$ 17	\$ 25	\$ 8
Two-party	\$ 64	\$ 80	\$16
Family	\$119	\$141	\$22

Then we looked at our benefit package. We have designed the package so that inpatient services would not be significantly better than the self-insured plan. We included a \$200 deductible per admission. We also put a deductible on drugs because we do not want to have significantly better drug coverage. As you can see, the substance abuse and mental health is basically consistent (Table 6).

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Table 6

XYZ Employer  
Comparison of Copayments

Benefit	HMO	Self-Insured Plan
Inpatient services	\$200	\$200 then 20%
Outpatient services:		
Mental health and substance-abuse	\$ 25	50%
Office visits	\$ 5	\$200 then 20%
Prescription drugs	\$50 then 100%	\$200 then 20%
Maternity services	\$200	\$200 then 20%

In conclusion, we believe there would be no selection impact from benefit package differences, and we decided to use a risk category of 115%.

At renewal time we want to look at the claims and utilization experience, to determine if we should make a modification. For XYZ group, we adjusted claims experience for the demographics and benefits, to come up with our adjusted health care cost. As you can see in Table 7, the demographic factor shows that we enrolled a little better demographic mix (1.10 versus 1.14) than the whole group. The industry factor was 1.09 versus 1.20.

Table 7  
XYZ Employer  
Renewal Rating

	PMPM
Claims experience	\$ 65.31
Demographic factor	÷ 1.10
HMO benefit factor	÷ 0.95
Adjusted health care costs	\$ 62.50
Community health care costs	\$ 75.21
Industry/experience factor (\$62.50/\$57.21)	109.24%

When we review this group, we would still requote them at 115% risk category, even though it looked like we were running less than a 110% risk category. The reason we maintain the 115% level is because we believe next year, as our penetration increases in this account, our experience will increase due to a little worse demographics.

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Overall our experience rating system has worked out very well for us. It was a little difficult to administer at the beginning but we have automated much of our system now and overall we are very pleased.

MR. DAVID F. OGDEN: We have just seen that there are some HMOs that do very sophisticated rating. Complete Health is on the leading edge of a sophisticated rating philosophy. Most HMOs have much simpler rating methods. I will give you an overview on community rating, why HMOs do it, and how it affects HMOs. The whole industry is moving in the direction of what Complete Health is doing. Complete Health reached its current position without ever being anywhere else. They are much more innovative than the majority of the HMO industry.

In order to properly consider HMO pricing, HMO cost structures should be considered. Different types of HMOs have different cost structures. There are generally four broad types of HMOs, as defined by Interstudy, a research organization which does an annual HMO survey. The four types are staff, group, IPA, and network.

A staff model HMO is one in which the physicians are salaried employees of the HMO. Interstudy's definition includes medical groups which work exclusively for the HMO, but which are structured as a group. However, in practice it appears that Interstudy calls some HMOs with captive medical groups a *group* model rather than a *staff* model. All physician services in a staff model HMO are not performed by physicians who are employees of the HMO. The number and range of specialties employed by the HMO will depend on the size of the HMO.

A group model HMO is an HMO that contracts with a single medical group to provide care. This medical group will usually have fee-for-service patients (or it would be considered a staff model). The medical group is usually capitated for physician services.

An IPA (*independent practice association or independent physician association*) is an HMO that contracts directly with individual physicians practicing in solo or very small practices. The HMO may contract directly with an organization of which the physicians are members. These independent physicians may be

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scattered over a broad geographical area, or may all have some connection, such as having admitting privileges at the same hospital.

Network HMOs have begun to appear recently. Interstudy defines a network HMO as one which contracts with a number of different medical groups. This may include contracting with some independent IPAs. I will use the term network to refer to an HMO that has a hybrid of structures. Several large, well-established, staff model HMOs have expanded by contracting with independent physicians. I would describe these HMOs as networks now, though I am not sure how Interstudy would describe them.

HMO rating is different from traditional insurance rating in a number of ways. One of the things that affects HMO rating is the types of medical expenses. In traditional insurance, practically all expenses are variable. Only administrative expenses can be considered fixed, and not all of these are. In an HMO, medical expenses are not necessarily variable. I will define three categories of medical expenses which are my own definitions: pure variable, capitated variable, and fixed.

Pure variable is a medical expense that is similar to what traditional insurance carriers pay. Payments are made on a fee-for-service basis. Payments are made only when services are performed. The number of services could rise or fall depending on utilization, changes in groups enrolled, changes in age and sex makeup, epidemics, etc. If for some reason people stopped using health care facilities, then costs drop off to zero. If everyone eligible is admitted to a hospital, costs become astronomical.

Capitated variable means that costs vary strictly on the number of individuals eligible. Costs are variable in that more members mean more costs, and fewer members mean fewer costs. However, the actual level of utilization does not directly affect costs. It will have an influence on future costs perhaps, but not on current costs. It is possible that catastrophic utilization could affect costs, as some capitation arrangements are not pure, but have a reinsuring element to them.

The way the capitation is arranged influences costs. If an HMO pays a fixed capitation per individual, then enrolling younger individuals will not reduce its



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costs, nor will enrolling older individuals increase its costs. Thus, age/sex rating may not make sense for an HMO paying a flat capitation. However, if a capitation is varied based on the age and sex of the enrollee, then costs would vary if the makeup of the enrollment changed.

Fixed costs come from staff model HMOs, and is the third category of medical expenses. Staff model HMOs have a medical center and physicians on staff. The physicians and ancillary medical personnel (such as nurses, lab technicians, therapists, etc.) are HMO employees, as well as administrative and clerical support needed to run a medical center. If enrollment drops, the costs at the medical center would not decrease at all, or decrease only slightly if some personnel were laid off. If enrollment increases, costs would not increase at all or, once again, only increase slightly if additional personnel were added. As long as the medical center has capacity to provide care to additional patients, enrollment can increase without costs increasing or increasing on a very minor basis.

In conclusion, the way costs vary has to be considered when designing a rating scheme for an HMO. Most HMOs have costs which come from one or more of these categories. Only staff model HMOs have costs that come from all of these categories.

Most IPA model HMOs have costs that are pure variable. Typically only a minor proportion of the costs are capitated, such as primary care physicians, lab, drugs, and perhaps some other minor physician categories. The capitated costs are generally less than 20% of the total. There are usually no fixed costs in an IPA.

There are some exceptions to these general rules. In some situations, an IPA organization is capitated for all physician services or all medical services. I have seen one situation where an IPA capitated its hospital costs, although this is generally rare.

Group model HMOs generally have greater capitations. The capitation usually applies to physician services. The capitation could apply to outpatient hospital, and some other ancillary services such as drugs are also capitated by groups. The capitated expense usually varies between 40% and 60% of the total,

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depending on what proportion the physician services are to the total. Once again, there may be exceptions. In some cases, the clinic accepts full responsibility for all medical costs, or the hospital may be capitated.

Staff models have various cost makeups depending on their age, size and philosophy. The fixed portion may be relatively small in a new staff model, which has only primary care physicians on staff. The fixed portion grows in a larger staff model, but usually represents no more than one-half to three-quarters of the physician expense. Capitated expense is generally fairly low. Some physician services are capitated, while others are contracted on a fee-for-service basis. Hospital costs are usually paid fee-for-service.

Some approximations of percentage ranges of medical expenses for staff models are given in Table 8:

Table 8  
Comparison of Medical Expense

	IPA	Model of HMO Group	Staff
Pure Variable	80 - 100%	40 - 60%	30 - 50%
Capitated	0 - 20	40 - 60	5 - 20
Fixed	0	0	20 - 50

These staff model costs may vary significantly. A few staff model HMOs own their own hospitals, which may provide all or a majority of hospital care. For example, Kaiser, Group Health of Puget Sound, and FHP in Southern California all own hospitals. However, Kaiser does not own hospitals in all areas. The larger the staff model HMO, the greater the portion which is usually fixed and/or capitated.

It is difficult to characterize the medical expense percentages of a network. Interstudy's definition of a network is essentially a group model with more than one medical group. If we use my definition of a network, which is a plan that is a hybrid, the types of medical expense will probably fall somewhere between the IPA model and the group model definition. However, there are some network staff models, and therefore the types of medical expenses could fall anywhere on this spectrum.

## HEALTH MAINTENANCE ORGANIZATION (HMO): PRICING TECHNIQUES

Most HMOs use some form of community rating. Community rating simply means that the rate for a group is not directly based on that group's experience. There are a multitude of reasons why community rating is used for HMOs: philosophy, nonvariable expenses, enrolling a portion of a group, simplicity, and regulation.

Perhaps the most important reason for community rating is philosophy. The original idea of an HMO was to provide comprehensive prepaid care to individuals. Community rating was used because, to provide quality care to all individuals, the price should be the same. It was expected that the low cost individuals should help subsidize the high cost individuals and make greater care available to all.

A number of practical reasons exist why community rating makes sense for an HMO. An HMO has expenses that are not variable in the same way that traditional insurance medical expenses are variable. With fixed costs and capitated costs, costs do not vary explicitly by group. Thus, it is much easier to spread costs over all groups in some straightforward manner.

HMOs have generally been associated with the concept of multiple choice. HMOs rarely enroll all members of a group. Thus there are fewer groups where the enrollment is high enough for the experience to be credible.

Community rating is simple. It is much easier to administer than experience rating. Currently, federal regulations require federally qualified HMOs to community rate. Some states also require community rating but by no means all states. I suspect that regulation for community rating came about because of the prior reasons -- especially the philosophy -- rather than regulation being a reason for community rating.

I will talk about community rating options for a federally qualified HMO. Most of the states that require community rating follow the feds. If an HMO is federally qualified, it can determine a community rate under one of three options.

The first option is *revenue per member*. Mr. Sobel mentioned earlier that HMOs do things on a per member basis. Mr. Little showed us numbers which were labeled *PMPM*, which stands for per member per month. This per member basis

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is the standard way of looking at things in the HMO industry. All costs of the HMO are spread over all enrollees. Members include employees, spouses, and all dependents. Since premium rates to a group are not quoted on a per member basis, the revenue received from a group (e.g., single/family rate structure) must be converted to a per member basis.

The second method is revenue per contract. The revenue received from a group must be converted to a per contract basis.

The third method is what I am calling a community rate structure -- rates by contract category: For example, \$50 for a single contract and \$100 for a family contract. This community rate structure will produce different revenue per member and revenue per contract from different groups. Most HMOs use either the first or third method and very few use the second method.

There are an infinite number of community rates for each group. The only limitation is that the total amount of revenue produced by the rates quoted to a group has to be approximately equal to what would be produced by the community rating method. If the single premium is too high, and the family premium is too low, in comparison to the competition and to the employer's contribution, then raise the family and lower the single premiums. If there are three or four rating tiers instead of two, then there are more categories to shift dollars. Community rating does not mean that every group gets the same rate. Groups with different renewal dates can have different rates. Groups with the same renewal date could have different rates because of reallocation or redistribution between contract categories.

Table 9 is a summary of hypothetical enrollment. It is the way HMOs typically look at enrollment. I assumed the HMO's demographics to be 50% single contracts and 50% family contracts. By definition there is only one member for each single contract. I assumed 3.5 members per family contract. The overall average is 2.25 members per contract. Under the premium loading category, a single premium is arbitrarily set at 1.0. The family premium is set at 2.6 times the single premium, based on both market considerations and expected cost differentials, although the 2.6 factor may not entirely represent either one.

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At the bottom of Table 9, I have calculated a conversion factor. This conversion factor is a term that the HMO industry uses extensively. The factor of 1.25 is multiplied by the per member revenue to get a single premium. This formula produces a ratio that will create a rate structure. This rate structure develops single and family rates, by using the premium loading factors that will reproduce the amount of per member revenue that is needed.

**Table 9  
Distribution of Overall Enrollment**

	<b>Contracts</b>	<b>Members</b>	<b>Premium Loading</b>
Single	50%	1.00	1.00
Family	50%	3.50	2.60
<b>Total</b>	<b>100%</b>	<b>2.25</b>	<b>1.80</b>

**Conversion Factor = 2.25/1.80 = 1.25**

HMOs typically analyze everything on a per member basis, but then have to quote premiums on a single/family basis. Assume that the HMO has determined that it needs \$40 per member per month in revenue. The \$40 is multiplied by 1.25 to obtain \$50, the single premium. The \$50 single premium is multiplied by 2.6 (the premium loading factor) to obtain the family premium. The community rate structure is therefore \$50 single, \$130 family. The average revenue per contract is \$90 (2.25 members per contract x \$40).

Any of these three benchmarks can be used in quoting a community rate to a group: Each group would either have to produce revenue equivalent to \$40 per member, \$90 per contract, or \$50 single/\$130 family. I will show two specific examples. (See Table 10.)

Group A is assumed to have more families than average, 70%, with 30% single. Remember that our overall average distribution was 50-50 for single/family contracts. Everything else in Table 10 is the same as Table 9: the members per single contract, the members per family contract, and the premium loading.

Notice the conversion factor is changed in Table 10. It increased from 1.25 to 1.30. What that means is that the per member revenue has to be increased by a greater amount to reach the single premium. The reason is that we have more

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Table 10  
Group A Enrollment

	Contracts	Members	Premium Loading
Single	30%	1.00	1.00
Family	70%	3.50	2.60
Total	100%	2.75%	2.12

$$\text{Conversion Factor} = 2.75/1.80 = 1.30$$

family contracts, and family contracts have more members. A family contract typically produces less revenue per member than a single contract. So here we have a group with more families and which is going to produce less revenue per member unless we raise the premiums. The HMO does not necessarily need to raise the premiums, but this is the way the formula works.

Now let us look at the way things work out for this group in Table 11. Under the three definitions I gave you -- per member, per contract and the community rate structure -- the premiums would work out as follows:

Table 11  
Community Rate Definitions -- Group A

Community Rating Option	Single	Family	Per Member	Per Contract
Per member	\$52.00	\$135.20	\$40.00	\$110.00
Per contract	42.55	110.62	32.73	90.00
Rate structure	50.00	130.00	38.55	106.00

1. Notice in the per member option, the \$40 per member premium produces \$52 single and \$135.20 family premiums (e.g.,  $\$40 \times 1.30$  conversion factor = \$52).
2. Under the per contract option, the per contract premium of \$90 will produce \$32.73 per member premium ( $\$90 \div 2.75$ ) and \$42.55 single premium ( $\$90 \div 2.12$  premium loading factor).
3. The third option is the rate structure (\$50 single and \$130 family). This option produces less than \$40 revenue per member, or \$38.55. The lower revenue per member is understandable, because this group has more families. Families have more children, who have lower costs, and therefore should produce less revenue per member.

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My own personal recommendation to HMOs is to always use the rate structure approach. If the single and family rates are set properly, the rate structure will reflect the expected costs in the single and family categories. Every group does not need \$40 per member; some need more and some need less. However, there are quite a few HMOs that still use the per member method. The HMO wants to get \$40 per member from each group because it views its expenses as varying only on a per member basis. In some cases that is literally true; however, that is not the way the real medical costs vary. As long as the demographic makeup in a group is fairly close to the overall demographics of the population, the revenue-per-member method is fine. In this example, the differentials are not that large. The single premium is \$2 more than the rate structure, \$52 instead of \$50; the family is \$5.20 higher. However, I have seen situations where the revenue-per-member method produced much more skewed results.

Let us look at an example, Group B, that goes the other way, with 70% singles instead of 70% families (Table 12). The reverse happens. Notice that the conversion factor is less than Table 9, 1.18 versus 1.25, because the population is made up of more singles, and there needs to be less of an adjustment to go from a per member value to a single value. More adults are in the population, and less children.

**Table 12  
Group B Enrollment**

	<b>Contracts</b>	<b>Members</b>	<b>Premium Loading</b>
Single	70%	1.00	1.00
Family	30%	3.50	2.60
Total	100%	1.75	1.48

$$\text{Conversion Factor} = 1.75/1.48 = 1.18$$

Table 13 shows the rates for Group B. The \$40 per member, \$90 per contract, and \$50 Single/\$130 Family are all in the same rows as before, because that is the way the community rating options are defined. But the reverse of Group A happens. The single and family rates under the per member row are now lower than the rate structure definition. With more single contracts, the premiums do

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not have to be as high to produce \$40 per member. However, with more single contracts, there are more adults, and therefore more medical costs.

Table 13  
Community Rate Definitions -- Group B

Community Rating Option	Single	Family	Per Member	Per Contract
Per member	\$47.20	\$122.72	\$40.00	\$70.00
Per contract	60.69	157.78	51.43	90.00
Rate structure	50.00	130.00	42.29	74.00

If the HMO is paying capitation on a per member basis, the HMO does not have higher medical costs, but certainly the medical group or whoever is taking the capitation will have higher medical costs. The reverse happens on the per contract option, with the single rate of \$60.69 being higher than the rate structure single premium of \$50.

Assume that Group A and Group B have the same age/sex distribution of the single contracts and the same age/sex distribution of the family contracts. Group A has more families and Group B has more singles. If the per member definition is used, the HMO will get different rates for the group, and I do not think those groups produce different risks.

The federal regulations were expanded in 1981 to allow community rating by class, which is essentially age/sex demographic rating that the commercial insurance industry has used for a long time.

Community rating by class was not defined as age/sex rating. The regulations allow HMOs to break up their enrollment into classes. The classes were intended to be good predictors of utilization. The most popular classes, as you would expect, are age, sex and marital status. Marital status is single/family, the breakout that everyone already used. The most common additional class is industry, for which supporting data is more difficult to obtain. Also, there are some technical problems: the congressional subcommittee conference report implied that classes were not supposed to be so tightly defined as to include a single group. The wording used was "classes should not be a single occupational class," which in some instances could be viewed as an industry. The



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stance of regulatory officials is to allow an HMO to use industry factors, but the HMO has to be careful in the way of phrasing the definition, so as to not appear to be going against what Congress had required.

Other classes could be used if they would define differences in utilization. Such classes might be income or area. Most HMOs, however, do not use area because they are in a limited geographic area, and the HMO would have a different rate structure for a different geographic area. Another class might be health status, such as nonsmoker discounts.

HMOs are not required to do community rating by class for all groups. An HMO could choose to use community rating by class (CRC) or age/sex ratings for some groups, but not all groups. The HMO has to be careful that they use a systematic, logical way of implementing CRC, as opposed to looking at both methods and picking the lower of the two rates, which is what the marketing department would like to do. Unfortunately, I do not think HMOs always hold out against that temptation, because of the competitive marketplace. HMOs believe they have reasons and needs to cut rates, and so one justification is as good as another in some situations.

Community rating by class overlays those three methods that I have described earlier. An age/sex adjustment is applied either to the per member revenue, the per contract revenue or to the community rating structure. In essence, CRC is just a further breakdown of those original methods.

An HMO is almost always faced with a dual choice situation. Very rarely is the HMO the only carrier in a group. To rate a group based on age and sex, the HMO has to decide what age and sex characteristics to use. The HMO has a number of choices.

1. The HMO's enrollment will be a cross section that is equivalent to the entire group.
2. If an existing account is coming up for renewal, the HMO can assume that its future enrollment will look exactly the same as existing enrollment; any growth in enrollment will be uniform across all age categories.

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3. Look at the enrollment of all the HMOs being offered in that account -- assuming that data is available, and the employer will provide it.
4. Look at the non-HMO enrollment and assume that enrollment growth will probably come from this segment. The age/sex mix will include members who are not in the HMO now, as well as the HMO's current enrollment.

There is a universal belief in the HMO industry that the HMO will keep everyone that is currently enrolled. HMO lapse rates have been very low, and there has been a high continuation. However, the persistency rate is not as high as the HMO industry believes, partly because of job turnover, and people leaving the metropolitan areas.

The federal guidelines that went along with the regulations on age/sex rating recommended that age/sex rating should not be done in small groups. There was potential fluctuation in age/sex makeup because of the small size of the group. However, this line of thinking seems to be completely counter to what the insurance industry does. Most small group carriers will quote rates on a demographic basis, especially in very small groups. Age/sex rating is necessary for small groups because of a much greater risk of obtaining a group whose enrollment is considerably different than the overall average. The HMO industry is so used to looking at things on a community basis that they think that it is probably improper to use CRC on a small group just because there is more potential of getting some unusual fluctuations.

This point illustrates that, despite the fact that the HMO industry really is in the insurance business, they do not always look upon themselves that way. HMOs obviously are in a different form of the insurance business than the traditional carriers once were. However, everybody is heading towards a common ground, as illustrated from Mr. Little's presentation on what Complete Health does. Complete Health does a very good job of combining what HMOs have traditionally done and what the traditional insurance industry has done.