Determinants of HMO Formulary Adoption Decisions

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Objective. To identify economic and organizational characteristics that affect the likelihood that health maintenance organizations (HMOs) include new drugs on their formularies.

Data Sources. We administered an original survey to directors of pharmacy at 75 HMOs, of which 41 returned usable responses. We obtained drug specific data from an industry trade journal.

Study Design. We performed multivariate logistic regression analysis, adjusting for fixed drug effects and random HMO effects. We used factor analysis to limit the number of predictors.

Data Collection Methods. We held initial focus groups to help with survey design. We administered the survey in two waves. We asked respondents to report on seven popular new drugs, and to describe a variety of HMO organizational characteristics.

Principal Findings. Several HMO organizational characteristics, including nonprofit status, the incentives facing the director of the pharmacy, size and make up of the pharmacy and therapeutics committee, and relationships with drugs makers, all affect formulary adoption.

Conclusions. There are many organizational factors that may cause HMOs to make different formulary adoption decisions for certain prescription drugs.

Key Words. Formulary, managed care, pharmacoeconomics

A drug formulary is a list of approved drugs.[1] The term is historically associated with hospitals; a hospital pharmacy stocks those drugs on the hospital formulary and some nonformulary items.[2] Today, formularies are an essential component of managed care.[3] Most health maintenance organizations (HMOs) provide greater coverage to patients who obtain drugs listed on their formularies.[4] Some HMOs design their own formularies while others rely on third parties for formulary design. Regardless of how HMOs design their formularies, there is variation across HMOs in how they make adoption decisions for a given set of drugs. Some formularies are relatively "open" and include almost all FDA-approved drugs.[5] Others are more restrictive, so that their HMOs pay for only one or two out of a class of competing drugs. This

member satisfaction increases by 0.8 percent, then the chances of adoption increase to 78 percent.

Health maintenance organizations tend to favor manufacturers whose representatives pay more visits. If representatives make four additional annual visits, the probability of formulary inclusion increases to 77 percent. This result could reflect endogeneity; that is, drug manufacturer representatives might make more visits to HMOs when they have products with a higher potential for adoption. However, the manufacturers of the drugs that we study sell many drugs besides those we analyze. Thus, we can take the number of visits as exogenous, and we interpret causality as running from visits to adoption. The makeup of the P&T committee and the sources of information that it relies upon also matter. Increasing the relative importance of management opinion versus the published literature by .25 increases the probability of adoption to 73 percent. Replacing two medical personnel on the P&T committee with two nonmedical personnel reduces the likelihood of adoption to 50 percent. This latter finding may reflect Fuchs' "therapeutic imperative"; that is, specialty physicians may argue for the full complement of therapeutic modalities in their specialty available on the formulary regardless of cost.[28]

Lastly, we find that drug sales do not affect adoption decisions, but that drugs with more direct competitors have a greater chance of adoption. The addition of two direct competitors boosts the adoption probability to 69 percent. This is consistent with competition forcing manufacturers to give larger rebates to encourage adoption.

Discussion

Prior to the growth of managed care, pharmaceutical companies directed their marketing efforts at physicians and hospitals. With managed care, pharmaceutical companies found that this was not sufficient. Now, they must convince MCOs to include their drugs on their formularies. Pharmaceutical companies have taken a number of steps to market their products to MCOs, including (1) MCO-specific sales forces, (2) disease-management programs, and (3) the establishment of in-house pharmacoeconomic programs. Managed care has also played a critical role in the development of direct-to-consumer (DTC) advertising. According to some pharmaceutical executives with whom we have spoken, one of the goals of DTC advertising is to get MCO enrollees to pressure their physicians to prescribe, and therein, their MCOs, to pay for

advertised drugs. Despite these efforts, pharmaceutical companies have had mixed success promoting their drugs to MCOs. The fact that some HMOs are willing to pay for drugs while others are not is a challenge for pharmaceutical companies. It is also a concern to patients, albeit not always a perceived one, because their access to drugs may depend on their choice of HMO. To the extent that MCOs believe that they use purely objective cost-benefit analyses to guide adoption decisions, the importance of organizational factors should be a concern.

In this article, we have attempted to identify organizational factors that cause inter-HMO variation in formulary adoption decisions. We studied seven drugs that were not universally adopted upon initial launch. By estimating a fixed drug effects model, we controlled for the overall propensity of HMOs to adopt each drug and examined why there is inter-HMO variation in adoption probabilities for each drug. Our key finding is that organizational characteristics do matter. The ways in which HMOs structure their review process, how they reward their key decision makers, and their relationships with manufacturers all affect adoption decisions. As a result, two seemingly similar HMOs (same size, nonprofit status) will often make different decisions about drug adoption. For example, HMOs with large P&T committees are much less likely to adopt drugs, whereas HMOs that reward their pharmacy directors on the basis of overall medical costs, rather than just pharmacy costs, are more likely to adopt drugs.

We should make several caveats about our findings. First, we only examined HMOs that develop their own formularies. The factors that influence their adoption decisions may differ from those in HMOs that outsource formulary development. Second, we examined a snapshot in time. It is possible that the adoption rates for drugs increase over time. This suggests that it would be valuable to study adoption rates over time as well as in cross-section. Third, we intentionally studied "controversial" drugs; that is, commonly prescribed drugs with variable rates of adoption. Virtually all drugs are less controversial than those that we studied, suggesting that there is substantial agreement among HMO formularies. Fourth, some of our predictor variables, such as the size of the P&T committee, may be endogenous to the overall goals of the HMO. Thus, an HMO that wishes to forestall drug adoption may enlarge its P&T committee. If so, then the observed negative effect of the size of the committee on adoption may be a reflection of the HMO's overall objectives rather than a result of the size of the committee per se. Fifth, even though many of our predictor variables are statistically significant and have substantial magnitudes, our models fail to

explain the majority of the variation among formulary adoption decisions. There are clearly additional sources of variation left to be identified. Finally, we note that since we performed our study, many HMOs have moved to more complex formulary structures, with multiple copayment levels that depend on different levels of "preferred" status. This might make it more difficult to predict whether drugs will be included on a formulary, and at what level of coverage.

What are the implications of our results for pharmacy directors and other participants in formulary adoption decisions? The upward pressure on pharmaceutical costs in managed care will only raise the stakes of formulary adoption decisions. Our findings suggest that many adoption decisions are based on organizational factors, rather than objective cost-benefit analyses. HMOs must review their internal systems to assure that they are making objective assessments of costs and benefits. The upward pressure on drug costs has also pressured some HMOs to adopt more complex drug benefits characterized by, for example, three or more tiers of copayments. At one level, the use of multiple tiers reduces the significance of the initial formulary adoption decision. But, it ushers in more complexity, as pharmacy decision makers must determine both whether to include a drug on their formulary and the appropriate tier on which to put it.

It is reasonable to expect that some level of inter-HMO variation in adoption decisions will persist. The HMOs are unlikely to become the same size, adopt identical objectives, or interpret evidence on drug benefits and costs in the same way. Since variation across HMO formularies is likely to persist, the question arises of its consequences for consumers. Variation in adoption decisions for drugs that have close therapeutic substitutes is unlikely to have important clinical consequences, provided that at least one of the class of drugs is on the formulary. However, variation in adoption decisions for therapeutically unique products may adversely affect some patients, especially if patients are unaware of the drug's formulary status at the time they select their HMO, or are offered no choice of HMO by their employer. Research to determine the medical and economic impact of formulary variation would appear appropriate.

Our findings have relevance to pharmaceutical companies as well. We have shown that some HMOs are harder to "crack" than others, and may require greater sales and marketing effort. At the same time, individual sales personnel should not be penalized if they fail to get adoption at particular HMOs. Relationships between drug manufacturers and HMOs influence adoption decisions. Therefore, investing in these relationships can yield

long-term benefits to pharmaceutical firms. Interestingly, mergers within the pharmaceutical industry can affect adoption decisions by changing personal selling relationships between manufacturers and HMOs.

Although we have not developed or tested a normative model, our findings do have some normative implications. To the extent that there is an "optimal" formulary based on objective benefit-cost data, our findings indicate that some HMOs do not achieve it. Over time, some HMOs may move toward such a formulary by learning from their own experiences and the experiences of others about the effects of organizational factors on adoption decisions. More and better scientific information will also help HMOs develop formularies that best balance benefits and costs.

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Notes

1. Ito and Blackburn (1995) define a managed care formulary as "a listing of prescription medications which are preferred for use by a health plan."
2. Goldberg (1997) discusses the origins of formularies and describes different types currently in use. See Sloan et al. (1993) for a discussion of the effectiveness of hospital formularies.
3. According to one report, in 1997 formularies were a component of more than 90 percent of all managed care plans. See Sax (1999). All of the managed care plans studied by Lyles et al. (1997) report that they use a formulary.
4. A 2000 survey by the Kaiser Family Foundation and the Health Research and Educational Trust reports that 58 percent of workers in HMOs face a formulary that restricts which drugs are covered.
5. Goldberg (1997).
6. Concerns about response rates limited our analysis to seven drugs. We chose large selling drugs because of the heightened interest among pharmaceutical companies and HMOs about the adoption of such drugs.
7. There are many articles describing selective contracting in more detail. For example, see Glied (2000).
8. Taniguchi (1995).
9. Aventis (2000).
10. Browne (1995).
11. Sarpong (1999) documents substantial variation in the training of P&T committee members.