1995

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Marsha R. Gold , Sc.D.
Mathematica Policy Research

Robert Hurley , Ph.D.
Medical College of Virginia, Virginia Commonwealth University

Timothy Lake , M.P.P.
Mathematica Policy Research

Todd Ensor
Mathematica Policy Research

Robert Berenson , M.D.
Georgetown University, Robert Wood Johnson Foundation IMPACS Progrem/CHPS, and the National Capital Preferred-Provider Organization

From The New England Journal of Medicine, Gold, M.R., Hurley, R., Lake, T., et al., A National Survey of the arrangements managed-care plans make with physicians, Vol. 333, Page 1678, Copyright © 1995 Massachusetts Medical Society. Reprinted with permission.

SPECIAL ARTICLES

A NATIONAL SURVEY OF THE ARRANGEMENTS MANAGED-CARE PLANS MAKE WITH PHYSICIANS

MARSHA R. GOLD, SC.D., ROBERT HURLEY, PH.D., TIMOTHY LAKE, M.P.P., TODD ENSOR, AND ROBERT BERENSON, M.D.

Abstract *Background.* Despite the growth of managed care in the United States, there is little information about the arrangements managed-care plans make with physicians.

Methods. In 1994 we surveyed by telephone 138 managed-care plans that were selected from 20 metropolitan areas nationwide. Of the 108 plans that responded, 29 were group-model or staff-model health maintenance organizations (HMOs), 50 were network or independent-practice–association (IPA) HMOs, and 29 were preferred-provider organizations (PPOs).

Results. Respondents from all three types of plan said they emphasized careful selection of physicians, although the group or staff HMOs tended to have more demanding requirements, such as board certification or eligibility. Sixty-one percent of the plans responded that physicians' previous patterns of costs or utilization of resources had little influence on their selection; 26 percent said these factors had a moderate influence; and 13 percent said they had a large influence. Some risk sharing with physicians was typical in the HMOs but rare in the PPOs. Fifty-six percent of the network or IPA HMOs used capitation as the predominant method of paying primary care physicians, as compared with 34 percent of the group or staff HMOs and 7 percent of the PPOs. More than half the HMOs reported adjusting payments according to utilization or cost patterns, patient complaints, and measures of the quality of care. Ninety-two percent of the network or IPA HMOs and 61 percent of the group or staff HMOs required their patients to select a primary care physician, who was responsible for most referrals to specialists. About three quarters of the HMOs and 31 percent of the PPOs reported using studies of the outcomes of medical care as part of their quality-improvement programs.

Conclusions. Managed-care plans, particularly HMOs, have complex systems for selecting, paying, and monitoring their physicians. Hybrid forms are common, and the differences between group or staff HMOs and network or IPA HMOs are less extensive than is commonly assumed. (N Engl J Med 1995;333:1678-83.)

UNDER managed care, the financing and delivery of health care are organized by a single entity. Managed-care plans are classified as health maintenance organizations (HMOs), preferred-provider organizations (PPOs), or various mixes of the two.[1] There are two major forms of HMO: group-model or staff-model HMOs and network or independent-practice–association (IPA) HMOs. Both types are usually at risk for the costs of care and therefore often control costs by requiring patients to be referred to specialists by primary care doctors. The doctors in network or IPA HMOs are usually in independent practice. A PPO, in contrast, consists of a group of doctors who agree to provide services to the plan's patients for discounted fees. Although managed-care plans are growing rapidly in the United States, they are controversial among physicians, who are concerned about their intrusion into medical practice.[2-4] Despite important studies of managed care,[5-7] there is relatively little information on the arrangements managed-care plans make to recruit, pay, and monitor physicians.[8] Much more is known about group or staff HMOs than about newer types, such as network or IPA HMOs and other forms of managed care, which account for much of its recent growth.[6,7,9] In contrast to group or staff HMOs, which use physicians in fully integrated group practices, network or IPA HMOs use community-based physicians in private practice and thus may intrude more on physicians' practices. The early network or IPA HMOs were loosely structured. Fee discounts and utilization review were the main new features.[6] Although many people assume that this loose structure continues today,[10,11] the assumption remains controversial.

To learn more about the arrangements different plans make with physicians, the Physician Payment Review Commission sponsored a telephone survey of managed-care plans, conducted in 1994 by Mathematica Policy Research.[12,13] The survey covered the recruitment of physicians, compensation and financial incentives, and nonfinancial influences on care, including oversight of quality, profiling, practice guidelines, and utilization review.

From Mathematica Policy Research, Washington, D.C. (M.R.G., T.L., T.E.); the Department of Health Administration, Medical College of Virginia, Virginia Commonwealth University, Richmond (R.H.); the Robert Wood Johnson Foundation IMPACS Program/CHPS, Georgetown University, Washington, D.C. (R.B.); and the National Capital Preferred-Provider Organization, Washington, D.C. (R.B.). Address reprint requests to Dr. Gold at Mathematica Policy Research, Suite 550, 600 Maryland Ave., SW, Washington, DC 20024.

Supported by a contract between the Physician Payment Review Commission and the Medical College of Virginia and Mathematica Policy Research. The views expressed in this article are those of the authors and not the Physician Payment Review Commission. Dr. Berenson is medical director and cofounder of the National Capital Preferred-Provider Organization, which was not included in this study.

METHODS

Samples and Response Rates

We restricted the survey to HMOs and PPOs. We used a two-stage selection process in which 20 market areas were chosen, and then a sample of plans operating in these areas was selected.[14] Plans were defined as entities in particular market areas rather than parent corporations. In the first stage, the 54 largest metropolitan areas (where 86

percent of HMO enrollees reside) were stratified according to size (under 1 million people or 1 million or more) and managed-care penetration (under 30 percent, 30 to 49 percent, or 50 percent or more). Within these strata, individual market areas were selected at random. The probability that any given metropolitan area would be selected was proportional to the size of its managed-care enrollment.

In the second stage, we selected one sample each of group or staff HMOs, network or IPA HMOs, and PPOs. An HMO was classified as a group or staff plan or as a network or IPA plan, and HMOs with more than one type of model were classified according to which type predominated, as reported in the Group Health Association of America's *National Directory of HMOs*.[14]

Although HMOs and PPOs enroll about the same number of people nationwide, we limited the PPO sample to 30 percent of the total, because PPOs have less diverse and less developed managed-care features than HMOs. We established the size of the group or staff HMO sample and the network or IPA HMO sample on the basis of their shares of total nationwide HMO enrollment (39 and 61 percent, respectively). The probability that a given plan would be selected was generally proportional to the size of the plan within its market. However, we did seek a minimum of one plan of each type from each market. Selecting the PPOs was complicated by the absence of a good list of PPOs from which to sample and by the need to obtain preliminary information by telephone.

Although the original sample consisted of 146 plans, the effective sample was 138 plans, because 5 also offered HMO products and thus were already in our study through the HMO sample and 3 had merged. The overall response rate was 78 percent: 78 percent for the group or staff HMOs, 83 percent for the network or IPA HMOs, and 70 percent for the PPOs (which were surveyed last). National data show that the HMOs that responded were generally similar to those that did not, except that the response rates were lower (17 of the 31 HMOs, or 55 percent) for the plans owned by commercial insurers.

Questionnaire

All plans received the same questionnaire, which contained more than 300 items. It was developed on the basis of a literature review and advice from a panel of researchers and experts in the delivery of managed care.

The plans were surveyed between June and September 1994. Each received a letter on Physician Payment Review Commission letterhead along with a list of panel members and letters of endorsement from industry trade associations. The respondents were senior clinical managers designated by the chief executive officers of the plans. Because of the length of the questionnaire, we allowed up to three respondents, whose areas of knowledge corresponded to the three major areas surveyed.

Sources of Error and Bias

Our results are limited in that they are based on what the respondents said rather than on an audit of what they do, how well they do it, and how strongly the plans' arrangements influence the practice of physicians. Any bias in the results probably arises from overreporting of managed-care approaches, especially those regarded as desirable.

The findings are reported according to the type of plan. Because of the small sample, we mention only differences that are large and that show a consistent trend across similar variables. Statistically significant differences were determined with use of the chi-square test.[15] Smaller plans are underrepresented relative to their number but are not underrepresented relative to their share of national managed-care enrollment.

Results

Table 1 shows the characteristics of the 108 study plans. Together they enrolled 33.5 million people; 15.2 million of these were in HMOs, representing 35 percent of the national HMO enrollment of 41.3 million people when the sample was selected. The plans usually had at least 100,000 members, and often more than 250,000.

Table 1. Characteristics of 108 Managed-Care Plans.

Characteristic	All Plans (N = 108)	Group or Staff HMOs (N = 29)	Network or IPA HMOs (N = 50)	PPOs (N = 29)
	percent			
Enrollment*				
<50,000	17	34	12	7
50,000–99,999	15	14	14	17
100,000–249,999	24	31	20	24
≥250,000	44	21	53	52
First year of operation				
Before 1970	10	34	0	3
1970–1979	26	41	30	0
1980–1984	24	14	18	45
1985–1989	35	7	48	41
1990 or later	4	3	2	10
For profit	59	34	74	72
Ownership				
Commercial insurer	8	7	10	7
Blue Cross–Blue Shield	16	10	20	14
National HMO or managed-care company	24	34	28	7
Other†	52	48	42	72
Federally qualified HMO‡	64	83	57	—
Managed-care penetration in market§				
Low (<30%)	28	24	26	34
Medium (30–49%)	23	24	20	28
High (>49%)	49	52	54	38
Market size				
<1 million	19	17	16	28
≥1 million	81	83	84	72

*Plans were asked to provide enrollment figures according to the benefit plan offered. For PPO and other point-of-service benefit plans, plans could provide the number of persons covered or the number of subscribers. To convert the number of subscribers to the number of persons, we used the ratio of 2.2 persons per subscriber, which is published by the Group Health Association of America.

†Other includes other national companies, independent owners, joint ventures, physician owners, community or regional groups, hospitals, and other nonprofit groups.

‡Federal qualification is generally not applicable to PPOs, except for the few that offer HMO products.

§Market penetration is the percentage of the area's population enrolled in managed-care plans.

Nearly all had been formed before 1990, and many before 1980. For-profit plans accounted for 59 percent of the sample and for about three quarters of the network or IPA HMOs and the PPOs.

Forming and Maintaining the Network

When asked which of three statements best characterized their policy on selecting physicians, most respondents chose "careful selection" (71 percent) rather than "prune later" (18 percent) or "as broad as feasible" (11 percent). Some plans (38 percent) were subtracting physicians ("tightening" the network), and others (43 percent) were adding physicians ("widening" the network). The group or staff HMOs were somewhat more likely to report widening their networks (51 percent) than the network or IPA HMOs (42 percent) or the PPOs (34 percent).

Table 2 summarizes the procedures used in recruiting physicians. When selecting physicians, the group or staff HMOs tended to have more demanding requirements than the other types of plan. Ninety percent of group or staff HMOs, but only 48 percent of the network or IPA HMOs and 41 percent of the PPOs, required board certification or eligibility. Both types of HMO were more

Table 2. Procedures Used by Managed-Care Plans to Recruit Physicians.

Procedure	All Plans (N = 108)	Group or Staff HMOs (N = 29)	Network or IPA HMOs (N = 50)	PPOs (N = 29)
		percent		
Selecting physicians				
Require board certification or board eligibility*	57	90	48†	41†
Require privileges at network hospital or ability to obtain them	82	86	88	69‡
Require agreement to take predetermined number of patients or not to practice outside plan§	37	48	48	7†¶
State that the effect of previous costs or utilization patterns on the decision was large	13	4	18‖	14
Contracting with physicians				
Verify license and credentials**	100	100	100	100
Consult National Practitioner Data Bank, sources on substance abuse, or both	92	86	94	93
Visit physician's office, review facility, and screen care through medical records††				
Do all three	43	38	66‖	7†¶
Do none of these	27	34	8†	52¶
Review quantitative data from indemnity claims, hospital-discharge data, or both	37	24	38	48‖
Meeting four criteria for orienting new physicians‡‡	30	69	22†	3†‡

*Other plans may allow exceptions.

†P<0.01 for the comparison with group or staff HMOs.

‡P<0.10 for the comparison with network or IPA HMOs.

§Only 100 plans responded (27 group or staff HMOs, 45 network or IPA HMOs, and 28 PPOs).

¶P<0.01 for the comparison with network or IPA HMOs.

‖P<0.10 for the comparison with group or staff HMOs.

**Only 102 plans responded (25 group or staff HMOs, 48 network or IPA HMOs, and 29 PPOs).

††Because they are much more likely to hire than to contract with physicians who practice in their facilities, group or staff HMOs may find these steps unnecessary or address the underlying concerns in different ways (e.g., by contacting references).

‡‡The four criteria are as follows: plan has orientation meetings specifically for medical staff, 75 percent or more of physicians participate, top management is involved, and less than 75 percent of time is devoted to administrative issues. Of all plans, 5 percent met none of the criteria, 17 percent one, 23 percent two, 26 percent three, and 30 percent four.

likely than the PPOs to require that new physicians either have privileges at network hospitals or be able to obtain them. Both types of HMO were also more likely than the PPOs (48 percent vs. 7 percent) to require physicians to provide care for a predetermined number of patients or to practice only within the plan.

A minority of the plans (37 percent) used quantitative information about physicians' performance and practice style in selecting new physicians. However, 63 percent of all the plans and 73 percent of the network or IPA HMOs took into account qualitative information, such as professional reputation and patterns of care. When asked how much previous patterns of costs or utilization of resources influenced the selection of physicians, 61 percent of the respondents characterized the influence as small, 26 percent as moderate, and 13 percent as large.

Before signing a contract with a new physician, virtually all plans verified the physician's license and credentials, and almost all screened for reportable disciplinary actions, substance abuse, or similar problems. Sixty-six percent of the network or IPA HMOs visited the physician's office, reviewed whether the facility met set standards, and screened care by reviewing medical records. Only 7 percent of the PPOs took all these steps, and 52 percent took none of them.

Ninety-three percent of the plans had a formal process for recredentialing physicians, although 62 percent began to do this only in 1991 or later. Rates of physician turnover were low and were consistent with those in other recent studies.[16] Sixty-seven percent of the group or staff HMOs, 79 percent of the network or IPA HMOs, and 86 percent of the PPOs had an annual turnover rate (including both voluntary and involuntary departures) of 5 percent or less. The higher rate of turnover in the group or staff HMOs resulted from the turnover of newly hired physicians in their first two years of employment. The group or staff HMOs were more likely to have extensive orientation programs for new physicians than were the network or IPA HMOs or the PPOs.

Risk Sharing, Payment, and Financial Incentives

Risk sharing with physicians was usual in both types of HMO but rare in the PPOs (Table 3). Among the network or IPA HMOs, 84 percent had some sharing of risk with primary care physicians; 56 percent used capitation as a primary method of payment; and 28 percent used fee-for-service payments in some form along with withholding or bonuses. In contrast, only 20 percent of the network or IPA HMOs used capitation as a predominant method of payment for individual specialists; 54 percent had some form of risk sharing with specialists, 47 percent used capitated payment for certain specialties, and 33 percent used competitive bidding to obtain some specialty services. The specialties in which physicians were most commonly paid on a capitated basis were cardiology, mental health, radiology, orthopedics, and ophthalmology. The group or staff HMOs paid primary care physicians on a salary or capitated basis, but fewer than half did the same for specialists (data not shown). The PPOs primarily used fee-for-service payments.

Most of the HMOs adjusted payments to primary care physicians to create performance-based incentives. Fifty percent of the group or staff HMOs and 74 percent of the network or IPA HMOs adjusted payments according to utilization and cost patterns. More than half of the group or staff HMOs and the network or IPA HMOs adjusted payment on the basis of patients' complaints and measures of the quality of care. The group or staff HMOs were more likely than the network or IPA HMOs to reward productivity and ten-

ure in the plan, whereas the network or IPA HMOs were more likely to adjust payments according to the results of consumer surveys.

Practice and Utilization Management

The plans used several different nonfinancial methods to influence medical practice (Table 4). Ninety-two percent of the network or IPA HMOs and 61 percent of the group or staff HMOs required patients to select a primary care physician, who was responsible for most referrals to specialists.

More than 95 percent of the HMOs and 62 percent of the PPOs had a written quality-assurance plan, a quality-assurance committee, and a patient-grievance system. Seventy-nine percent of the group or staff HMOs and 70 percent of the network or IPA HMOs required outcome studies for particular clinical conditions, had targeted quality-improvement initiatives, and used outcome studies to identify needs for improvement and to gauge success. Studies of the treatment of asthma and diabetes and the use of mammography were the most common. Sixty-nine percent of the group or staff HMOs and 80 percent of the network or IPA HMOs used physician profiles and applied them. Substantially fewer PPOs than HMOs used outcome studies (31 percent) or physician profiles (45 percent) in this way.

Table 3. Procedures Used by Managed-Care Plans to Pay Physicians.

Procedure	All Plans (N = 108)	Group or Staff HMOs (N = 29)	Network or IPA HMOs (N = 50)	PPOs (N = 29)
		percent		
Primary care physicians				
Predominant payment for sole or largest benefit plan involves:				
Some sharing of risk with providers*	60	68	84	10†‡
Capitation as predominant method	37	34	56§	7†‡
Salary with no withholding or bonus	8	28	2‡	0‡
Fee for service with no withholding or bonus	31	3	12	90†‡
Basis of payment adjustment¶				
Utilization or cost measures	57	50	74§	34†
Patient complaints or grievance	49	57	61	21†‡
Quality measures	46	54	64	7†‡
Consumer surveys	36	37	55	3†‡
Provider productivity	24	43	26	3†‡
Enrollee turnover rate	21	11	36§	3†
None of above	28	29	14	55†§
Financial reward given for devoting a higher percentage of time to plan, increasing number of patients, longevity, exclusivity, or willingness to provide a wider range of services‖	52	69	64	14†‡
Specialty physicians				
Predominant payment for sole or largest benefit plan involves:				
Some sharing of risk with providers* **	43	59	54	3†‡
Capitation as predominant method	18	31	20	0†‡
Salary with no withholding or bonus	6	17	2§	0§
Fee for service with no withholding or bonus	52	24	42	97†‡
Capitation for individual specialties, pooled capitation across specialties, risk sharing based on withholding or bonuses, or competitive bidding				
Any of above	69	97	86	10†‡
Capitation for individual specialties	42	69	47	7†‡
Competitive bidding	28	31	33	17

*Physicians are paid some form of capitation (with or without other withholding or bonuses), or withholding or bonuses are applied to salary or fee-for-service arrangements. Withholding is similar to a bonus, except that funds are initially withheld and then returned in part or in whole at the end of the payment period.

†$P<0.01$ for the comparison with network or IPA HMOs.

‡$P<0.01$ for the comparison with group or staff HMOs.

§$P<0.10$ for the comparison with group or staff HMOs.

¶The number of plans responding to this item ranged from 104 to 106 (27 to 29 group or staff HMOs, 48 or 49 network or IPA HMOs, and 29 PPOs).

‖This question did not refer specifically to primary care physicians, but these approaches are most relevant to them.

**Only 107 plans responded (29 group or staff HMOs, 49 network or IPA HMOs, and 29 PPOs).

Practice guidelines were used less often than outcome studies or physician profiles. About three quarters of the HMOs and 28 percent of the PPOs used formal, written practice guidelines. These most commonly applied to childhood immunizations, the management of asthma, mammographic screening, and screening for colorectal cancer. Almost all plans had procedures for utilization review. In most plans, patient-level claims or encounter data on physicians' services and other ambulatory care services were collected even when providers were paid on a capitated or salaried basis. But physicians submitted more than 90 percent of encounter forms (dummy claims) in only a minority of plans. Such information is less likely to be available in the network or IPA HMOs than in the group or staff HMOs.

Similarities among HMO Plans

There were many similarities in structure between the group or staff HMOs and the network or IPA HMOs. Fifty-five percent of the plans identified as group or staff HMOs were actually mixed models, with traditional HMO coverage provided by a network or IPA. Only 59 percent of the group or staff HMOs used physicians in large multispecialty groups to provide care to more than two thirds of their enrollees. Moreover, only 44 percent reported that their members made up 80 percent or more of the practice of a typical physician in their plan, whereas 45 percent of the network or IPA HMOs reported that their members accounted for at least 20 percent of a typical physician's practice.

Discussion

Our findings indicate that managed-care plans have complex systems for recruiting physicians, paying them, and monitoring their performance. Such systems are much more likely to be found in HMOs than in PPOs, perhaps because purchasers have recently encouraged the accreditation of such plans by the National Committee for Quality Assurance.[17]

Our study is descriptive, and the data come from un-

Table 4. Procedures Used by Managed-Care Plans to Monitor Practice and Utilization.

Procedure	All Plans (N = 108)	Group or Staff HMOs (N = 29)	Network or IPA HMOs (N = 50)	PPOs (N = 29)
		percent		
Clinical structure (traditional HMO benefit plans)				
Plan generally holds primary care physicians responsible for referral to most specialists	94	96	92	—*
Patients are required to select an individual primary care physician†	82	61	92‡	—*
Medical management				
Quality structure				
Plan has a quality-assurance document, quality-assurance committees, and active patient-grievance procedures	87	97	96	62‡§
Quality monitoring and focused studies				
Plan requires clinically focused or outcome studies for specific clinical conditions and targeted quality-improvement initiatives, and uses them to identify needed improvements and to gauge success¶				
All of the above	62	79	70	31‡§
Focused studies conducted regularly	83	100	96	45‡§
Profiling				
Plan uses profiling, provides physician feedback, and identifies areas for system-wide improvement‖				
All of the above	68	69	80	45§**
Any use of profiles	74	76	86	52§**
Practice guidelines				
Plan uses established, formal, written practice guidelines, does so fairly extensively (in more than a few areas), monitors compliance, and meets with physicians to review results††				
All of the above	26	31	34	7§**
Any use of guidelines	63	76	76	28‡§
Utilization review				
Preadmission review for all nonemergency admissions, concurrent and retrospective review, discharge planning (that does not rely on hospital staff), and ambulatory review for resource-intensive services‡‡				
At least four of five	62	72	70	37‡§
Any of the above	95	97	100	86§
Data				
Plan maintains patient-level claims or encounter data base for hospital stays	91	90	100**	76§
Plan has patient-level claims or encounter data base for in-plan physician and other services, requires dummy claims or encounter forms, and estimates that ≥90% of encounter forms are submitted				
Requires data base	88	93	94	72§**
Requires data base with dummy claims§§	74	82	69	—*
Requires data base with dummy claims§§ and ≥90% of encounter forms submitted	24	39	13**	—*

*Only applicable to six PPOs with traditional HMO benefits.

†Only 107 plans responded (28 group or staff HMOs, 50 network or IPA HMOs, and 29 PPOs).

‡$P<0.01$ for the comparison with group or staff HMOs.

§$P<0.01$ for the comparison with network or IPA HMOs.

¶Clinically focused studies were defined as studies of performance of patient outcomes in areas such as childhood immunization, pregnancy, diabetes, breast cancer or mammography, lead toxicity, and sickle cell disease. One of the items specified that these must be done on a regular basis.

‖Profiling was defined as examining patterns of practice through various use or outcome rates aggregated over time for a defined population of patients and comparing them with other practice patterns.

**$P<0.10$ for the comparison with group or staff HMOs.

††Practice guidelines were defined as an explicit statement of what is known and believed about the benefits, risks, and costs of particular courses of medical action to assist decisions about appropriate health care for specific clinical conditions.

‡‡Respondents were asked to characterize their process for preadmission review in various ways. Those not counted as "yes" include, for example, those in which no specific action is needed, although the pattern may be monitored, those in which an intermediate entity or patient is responsible for preadmission review, and those covering only some nonemergency admissions.

§§If applicable (excludes those using fee for service as the predominant way of paying primary care and specialty physicians in the sole or largest benefit plan).

audited reports from the plans themselves. Thus, it can offer little insight into how the arrangements between physicians and managed-care plans influence the accessibility, cost, or quality of care.

Our findings do suggest, however, that many of the differences between specific HMOs cannot be explained by their classification as group or staff HMOs or as network or IPA HMOs. The Congressional Budget Office's estimates assume that most cost savings attributable to HMOs result from group or staff plans, not from network or IPA plans, on the basis of the belief that most network or IPA HMOs do not create the conditions on which savings depend[10,11]: "These conditions include [the presence of] cost conscious providers, an effective network for information and control, [placing] providers at financial risk, and [generating] a substantial portion of each provider's patient load."[10] We found that many large network or IPA HMOs met at least some of these conditions and that the two types of HMO did not differ from one another as much as is often assumed. Diversity in managed care occurs within as well as across types of plans.

Common arrangements between managed-care plans and physicians appear to result in less independence and less control over income and practice for physicians. Nonetheless, the emphasis on outcome studies

and enrollee-based clinical information may have beneficial effects for plan members, because this approach accounts for those who do not use services as well as those who do.

We are indebted to Jack Hoadley of the Physician Payment Review Commission for his guidance and support; to the following staff members at Mathematica Policy Research: Lyle Nelson for reviewing the research, Linda Mendenko for supervising the survey, Daisy Ewell and Susan Thomas for programming support, Barbara Foot and DeWayne Davis for coordinating production, Daryl Hall for editing the manuscript, and Kathleen Donaldson for assistance in the preparation of the manuscript; to the managed-care plans that participated in the study; to the Group Health Association of America, the American Managed Care and Review Association, and the American Association of Preferred Provider Organizations; to the expert panel of clinical leaders in managed care; and to Paul Ginsburg of the Center for Studying Health Systems Change for reviewing the manuscript.

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