Physicians' Reports of Their Experience With Health Plan Care Management Practices

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Objective: To determine the availability of care management practices in various practice settings, the degree to which physicians report that these practices are useful, and whether physicians' reports vary by their relationships with health plans.

Study Design: Cross-sectional survey.

Participants: In 2001, we surveyed generalist and specialist physicians serving commercial, Medicaid, and Medicare patients. This report focuses on the responses of 2134 physicians (1252 generalists, 882 specialists) who contracted with independent practice associations and preferred provider organizations.

Measures: Physicians were asked about the availability, accuracy, and usefulness of specified care management practices. The responses were analyzed according to their relationships with their health plan.

Results: Generalists, physicians with a higher percentage of health plan patients, and physicians who reported that health plans sought their views were more likely to report that they used care management practices. The majority who used these practices found them somewhat or very useful. Guidelines and disease management were among the most commonly available and most highly rated care management practices. Physicians' ratings of the usefulness of practice reports were associated with their perceptions of the reports' accuracy and with whether health plans sought their views on other aspects of the care management process.

Conclusion: The stronger a physician's relationship with a health plan, the more positive the physician's experience with care management practices and policies was. The concordance between the types of available practices and physicians' ratings suggests that health plans and physicians agree about how to improve the quality of care.

(Am J Manag Care 2003;9:SP100-SP110)

Health plans vary in their overall and relative use of different care management practices.[1,2] In general, primary care physicians are more exposed to these practices than specialists, and the use of these practices has increased over time.[3] Many care management practices were developed and have been extensively used in group-/staff-model HMOs.[4] The group/staff environment facilitated the development of these practices because of the close interaction among physicians, because a high volume of the physicians' patients come from the health plan, and because HMOs have a vertically integrated organizational structure with a financial incentive to practice cost-effective care.[5-8] Although care management practices are still widely used in the group/staff environment, less is known about their use in independent practice associations (IPAs) and preferred provider organizations (PPOs), where there is not as much interaction among physicians, where physicians do not have as great a volume of patients from any single health plan, and where the organization is more virtually than vertically integrated.[8] Understanding the effect of physician–health plan relationships on physicians' experiences with care management practices is important because IPAs and PPOs grew rapidly throughout the 1990s, coming to be the most common form of managed care health plans.[9] This study explores how the physician–health plan relationship within IPAs and PPOs affects physicians' experience with and assessment of different care management practices.

A key aspect of the physician–health plan relationship is a physician's practice volume with the health plan. As volume increases, it becomes less

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Preparation of this article was assisted by grant 32366 from The Robert Wood Johnson Foundation, Princeton, NJ.

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costly for health plans, on a per patient basis, to work with a physician to ensure that relevant patient information is available and care management practices are in use. Physicians with a higher volume of patients from a health plan also may have a greater willingness to cooperate with a health plan's attempts to support care through dissemination of information and care management policies and practices. Previous research found that a physician's perceptions of managed care plans are positively associated with the volume of practice from these plans.[10-13] A limitation of this research is that it focused on the relationship between the volume of a physician's patients with a health plan and an attitudinal or evaluative measure such as recommending a health plan or perceived quality of care. Although this paper examines evaluative measures (eg, reported usefulness), it extends the existing literature by examining the effect of volume of patients with a health plan on physicians' experience with care management practices. We expected a higher volume of patients to have a positive effect on that experience.

A similar argument can be made about the duration of a physician's relationship with a health plan. A long relationship between a physician and health plan may signify a good match. A long relationship also allows a physician to become accustomed to health plan care management practices. Among specialists, greater length of time with a health plan is significantly correlated with overall positive attitudes toward gatekeeper-based plans.[10,11] A separate study of generalists did not find an association between the number of years contracted with a plan and satisfaction with the plan.[14] One study of physicians' experiences with guidelines suggested that physicians' perceptions of them became more negative with time. These physicians became increasingly concerned that the purpose of the guidelines was to save money rather than improve quality.[15] This latter effect may moderate the positive effect of the duration of the relationship between a physician and a health plan.

Although volume and duration are likely to affect a physician's experience with health plan care management practices, they do not capture how the health plan interacts with its physicians. This interaction process also is likely to influence a physician's receptivity to health plan practices. In general, physicians are more accepting of educational than regulatory strategies for changing their behavior.[14] Physicians also hold more positive views of care management practices when they are given an opportunity to participate in their development or implementation.[16] These arguments suggest that when physicians perceive a health plan is seeking their views, they will be more receptive to that plan's practices.

Another potential barrier to physicians' receptivity to health plan care management practices is the physicians' perception of the validity or accuracy of those practices. There is widespread concern among physicians, for example, that practice reports often contain errors[17] that may result in the reports not being regarded as useful. We expect physicians' opinions regarding the accuracy of practice reports to be positively associated with their beliefs about the usefulness of these reports.

METHODS

Population and Sample

As a part of a larger study of physicians' perceptions of health plans, we collected and analyzed information on physicians' experiences with plan care management practices. In 2001, we surveyed generalist and specialist physicians serving commercial, Medicaid, and Medicare patients in 23 health plans in 6 geographic areas: Seattle, New York City, Miami, Pittsburgh, Philadelphia, and Denver. This study focuses on physicians associated with 19 IPA and PPO type health plans. Details regarding the performance of the survey and the items in the questionnaire have been described elsewhere.[18-20] In brief, we worked with purchaser partners and health plans to obtain lists of physicians associated with plans. The survey was mailed without a financial incentive to 11 453 generalist and specialist physicians listed as having managed care contracts with the selected health plans. We sampled up to 300 generalists and 300 specialists from each plan. Generalists were physicians the health plan contracted with and listed in their directories as primary care providers, and specialists were other physicians. Mail and telephone mixed-mode survey administration was used in this study.[21]

The overall number of physicians responding was 3798. The overall response rate for the survey was 36%, with a generalist response rate of 39% and specialist response rate of 32%. Overall response rates for health plans ranged from a low of 22% in a Medicaid and a Medicare health plan to a high of 61% in a large group-/staff-model HMO. Physicians in commercial health plans had higher response rates than physicians in Medicare or Medicaid health

plans, and generalist response rates were higher than those of specialists. These overall response rates are conservative estimates because the denominator used in the calculations was the total number of physicians sampled from a health plan list. Our telephone interviews suggest that the sampling lists, as provided by health plans, included physicians who were not associated with the health plan and individuals who were not physicians. The reliability of the lists varied across sites and by type of health plan. Group/staff plan lists tended to be better, and Medicaid plan lists were worse. Taking this variation into account, we estimated that the overall response rate for eligible physicians (those that a telephone survey would show were associated with a health plan) was between 41% and 45%.

Measures

Physicians were asked about their experience with a specifically named health plan in a questionnaire that was designed to measure experience by resource area (ambulatory care, pharmacy, hospital) and by the way the care management tool affects care delivery.[18] The latter was based on the PRECEDE model, which focuses on enabling, reinforcement, and predisposing aspects of behavior.[22,23] Enabling effects "are skills, resources, or structural barriers that facilitate or prevent behavior."[23(p2021)] We asked physicians about (1) reminders, (2) patient-specific drug information, (3) guidelines, and (4) disease management. Reinforcing effects provide feedback to providers about their performance. We asked physicians about specific types of practice reports: (1) use of referrals or tests; (2) provision of specific preventive care services (childhood immunizations, mammography, blood sugar levels for diabetic patients, and blood pressure levels for hypertensive patients); (3) patient satisfaction; (4) prescription drug use by cost or in accordance with guidelines; and (5) hospital admissions and lengths of stay. Predisposing effects refer to general education and training programs. We asked physicians whether they received (1) plan-provided opportunities for continuing medical education, (2) training in avoidable hospital admissions, and (3) plan-provided information to assist them in responding to patient questions about direct-to-consumer advertised drugs.

In all 3 domains, the questions reflected health plan care management practices in 3 resource areas (ambulatory care, pharmacy, hospital). The question wording was designed to fit both the situation of a health plan directly carrying out a care management practice or a health plan delegating the responsibility for carrying out a care management practice.[18,19] For a subset of the care management practices, physicians who answered that a particular care management practice was available were asked to rate on a 4-point Likert scale whether they found the practice useful (not at all useful, not very useful, somewhat useful, very useful). The items regarding guidelines and disease management allowed physicians to respond that the practice was not available, available but not used, or available and used. Only subjects who chose the last response were asked to rate usefulness. Physicians who reported that they received practice reports also were asked to rate how accurate they thought the reports were on a 4-point Likert scale (very inaccurate, somewhat inaccurate, somewhat accurate, very accurate).

The survey collected information about 3 aspects of a physician's relationship with a health plan: (1) the number of years a physician had a contract with a specified health plan; (2) the percentage of patients in the physician's practice from the specified health plan, categorized as fewer than 1%, 1%-5%, 6%-10%, 11%-25%, or more than 25%; and (3) whether the health plan sought the physician's views on the formulary and/or hospital quality.

Study physicians also were asked about their personal characteristics, specialty, board certification, years in practice, practice type (solo, single-specialty group, multispecialty group), workload (hours worked per week, number of patients seen per day), and participation in administrative work. These variables were used as control variables in the analysis.

Analysis of Care Management Practice Receptivity

We compared the mean experience of physicians with plan care management practices using 3 dichotomized physician–health plan measures: (1) whether or not the physician had a contract with the plan for fewer than 6 years (mean among all physicians); (2) whether or not more than 5% of the physician's practice was derived from the health plan; and (3) whether or not the health plan sought the physician's views on the formulary or hospital quality. Means were calculated separately for generalist and specialist physicians.

We used multivariate logistic regression to determine whether a physician's relationship with a health plan was associated with the perceived availability of care management practices. We tested the hypotheses that physicians who had a longer working relationship with a health plan, who had a

greater percentage of their patients from the health plan, and whose views were sought were more likely to report the availability of care management practices. The number of years with a health plan contract was entered as a continuous variable. The percentage of patients from the plan was entered as an ordinal variable that corresponded to the questionnaire response categories for this item. The tendency for health plans to seek physicians' views was entered as 2, 1, or 0 depending on whether physicians reported that a health plan sought their views on both the formulary and hospital quality, on just one of these areas, or on neither area.

The multivariate models were estimated by using Stata statistical software (Stata Corporation, College Station, Tex). The cluster option was used to account for the correlation of the error term within health plans, and the robust option was used to obtain Huber-White corrected estimates of the variances.[24] All estimated models controlled for physician demographics, training, and practice characteristics, and whether a physician was a specialist.

Table 1. Physician Characteristics by Specialty

Characteristic	All Physicians (n = 2134)	Generalists (n = 1252)	Specialists (882)
Demographics			
Mean age (y)	47	46	48
Sex (% male)	75	70	82
Race (%)			
African-American	2	3	1
Asian	8	9	7
White	84	81	89
Other	5	7	3
Latino (%)	7	9	6
Training			
Board certified (%)	92	90	95
Mean number of years as physician	20	19	21
Practice (%)			
Practice organization			
Solo practice	30	28	33
Single-specialty group practice	49	48	49
Multispecialty group practice	21	24	18
Mean number of hours per week	48	46	52
Mean number of patients per day	22	23	22
Participate in administrative work (%)	20	21	18
Physicians contracting with:			
No other health plans	2	3	1
1 other health plan	2	2	1
2 other health plans	4	4	3
>2 other health plans	93	91	95
Health plan relationship			
Mean number of years with health plan	6	6	7
Percentage of physicians by percentage of health plan patients in practice			
<1%	10	10	11
1%-5%	34	31	38
6%-10%	29	28	30
11%-25%	17	18	16
>25%	10	13	6
Percentage of physicians reporting that health plan seeks their views on formulary and/or hospital quality	7	8	4

Analysis of Care Management Practice Usefulness

We used a similar methodologic procedure for examining physician ratings of a care management practice as useful. However, caution must be used in interpreting the predictors of physicians' ratings of usefulness, as they are conditional on physicians' reporting that they used a specified practice. This question structure was deliberately chosen to minimize physician survey burden and because it was felt that some portion of the physicians not using the tool would not have the expertise to say how useful the tool was. For analyses of physicians' ratings of the usefulness of care management practices, the response options of somewhat and very useful were combined and compared with the combined response choices of not very and not at all useful.

For practice reports, we also tested the hypothesis that physicians who rated these reports as more accurate were more likely to rate care management practices as somewhat or very useful. To avoid losing cases where physicians responded to the usefulness questions but responded "don't know" to the corresponding accuracy question, we used Stata's impute procedure to impute an accuracy measure.

We included an indicator variable set to 1 when an imputed value was used and 0 otherwise. The imputation regressed the nonmissing accuracy responses on all independent variables and imputed a value for report accuracy as the predicted value plus a normal random number (mean = 0, standard deviation = 1) times the prediction error. The analysis was done separately for each question that included accuracy as an independent variable. Of the accuracy ratings, 23% (124 of 535) were imputed for referral/test use reports, 16% (66 of 420) for preventive care rates, 18% (66 of 371) for patient-specific pharmacy reports, 24% (101 of 425) for pharmacy use reports, and 22% (39 of 178) for hospital use reports. We included an indicator variable set to 1 when an imputed accuracy value was included in the model. This methodology partitions the accuracy effects into 2 components—the level of accuracy if it was supplied by the respondent (the responses and imputed values) and whether a physician offered an assessment of the accuracy of a report.

RESULTS

From physicians associated with IPAs and PPOs, we obtained 2134 completed questionnaires (1252 from generalists and 882 from specialists) that had data on all the independent variables used in the analysis. Physicians varied in the number of questions they responded to. Study physicians were more likely to include generalists, Latino physicians, younger physicians, physicians with a higher volume of patients associated with the health plan, and physicians who contracted with fewer health plans. There were no differences by sex, race, board certification, or practice organization [solo, single specialty, multispecialty]. The mean age of respondents was 47 years, 75% were men, and the majority were white (**Table 1**). Approximately 40% of the respondents were specialists. Physicians had worked with a plan for an average of 6 years. A little more than half reported that more than 5% of their practice was derived from the specified health plan, and 7% said that health plans sought their views regarding the formulary and/or hospital quality.

As hypothesized, generalist physicians with lengthier relationships with their health plan, with a higher percentage of health plan patients, and whose views were sought were more likely to report that they were exposed to care management practices (**Table 2**). For example, 63% of generalist physicians who had a contract with a health plan for 6 or more years reported that reminders were available to them compared with only 51% of generalists whose health plan contract was for fewer than 6 years. The associations between health plan relationship variables and availability of care management practices were less consistent among specialists (**Table 3**). However, both generalists and specialists who reported that health plans sought their views were more likely to report that care management practices were available. Guidelines and disease management were among the most commonly available care management practices for generalists and specialists.

After adjusting for physician personal characteristics, training, practice characteristics, and health plan relationship variables, generalist physicians were still more likely than specialists to report that each care management practice was available (**Table 4**). Except for information on direct-to-consumer advertised drugs, generalists and physicians who derived a greater percentage of their practice from the health plan were significantly more likely to report the availability of a care management practice. The elasticity shows the effect of a 1-unit increase in the volume measurement on availability of a care management practice. Inferences from models estimated using indicators for each volume level were similar. Physicians who reported that health plans sought their views also were more likely to report the availability of all the care management practices included in this survey. For most of the practices, there was a small positive association between the availability of the practice and the number of years a physician contracted with the health plan, but this association did not reach statistical significance.

In most cases, the majority of physicians who reported the availability of a specific care management practice also reported that practice as somewhat or very useful (**Table 5** and **Table 6**). Generalists gave their most favorable ratings to guidelines and disease management programs. In addition to guidelines and disease management programs, specialists were positive about practice reports and drug information. Among generalists, those who reported that health plans sought their views also were more likely to say that most care management practices were useful. This difference was not found among specialists. There were few consistent differences in the ratings of the usefulness of care management practices by generalists and specialists based on the length of a physician's relationship with a health plan or on the percentage of a health plan's patients in a physician's practice.

Table 2. Generalist Physicians Reporting Availability of Care Management Practices by Health Plan Relationship

	No. (%) of Generalist Physicians					
	Years With Plan		% Patients From Plan		Plan Seeks Views	
Care Management Practice	<6	≥6	≤5	>5	No	Yes
Enabling						
Reminders	731 (51)	421 (63)	472 (47)	680 (61)	1057 (53)	95 (82)
Patient-specific drug information	720 (23)	417 (32)	467 (24)	670 (28)	1044 (24)	93 (52)
Guidelines	741 (79)	428 (84)	482 (77)	687 (84)	1074 (79)	95 (97)
Disease management	741 (67)	428 (71)	482 (64)	687 (72)	1074 (67)	95 (89)
Reinforcement						
Referral or test reports	716 (33)	421 (49)	462 (35)	675 (42)	1046 (37)	91 (64)
Preventive care reports	611 (21)	334 (41)	401 (20)	544 (34)	874 (26)	71 (61)
Patient satisfaction reports	728 (16)	416 (34)	472 (12)	672 (31)	1053 (20)	91 (53)
Prescription drug reports	722 (24)	417 (40)	468 (23)	671 (35)	1046 (27)	93 (60)
Admissions/LOS reports	734 (10)	422 (22)	475 (07)	681 (19)	1062 (11)	94 (47)
Predisposing						
CME	718 (20)	420 (33)	468 (17)	670 (30)	1045 (22)	93 (54)
Training in avoidable admissions	728 (03)	422 (07)	475 (03)	675 (06)	1057 (03)	93 (26)
Advertised drug information	733 (05)	422 (09)	476 (06)	679 (07)	1061 (05)	94 (29)

CME indicates continuing medical education; LOS, length of stay.

Table 3. Specialist Physicians Reporting Availability of Care Management Practices by Health Plan Relationship

	No. (%) of Specialist Physicians					
	Years With Plan		% Patients From Plan		Plan Seeks Views	
Care Management Practice	<6	≥6	≤5	>5	No	Yes
Enabling						
Reminders	460 (25)	340 (22)	379 (25)	421 (23)	766 (23)	34 (35)
Patient-specific drug information	456 (16)	340 (16)	380 (16)	416 (16)	762 (15)	34 (41)
Guidelines	465 (45)	348 (50)	387 (48)	426 (46)	779 (46)	34 (65)
Disease management	465 (36)	348 (38)	387 (36)	426 (38)	779 (36)	34 (53)
Reinforcement						
Referral or test reports	448 (23)	335 (24)	369 (24)	414 (22)	751 (22)	32 (38)
Preventive care reports	428 (02)	319 (02)	354 (03)	393 (01)	716 (02)	31 (13)
Patient satisfaction reports	459 (05)	342 (08)	381 (05)	420 (08)	768 (06)	33 (30)
Prescription drug reports	457 (14)	339 (12)	382 (11)	414 (14)	763 (12)	33 (33)
Admissions/LOS reports	459 (04)	342 (06)	379 (03)	422 (07)	767 (04)	34 (24)
Predisposing						
CME	453 (06)	340 (07)	378 (06)	415 (07)	760 (06)	33 (24)
Training in avoidable admissions	458 (02)	344 (02)	382 (02)	420 (02)	768 (02)	34 (09)
Advertised drug information	461 (07)	342 (04)	381 (06)	422 (05)	769 (05)	34 (18)

CME indicates continuing medical education; LOS, length of stay.

Table 4. Multivariate Predictors of Physicians' Reports of Availability of Care Management Practices*

Care Management Practice	Generalist/Specialist (Referent = Specialist)	Physician Relationship With Health Plan		
		Years Contracted With Plan	% Patients From Plan†	Plan Seeks Views‡
Enabling				
Reminders	4.12 (3.31, 5.15)	1.00 (0.98, 1.02)	1.23 (1.12, 1.35)	2.33 (1.67, 3.23)
Patient-specific drug information	1.90 (1.47, 2.44)	1.01 (0.99, 1.03)	1.18 (1.06, 1.31)	2.57 (1.86, 3.54)
Guidelines	4.73 (3.79, 5.93)	1.02 (0.99, 1.04)	1.11 (1.01, 1.23)	2.63 (1.63, 4.25)
Disease management	3.95 (3.21, 4.86)	0.99 (0.97, 1.01)	1.18 (1.07, 1.29)	2.33 (1.55, 3.51)
Reinforcement				
Referral or test reports	2.25 (1.79, 2.84)	1.01 (0.99, 1.03)	1.22 (1.11, 1.34)	2.13 (1.59, 2.86)
Preventive care reports	20.94 (11.99, 36.56)	1.03 (1.00, 1.05)	1.34 (1.18, 1.52)	
Patient satisfaction reports	4.21 (2.99, 5.94)	1.02 (1.00, 1.04)	1.73 (1.53, 1.96)	2.80 (1.53, 1.96)
Prescription drug reports	2.95 (2.25, 3.86)	1.01 (0.99, 1.03)	1.26 (1.14, 1.39)	2.55 (1.84, 3.53)
Admissions/LOS reports	3.23 (2.17, 4.79)	1.00 (0.98, 1.03)	1.63 (1.43, 1.86)	3.38 (2.40, 4.76)
Predisposing				
CME opportunities	4.60 (3.25, 6.52)	1.01 (0.99, 1.04)	1.43 (1.27, 1.62)	2.94 (2.13, 4.07)
Training in avoidable admissions	2.10 (1.12, 3.94)	1.01 (0.97, 1.06)	1.36 (1.07, 1.72)	5.28 (3.57, 7.79)
Advertised drug information	1.14 (0.74, 1.75)	1.00 (0.96, 1.04)	0.95 (0.80, 1.13)	4.82 (3.28, 7.09)

*Values are given as odds ratios (95% confidence intervals). Multivariate odds ratios were adjusted for age, sex, race, ethnicity, board certification, years as physician, practice type, hours worked per week, patients seen per day, participation in administrative work, and number of other health plans contracted with. CME indicates continuing medical education; LOS, length of stay.
†1 = fewer than 1%; 2 = 1%-5%; 3 = 6%-10%; 4 = 11%-25%; 5 = more than 25%.
‡0 = plan does not seek physicians' views about formulary or hospital; 1 = plan seeks physicians' views about formulary or hospital; 2 = plan seeks physicians' views about formulary and hospital.

In multivariate models used to predict physicians' ratings of the usefulness of care management practices, generalists were more likely than specialists to rate reminders and guidelines as somewhat or very useful (**Table 7**). Specialists were more likely than generalists to rate practice reports on referrals or tests and drug information as somewhat or very useful. There were no significant differences in the usefulness ratings between generalists and specialists for the other care management practices.

Physicians who reported that health plans sought their views on the formulary and/or hospital quality were generally more likely to report that care management practices were somewhat or very useful. On the other hand, the associations between a physician's rating of the usefulness of a care management practice and the length of a physician's relationship with a health plan or the percentage of patients from the health plan were generally consistent with our hypotheses, but not significant.

Although measures of physicians' relationships with health plans were not consistently associated with ratings of care management practices, there was a strong and positive association between physicians' ratings of the accuracy of practice reports and their ratings of the usefulness of these reports. This association was statistically significant for all reports with the exception of hospital resource use (admissions and length of stay). Physicians who did not rate the accuracy of the reports tended to provide a lower rating of the report's usefulness, as shown by the following examples: referral or test reports (odds ratio [OR] = .40; 95% confidence interval [CI] = .24, .66); preventive care reports (OR = .46; 95% CI = .24, .88); patient-specific drug information (OR = .26; 95% CI = .12, .41); prescription drug use reports (OR = .22; 95% CI = .12 to .41); and admissions/length of stay (OR = .43, 95% CI = .16, 1.11).

DISCUSSION

Our study of physicians practicing in 6 cities in the United States found that the stronger a physician's

Table 5. Generalist Physicians Who Rated Care Management Practices as Somewhat or Very Useful by Health Plan Relationship

	No. (%) of Generalist Physicians					
	Years With Plan		% Patients From Plan		Plan Seeks Views	
Care Management Practice	<6	≥6	≤5	>5	No	Yes
Enabling						
Reminders	365 (54)	266 (58)	216 (57)	415 (55)	554 (53)	77 (70)
Patient-specific drug information	143 (61)	116 (56)	98 (57)	161 (60)	216 (56)	43 (72)
Guidelines	297 (84)	206 (86)	187 (82)	316 (87)	434 (85)	69 (87)
Disease management	219 (83)	174 (82)	129 (84)	264 (82)	330 (81)	63 (90)
Reinforcement						
Referral or test reports	209 (62)	181 (59)	136 (64)	254 (59)	338 (58)	52 (75)
Preventive care reports	197 (60)	182 (52)	123 (55)	256 (57)	329 (53)	50 (74)
Patient satisfaction reports	118 (57)	142 (61)	55 (58)	205 (60)	212 (54)	48 (83)
Prescription drug reports	166 (43)	164 (50)	104 (47)	226 (46)	274 (43)	56 (63)
Admissions/LOS reports	63 (46)	80 (45)	29 (48)	114 (45)	105 (37)	38 (68)
Predisposing						
CME	140 (39)	134 (66)	76 (34)	198 (59)	227 (48)	47 (74)
Training in avoidable admissions	25 (76)	31 (58)	14 (57)	42 (69)	32 (47)	24 (92)
Advertised drug information	37 (73)	36 (81)	26 (65)	47 (83)	46 (72)	27 (85)

CME indicates continuing medical education; LOS, length of stay.

Table 6. Specialist Physicians Who Rated Care Management Practices as Somewhat or Very Useful by Health Plan Relationship*

	No. (%) of Specialist Physicians					
	Years With Plan		% Patients From Plan		Plan Seeks Views	
Care Management Practice	<6	≥6	≤5	>5	No	Yes
Enabling						
Reminders	112 (39)	74 (50)	93 (42)	93 (45)	174 (42)	12 (67)
Patient-specific drug information	67 (58)	45 (56)	52 (58)	60 (57)	99 (58)	13 (54)
Guidelines	70 (77)	86 (65)	67 (70)	89 (71)	143 (71)	13 (62)
Disease management	47 (77)	44 (77)	37 (78)	54 (76)	83 (77)	8 (75)
Reinforcement						
Referral or test reports	85 (79)	60 (73)	68 (75)	77 (78)	134 (77)	11 (73)
Preventive care reports	26 (58)	15 (67)	23 (57)	18 (67)	35 (57)	6 (83)
Patient satisfaction reports	22 (64)	28 (64)	16 (44)	34 (74)	40 (65)	10 (60)
Prescription drug reports	59 (46)	36 (39)	41 (49)	54 (39)	85 (39)	10 (80)
Admissions/LOS reports	16 (44)	19 (26)	10 (30)	25 (36)	27 (33)	8 (38)
Predisposing						
CME	27 (37)	24 (29)	21 (33)	30 (33)	43 (33)	8 (38)
Training in avoidable admissions	8 (38)	6 (33)	6 (17)	8 (50)	11 (36)	3 (33)
Advertised drug information	27 (78)	11 (01)	22 (82)	16 (88)	33 (82)	5 (01)

*Among physicians who reported that they use the specified care management practice. CME indicates continuing medical education; LOS, length of stay.

Table 7. Multivariate Predictors of Physicians' Rating of Care Management Practices as Somewhat or Very Useful*

Care Management Practice	Generalist/Specialist (Referent = Specialist)	Physician Relationship With Health Plan			
		Years With Health Plan	% Patients From Plan†	Plan Seeks Views‡	Report Accuracy
Enabling					
Reminders	1.53 (1.06, 2.21)	1.03 (1.00, 1.06)	1.06 (0.92, 1.22)	1.85 (1.26, 2.72)	—
Patient-specific drug information	1.14 (0.67, 1.93)	0.98 (0.94, 1.02)	1.08 (0.87, 1.35)	1.38 (0.82, 2.33)	2.28 (1.67, 3.12)
Guidelines	2.33 (1.47, 3.69)	1.01 (0.97, 1.05)	1.10 (0.90, 1.34)	0.91 (0.56, 1.47)	—
Disease management	1.61 (0.86, 3.01)	1.01 (0.97, 1.06)	1.05 (0.85, 1.29)	1.55 (0.82, 2.94)	—
Reinforcement					
Referral or test reports	0.46 (0.24, 0.66)	0.99 (0.96, 1.03)	1.04 (0.87, 1.25)	1.52 (0.88, 2.62)	1.67 (1.37, 2.03)
Preventive care reports	1.87 (0.41, 1.87)	0.97 (0.93, 1.36)	1.13 (0.94, 1.36)	1.97 (1.14, 3.40)	1.75 (1.37, 2.25)
Patient satisfaction reports	0.63 (0.31, 1.28)	1.04 (0.98, 1.09)	1.08 (0.86, 1.36)	2.09 (1.22, 3.55)	—
Prescription drug reports	1.27 (0.76, 2.13)	1.03 (0.98, 1.07)	1.00 (0.82, 1.22)	2.03 (1.22, 3.34)	2.04 (1.54, 2.67)
Admissions/LOS reports	1.46 (0.55, 3.81)	0.98 (0.91, 1.06)	1.21 (0.80, 1.81)	2.53 (1.45, 4.42)	1.22 (0.89, 1.67)
Predisposing					
CME	1.81 (0.87, 3.77)	1.04 (0.99, 1.10)	1.51 (1.21, 1.89)	1.62 (0.99, 2.64)	—
Training in avoidable admissions	0.79 (0.06, 9.74)	1.05 (0.89, 1.25)	2.02 (0.90, 4.56)	5.91 (1.10, 31.69)	—
Advertised drug information	0.16 (0.05, 0.55)	1.34 (1.05, 1.71)	2.18 (0.84, 5.67)	2.10 (0.82, 5.37)	—

*Among physicians who reported that they use the specified care management practice. Values are given as odds ratios (95% confidence intervals). Multivariate odds ratios were adjusted for age, sex, race, ethnicity, board certification, years as physician, practice type, hours worked per week, patients seen per day, and participation in administrative work. CME indicates continuing medical education; LOS, length of stay.

†1 = fewer than 1%; 2 = 1%-5%; 3 = 6%-10%; 4 = 11%-25%; 5 = more than 25%.

‡0 = plan does not seek physicians' views about formulary or hospital; 1 = plan seeks physicians' views about formulary or hospital; 2 = plan seeks physicians' views about formulary and hospital.

relationship with a health plan, the more likely the physician was to report the availability of care management practices. Physicians whose patient panels contained a greater percentage of a health plan's patients and whose views were sought by the health plan were more likely to report that care management practices were available. Most physicians who reported that care management practices were available rated these practices as somewhat or very useful. In all health plan settings, generalists were more likely than specialists to report that care management practices were available. Although specialists reported less exposure to care management practices, in many cases their ratings of the usefulness of these practices were similar to the generalists' ratings.

Physicians who reported that health plans sought their views were more likely to report the availability of care management practices and to rate plan care management practices as useful. We did not assess the amount of time and cost of seeking physicians' views, but the low percentage of physicians who reported that health plans seek their views suggests that there is substantial room for improvement.

One of the goals of this survey was to document physician experiences with care management practices in different health plans.[18,19] The results show that guidelines and disease management programs were among the most commonly available and most highly rated care management practices. This suggests that, to some degree, health plans and physicians are in agreement about how to improve the quality of care.

These findings extend to specialists what had previously been reported only for primary care physicians. Kerr et al reported that California primary care physicians with more exposure to guidelines were more satisfied with capitated care.[25] In a separate study of California physicians, Fernandez et al found that three quarters believed that disease management programs improved the quality of patient care.[26]

Although there was concordance between reports of the availability and physicians' ratings of guidelines and disease management programs, some care management practices were not as widely used, even though physicians tended to report them as useful when they were available. These included practice reports such as providing feedback on quality of preventive care and patient satisfaction. Our results suggest that addressing physicians' concerns about the accuracy of practice reports could further improve physicians' perceptions of this kind of care management practice. Although the survey did not probe to determine which elements of inaccuracy were of the greatest concern to physicians, others have found that physicians rate practice reports more favorably when they are risk-adjusted to account for differences in patients' severity of illness.[2]

Our study has several important limitations. First, we had only a moderate response rate, and we had little information by which to judge whether our respondents were biased in ways that could have affected our results. On the other hand, our exhaustive attempts to determine the eligibility of nonresponding physicians suggested to us that many of the nonrespondents were not truly eligible for the study because they no longer had a contract with the health plan from which they were sampled. Second, our results are based on physicians' self-reports and may not accurately reflect their actual experience. However, survey questions were designed to be easily interpretable and straightforward questions about specific behaviors. Third, our cross-sectional design limits our ability to make causal statements about the association of physician characteristics and their ratings of the usefulness of care management practices. For example, physicians may hold more positive opinions of care management practices because they were involved in developing and implementing these practices. Alternatively, health plans may be more likely to seek the advice of physicians who are more inclined to use and accept care management practices. Our research cannot distinguish between these 2 possibilities. Finally, because physicians' ratings of the usefulness of care management tools were dependent on their saying they use the tool, we may have overestimated how useful these tools were to physicians in general. Physicians who did not use care management tools were probably more likely to think that these tools were not useful.

CONCLUSION

In summary, this study extends our earlier research, which demonstrated that a physician's perspective can be used to measure health plan quality[1] by showing that a stronger health plan–physician relationship is associated with greater use of enabling, reinforcing, and predisposing managed care practices. Further research is required to relate the experience with these practices to improvements in the quality of care for patients. This study suggests that modifiable components of the relationship between health plans and physicians will affect the opportunity to capitalize on those care management practices that are proven to be effective.

Acknowledgments

We appreciate the assistance of the other members of Physicians Evaluating Health Plans research team: Steven Borowsky, MD, MPH; Bruce Center, PhD; Paula Henning, MA; Dave Knutson, MA; Michael Finch, PhD; Margaret King-Davis, MS; Mary Jo O'Brien, MS; Todd Rockwood, PhD; and Maureen Smith, MD, PhD. We thank in particular Louise Warrick, DrPH, for her assistance with the literature review.

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