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### Authors

Rittenhouse, Diane R  
Robinson, James C

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# Improving Quality in Medicaid

## *The Use of Care Management Processes for Chronic Illness and Preventive Care*

*Diane R. Rittenhouse, MD, MPH,\* and James C. Robinson, PhD, MPH†*

**Background:** Care management processes (CMPs), tools to improve the efficiency and quality of primary care delivery, are particularly important for low-income patients facing substantial barriers to care.

**Objective:** To measure the adoption of CMPs by medical groups, Independent Practice Associations, community clinics, and hospital-based clinics in California's Medicaid program and the factors associated with CMP adoption.

**Methods:** Telephone survey of every provider organization with at least 6 primary care physicians and at least 1 Medi-Cal HMO contract, Spring 2003. One hundred twenty-three organizations participated, accounting for 64% of provider organizations serving Medicaid managed care in California. We surveyed 30 measures of CMP use for asthma and diabetes, and for child and adolescent preventive services.

**Results:** The mean number of CMPs used by each organization was 4.5 for asthma and 4.9 for diabetes (of a possible 8). The mean number of CMPs for preventive services was 4.0 for children and 3.5 for adolescents (of a possible 7). Organizations with more extensive involvement in Medi-Cal managed care used more CMPs for chronic illness and preventive service. Community clinics and hospital-based clinics used more CMPs for asthma and diabetes than did Independent Practice Associations (IPAs), and profitable organizations used more CMPs for child and adolescent preventive services than did entities facing severe financial constraints. The use of CMPs by Medicaid HMOs and the presence of external (financial and nonfinancial) incentives for clinical performance were strongly associated with use of care management by provider organizations.

**Conclusions:** Physician and provider organizations heavily involved in California's Medicaid program are extensively engaged in preventive and chronic care management programs.

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From the \*Department of Family and Community Medicine, University of California, San Francisco; and †Division of Health Policy and Management, University of California, Berkeley.

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Reprints: Diane Rittenhouse, MD, MPH, Assistant Professor In-Residence, Department of Family and Community Medicine, University of California, San Francisco, 500 Parnassus Avenue, Room MU 308-E, San Francisco, CA 94143-0900. E-mail: rittenhouse@fcm.ucsf.edu.

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The Institute of Medicine and others have called for the redesign of medical practice to improve quality of care.<sup>1–4</sup> Amid these calls, physician organizations are developing and implementing care management processes (CMPs), ie, organized processes to improve the quality and efficiency of chronic illness and preventive care.<sup>5–7</sup> Examples of CMPs linked to improved patient outcomes include maintaining registries of patients with diabetes and other conditions, using these registries to send reminder notices to patients for routine screening examinations or immunizations, providing physicians with information concerning practice patterns, and assigning nurse “case managers” to patients with especially complex conditions.<sup>8,9</sup> Low-income patients face substantial barriers to care<sup>10</sup> and, in principle, would benefit disproportionately from the implementation of processes designed to make chronic care and preventive services more coordinated and accessible.

Previous research has demonstrated that CMP use is higher among physician organizations with an extensive information technology infrastructure and strong external financial incentives to improve quality.<sup>5</sup> The organizations studied to date, however, served primarily commercially insured patients. Little is known about the extent to which CMPs are used by medical groups, Independent Practice Associations (IPAs), community clinics, and other organizations that serve Medicaid patients and whether information technology and financial incentives similarly encourage the use of CMPs by these organizations.

In recent years, nearly all states have moved significant proportions of their Medicaid beneficiaries into managed care. One promise of Medicaid managed care was that patients would receive care in the same settings as patients with commercial insurance.<sup>11</sup> It is not known, however, whether “mainstream” physician practices actually provide higher quality care for the typically small number of Medicaid patients they choose to serve than do organizations whose patient population is extensively composed of Medicaid beneficiaries.

The aim of this study was to quantify the use of care management processes by provider organizations that serve Medicaid patients, including organizations who serve primarily this population and organizations for whom Medicaid covers a minor fraction of their total patients, and to better understand the differences between organizations that use

CMPs and those that do not. We focus on care management processes for 2 chronic conditions (asthma and diabetes) and preventive programs for 2 populations (infants and adolescents) across practices with different organizational structures, levels of involvement in Medicaid, organizational capabilities (eg, profitability, information technology), and financial (eg, capitation payment) and nonfinancial incentives for quality improvement.

## METHODS

### Study Design

Between March and May 2003, 30-minute structured telephone interviews were conducted with the Medical Director or Chief Executive Officer of medical groups, Independent Practice Associations, community clinics, and hospital-based health systems with at least 6 primary care physicians and a contract with at least one Medicaid HMO in California.<sup>12</sup> The list of organizations was obtained from the consulting firm, Cattaneo & Stroud, Inc., which maintains an inventory of all physician organizations and health care clinics in California, with funding from the California Health-Care Foundation. The initial database contained 212 organizations. During the course of the study, 21 organizations were deemed ineligible because they no longer existed as a separate contracting entity or because they no longer met study criteria. Of the remaining 191 organizations, 123 completed the survey (completion rate = 64.4%). Respondents were not different from nonrespondents in terms of size (number of physicians, patient volume) or type (medical group, IPA, community clinic, or health system).

### Data

#### Use of Care Management Processes

Outcome measures included the use of CMPs for chronic illness and disease prevention. There is a substantial body of evidence that CMPs are associated with improved patient outcomes.<sup>8,13–20</sup> We focused on the delivery of care to patients with asthma and diabetes and on the delivery of preventive services to children aged 0–2 and to adolescents because these populations comprise a large portion of Medicaid beneficiaries.

Care management is a multidimensional system of care designed to improve quality using organized processes to target particular patient populations. As detailed in Table 1, care management has 3 general aspects: (1) bringing patients in for routine care using registries and reminders; (2) improving physician adherence to recommended care by developing evidence-based clinical guidelines, linking recommendations to individual patients' charts using flow sheets or prompts, and providing physicians training and feedback concerning their clinical performance; and (3) improving patients' ability to navigate the health care system through patient education, self-management programs, and specially trained nurse case managers.

For this study, each component of care management for each condition was measured as a dichotomous variable (the organization uses the component or does not). The clinical literature on chronic care management suggests that the

**TABLE 1.** Care Management Processes (CMPs): Organized Processes to Improve Care

CMPs aimed at bringing patients in for routine care:

- *Registries*: lists of patients with a particular disease or in a particular age group that allow organizations to easily identify their patients who need follow-up care.
- *Reminders*: phone calls, postcards, letters or electronic messages to physicians and/or patients reminding them to obtain routine laboratory tests or other services.

CMPs designed to improve physician adherence to recommended care for particular populations:

- *Medical record flowsheets*: a component of the medical record on which medical information is recorded over the course of multiple visits to improve chart organization and facilitate consistent provision of care by reminding physicians of recommended services and allowing for the observation of trends in care over time.
- *Performance feedback to physicians*: information provided to physicians regarding their clinical performance in the care of particular populations, for example the proportion of their diabetic patients with adequate glycemic control.
- *Formal training for physicians on established clinical guidelines*

CMPs that improve patients' ability to navigate the healthcare system and improve their own well-being:

- *On-site health promotion/patient education classes*
- *Support groups for parents of children aged 0–2 or for adolescents*
- *Self-management support programs*: programs to assist chronically ill patients to work with providers to define health priorities, goals, and treatment plans.
- *Case managers*: nurses dedicated to coordinate care for severely ill patients.

individual components are most effective when used together rather than separately, and so we constructed indexes that represent the number of different components adopted by each provider organization. The indices equal the sum of the dichotomous variables and hence are continuous variables ranging from 0 to 8 (asthma and diabetes) or 0 to 7 (preventive services for children and adolescents). The indexes provide better insight than does each individual measure into the organization's activity in care management. The individual measures were weighted equally in the indexes, as there was no a priori reason to weight any of them more or less heavily than the others. This approach draws on prior work in the National Study of Physician Organizations and Management of Chronic Illness.<sup>5</sup>

### Independent Variables

Our conceptual model focused on the role of organizational structure, financial status, external (health plan and regulatory) incentives, and information technology capabilities in influencing each provider organization's involvement in care management. The key explanatory variable for variation in CMP use by provider organizations was the extent of involvement in and dependence on Medicaid managed care. Provider organizations heavily involved with Medicaid are subject to 3 distinct factors that are hypothesized to influence care management. First, Medicaid tends to pay lower rates than other insurers, and so Medicaid-focused organizations may face financial barriers to implementing CMPs. Because previous research has shown a reluctance of provider orga-

nizations to reveal financial information, we measured profitability through a single question concerning whether the organization earned a profit, suffered a loss, or broke even during the previous fiscal year. Second, Medicaid-focused provider organizations face a variety of incentives and regulations from state regulatory agencies and health plans that contract with the state to manage care for Medicaid recipients. We developed detailed measures of such external influences on provider organizations (described below). Finally, Medicaid-focused provider organizations treat patient populations with low income and lower educational attainment than populations covered by private insurance and Medicare, and may perceive an imperative to use the more proactive care management approach rather than rely on patients to self-present for recommended care. Controlling for profitability and external influences allows the residual association between the extent of the provider organization's involvement with Medicaid, measured in terms of the percentage of annual patient care revenue (and, in some cases, annual patient visits), and the intensity of its care management programs to be interpreted as the influence of the patients' special demographic and epidemiologic characteristics on the organization's approach to clinical practice.

### External Influences

Measures of external incentives to improve quality included the requirement to report clinical process or outcomes measures, such as the Health Plan Employer Data and Information Set (HEDIS),<sup>21</sup> to a health plan or other entity, and the availability of financial or nonfinancial rewards for scoring well on external evaluations. For each organization, an *external incentive index* was created with a value of 0–3 (1 possible point each for required to report, financial reward, and nonfinancial reward).

We hypothesized that provider organizations would not use CMPs if the Medicaid health plans with whom they contracted already used comparable care management tools. Some HMOs operate their own care management programs, despite the fact that they do not employ physicians and provide clinical services. Health plan care management programs typically focus on developing patient registries and sending patient and physician reminders, plus, in some instances, offering nurse care managers to help patients with chronic disease navigate the health care system. For each provider organization, *health plan activity indices* were created for child and adolescent preventive services, ranging from 0 to 3 (1 point for each Medicaid health plan activity including sending reminders to patients, sending reminders to physicians, and providing performance feedback to physicians). Similar Medicaid health plan indices were created for asthma and diabetes but included the use of case managers and ranged from 0 to 4.

We ascertained the extent to which each physician organization received capitated payments for primary care, specialty care, and hospital services, respectively. To the extent investment in care management reduces the need for specialty and hospital services, we hypothesized that capitation contracting would be positively associated with use of CMPs.

### Organizational Characteristics

The components of structure theorized to influence commitment to care management included the size of the organization and the relationship between the individual physicians and the organization (eg, employment, ownership partners). Size was measured in terms of the number of primary care physicians in each organization. Ownership and employment structure was measured in terms of 4 categories. Medical groups are partnerships of primary care and, often, specialty care physicians who own and are employed by a single professional corporation or limited liability corporation. Independent Practice Associations (IPAs) are network-type organizations that include solo and small physician practices as members and subcontractors, not employees. The IPA negotiates with health insurance plans on behalf of small physician practices and, of special relevance for this study, provides a context for care management that would be financially infeasible for small practices acting alone. Community clinics are nonprofit organizations that employ physicians on a salaried basis and typically are dedicated to low-income patients. The fourth category of provider organizations is composed of the primary care clinics associated with larger organizations, including university teaching hospitals, public hospitals, and private hospital chains. Their common feature is that the primary care group is affiliated with, and often owned by, a hospital and hence is part of a large delivery system. There is some overlap among these 4 categories of organizational structure. For example, some community clinics belong to IPAs for contracting purposes and some large medical groups have IPA "wrap-around" components that provide administrative functions for smaller practice sites.<sup>22</sup> Each of the 4 categories includes contracting organizations that represent multiple practice sites. The community clinic category, for example, comprises 35 contracting organizations (the unit of analysis for this study) but each organization represents numerous individual small clinics, while the IPA category includes 51 organizations representing hundreds of small physician practices.

We hypothesized that an organization with greater clinical information technology (IT) capabilities would be more likely to implement organized systems to improve care. We defined IT capabilities as the number of clinical IT functionalities available within each organization. We asked about the availability of an electronic patient database with the following components: a standardized problem list, ambulatory care progress notes, emergency room visit notes, hospital discharge summaries, laboratory results, medications prescribed, radiology results, or decision support in the form of prompts or reminders at the point-of-care. The question required a yes/no response for each of the 8 components. For each organization, a continuous *information technology index* was calculated equal to the number of these electronic capabilities in the organization (possible values for the *IT index* ranged from 0 to 8).

### Statistical Analyses

First we calculated the extent of CMP use (average number of components in the CMP index) for each target population. Bivariate analyses were conducted to examine the

CMP indexes for each of the 4 types of organization and by the level of each organization's involvement with Medicaid.  $\chi^2$  tests for bivariate comparisons of categorical data were performed. The care management indices were then analyzed in multivariate regressions using ordinary least squares (OLS).

The subsequent multivariate regression analyses examined the association between various independent variables and the level of the care management indexes, with higher index levels indicative of a stronger commitment to the care management approach to chronic and preventive services. Independent variables for the regression analyses were calculated as follows. Initial analyses had demonstrated significantly greater use of CMPs by organizations in the top quartile (84–100% of revenue) of involvement with Medicaid managed care, compared with all other quartiles, but no variation between organizations with moderate involvement in Medicaid compared to no involvement and hence we created a dichotomous variable for use in the regression models (high Medicaid involvement vs. moderate or none). A dichotomous variable was also created for *profitability*, allowing for comparison between organizations that sustained a loss during the most recent fiscal year and organizations that did not. Because nearly all of the organizations in our sample were capitated for primary care services and only a small percentage were capitated for hospital services, we limited our measure of capitation to a dichotomous variable (capitated for specialty services versus not). Other independent variables included the *number of primary care physicians*, the *external incentive index*, the *health plan activities index*, and the *information technology index* described previously.

## RESULTS

Table 2 displays the proportion of organizations that used each CMP for each of the 4 conditions and populations. Half of the organizations provided physicians with access to lists or registries of patients with asthma or diabetes; a similar proportion sent these patients routine reminders for recommended care. Seventy-five percent provided flow sheets for patient medical charts for asthma and diabetes. Two-thirds of the organizations provided physician training on established asthma and diabetes guidelines and provided physicians with feedback on their clinical performance. Similar proportions of organizations used CMPs for preventive services for children aged 0–2, but a lesser proportion of organizations used CMPs for preventive services for adolescents. As shown by the care management index, organizations used, on average, more than half of the studied CMPs for chronic and preventive care.

The characteristics of the provider organizations are listed in Table 3. The mean proportion of patient care revenues and visits from Medicaid managed care patients was 40%. Of the 123 organizations surveyed, 25 were medical groups, 51 were IPAs, 26 were community clinics (and clinic consortia), and 21 were primary care clinics associated with health systems. Sixty-five percent of the organizations earned a financial surplus or broke even on their clinical services in their most recently completed fiscal year. Forty-six percent of the organizations were paid primarily by capitation for specialist physician services for their Medicaid patients. Less than one-fourth of organizations had a majority of physicians that had access to an electronic database with ambulatory care progress notes, standardized problem lists, or emergency room visit notes. Electronic access to hospital discharge

**TABLE 2.** Proportion of Provider Organizations Serving Medicaid Beneficiaries That Use Care Management Processes for 4 Target Populations, California, 2003 (n = 123)

Percent of Organizations That:	Percent of Organizations That Use CMPs for Each Target Population			
	Patients With Asthma	Patients With Diabetes	Children Aged 0–2	Adolescents
Provide physicians with easy access to list or registry for:	50	56	50	49
Send reminders for routine care to:	49	54	45	34
Send reminders for routine care to physicians for:	35	36	37	31
Provide flow sheets for patient medical charts for:	76	76	79	72
Offer on-site self-management support programs for:	54	65	†	†
Offer on-site health education for:	†	†	57	48
Provide physician training on established guidelines for:	67	65	57	52
Provide physicians with feedback on clinical performance for:	66	67	64	52
Provide case managers for:	48	59	†	†
Care Management Index* (mean)	Mean Number of CMPs Used for Each Target Population			
	Patients With Asthma	Patients With Diabetes	Children Aged 0–2	Adolescents
	4.5	4.9	4.0	3.5

\*The Care Management Index is specific to each target population and equals the number of care management processes used by a particular organization for that population. The range for patients with asthma and diabetes is 0–8. The range for children and adolescents is 0–7.

†Not applicable.

**TABLE 3.** Characteristics of Provider Organizations That Serve Medicaid Beneficiaries, California, 2003 (n = 123)

	Mean Percent
Involvement with Medicaid managed care (continuous variable)	
Percentage of revenue from Medicaid managed care	39%
Percentage of visits from Medicaid managed care	40%
	Percent
Type of organization (dummy variables)	
Medical groups	20%
Independent practice associations	41%
Community clinics	21%
Health systems	17%
	Percent
Profitability (dummy variable)	
Percentage of organizations that sustained a loss in most recent fiscal year	29%
	Percent
Capitation (dummy variable)	
Percentage of organizations paid by capitation for specialty services	46%
	Percent
Information Technology: Percent of organizations whose physicians have access to an electronic database with the following components (dummy variables)	
Ambulatory care progress notes	22%
Standardized problem list	22%
Emergency room visit notes	18%
Hospital discharge summaries	31%
Laboratory results	56%
Medications prescribed	24%
Radiology results	37%
Decision support in the form of prompts or reminders at the point-of-care	19%
	Mean Number
Information Technology Index* (continuous variable)	2.3
	Mean/Median
Number of primary care physicians (continuous variable)	94/33

\*The Information Technology Index for each organization equals the number of Information Technology functionalities available within that organization. Values range from 0 to 8.

summaries, laboratory results, and radiology results were more prevalent. Less than 1 in 5 organizations provided their physicians with access to an electronic database, or with decision support in the form of prompts or reminders at the point-of-care. The average number of IT components per organization was 2.3 of a possible 8. The median number of primary care physicians per organization was 33; the mean was 94, given the presence of a few very large physician organizations.

External incentives for quality improvement are displayed in Table 4. Eighty-one percent of organizations were required to report clinical process or outcomes measures,

**TABLE 4.** External Influences on Use of Care Management Processes by Provider Organizations Serving Medicaid Beneficiaries in California, 2003 (n = 123)

	Percent of Organizations
External incentives for quality	
Required to report clinical process or outcomes measures, such as HEDIS,* to a health plan, or other entity	81%
Eligible for any additional income from health plans or other entities	35%
Eligible for any nonfinancial reward such as public recognition	38%
	Mean Number
External Incentives Index <sup>†</sup>	1.5
	Percent of Organizations
Use of care management processes by Medicaid health plans	
For asthma	
Health plans send reminders to patients	33%
Health plans send reminders to physicians	34%
Health plans provide case managers for patients	46%
For diabetes	
Health plans send reminders to patients	37%
Health plans send reminders to physicians	35%
Health plans provide case managers for patients	42%
For children aged 0–2	
Health plans send reminders to patients	42%
Health plans send reminders to physicians	42%
For adolescents	
Health plans send reminders to patients	33%
Health plans send reminders to physicians	29%
	Mean Number
Health Plan Activities Index, asthma <sup>‡</sup>	1.5
Health Plan Activities Index, diabetes	1.5
Health Plan Activities Index, children	1.3
Health Plan Activities Index, adolescents	1.0

\*Health Plan Employer Data and Information Set.  
<sup>†</sup>The External Incentives Index for each provider organization is the number of external incentives for quality faced by that organization. Values range from 0–3.  
<sup>‡</sup>The Health Plan Activities Index for each provider organization is the number of CMPs used by the contracting health plan for a particular disease or population. Values for the Health Plan Activities Indexes for asthma and diabetes range from 0 to 3; for children and adolescents range from 0 to 2.

such as HEDIS, to a health plan or other entity. Thirty-five percent of organizations would have been eligible for additional income if they scored well on clinical outcome or process measures, such as HEDIS. Thirty-eight percent would have been eligible for a nonfinancial reward, such as public recognition.

As shown in Table 4, the proportion of provider organizations reporting that Medicaid health plans were using CMPs for patients with asthma or diabetes and for preventive services for children and adolescents ranged from 28% to 46%. The mean number of CMPs used by health plans for chronic illness was 1.5 (out of possible 3); this number was

1.3 and 1.0 (out of a possible 2) for child and adolescent preventive services, respectively.

Table 5 displays the multivariate regression analysis of determinants of CMP use by provider organizations for particular target populations. The average number of CMPs used by the reference organization was 1.2 (of a possible 8) for diabetes and asthma, 1.5 and 1.2 (of a possible 7) for children and adolescents, respectively. A high level of involvement with Medicaid managed care was strongly associated with increased CMP use for both chronic illness care and prevention. Organizations in the top quartile of Medicaid managed care used, on average, 2 more CMPs for chronic care and one more CMP for preventive services, when compared with other organizations. Community clinics, compared with IPAs, used between 2.2 and 3.2 more CMPs for the chronic care of patients with diabetes and asthma. Primary care clinics owned by health systems used 1.5 and 2.0 more CMPs for asthma and diabetes, respectively, when compared with IPAs. Type of organization was not associated with CMP use for preventive services.

Physician organizations that earned a financial surplus or broke even in the most recently completed fiscal year used 0.9 more CMPs for preventive services, compared with organizations that sustained a loss. There was no association

between profitability and CMP use for chronic illness. There was a small but statistically significant association between organizational information technology capabilities and CMP use for asthma, but not for diabetes or for child or adolescent preventive services. There was a strong positive association between the presence of external (financial and nonfinancial) incentives for high quality care and the use of CMPs for both chronic and preventive care; organizations used approximately 0.5 additional CMPs for each additional external incentive they faced. The use of CMPs by Medicaid health plans also positively influenced the use of CMPs by provider organizations. For each additional CMP used by a Medicaid HMO for a particular target population, the provider organizations used between 0.4 and 0.7 more CMPs for that same population.

## DISCUSSION

We found that provider organizations contracting with Medicaid HMOs in California are using care management to improve primary care quality. On average, organizations used more than half of the studied CMPs for chronic and preventive care and, with one exception, each CMP was used by over 50% of the organizations.

**TABLE 5.** Multivariate Regression Analysis of the Determinants of Number of Care Management Processes Used by Provider Organizations for Chronic Illness and Preventive Services, California, 2003 (n = 123)

	Regression Coefficients (SD) Predicting CMP use <sup>###</sup> for:			
	Patients With Asthma	Patients With Diabetes	Children, Aged 0–2	Adolescents
Organizational characteristics				
Involvement with Medi-Cal managed care				
Highest quartile	2.23 (0.51) <sup>‡</sup>	2.05 (0.50) <sup>‡</sup>	1.41 (0.44) <sup>‡</sup>	1.27 (0.48) <sup>‡</sup>
Lower 3 quartiles	ref	ref	ref	ref
Type of organization				
Medical group	0.59 (0.53)	0.83 (0.52)	−0.34 (0.46)	−0.36 (0.48)
Independent Practice Association	ref	ref	ref	ref
Community clinic	2.18 (0.54) <sup>‡</sup>	3.24 (0.53) <sup>‡</sup>	0.91 (0.47) <sup>*</sup>	0.66 (0.49)
Health system	1.47 (0.60) <sup>†</sup>	2.03 (0.58) <sup>‡</sup>	0.70 (0.53)	0.29 (0.54)
Profitability (most recently completed fiscal year)				
Earned a surplus	0.18 (0.39)	0.08 (0.38)	0.95 (0.34) <sup>‡</sup>	0.87 (0.35) <sup>†</sup>
Broke even or sustained a loss	ref	ref	ref	ref
Information Technology Index (range, 0–8)	0.19 (0.08) <sup>†</sup>	0.12 (0.08)	0.05 (0.07)	0.08 (0.07)
No. primary care physicians	0.001 (0.0008) <sup>*</sup>	0.001 (0.0007)	0.001 (0.001)	−0.001 (0.001)
External Influences				
Medi-Cal Health Plan Activities Index (range, 0–3)	0.39 (0.14) <sup>‡</sup>	0.44 (0.13) <sup>‡</sup>	0.63 (0.14) <sup>‡</sup>	0.70 (0.15) <sup>‡</sup>
External Incentives Index (range, 0–3)	0.41 (0.20) <sup>†</sup>	0.65 (0.19) <sup>‡</sup>	0.47 (0.17) <sup>‡</sup>	0.50 (0.18) <sup>‡</sup>
Capitation from HMOs				
Capitated for specialty services	0.14 (0.43)	−0.49 (0.43)	−1.04 (0.38) <sup>‡</sup>	−0.57 (0.39)
Not capitated for specialty services	ref	ref	ref	ref
Intercept	1.20 (0.60) <sup>†</sup>	1.27 (0.58) <sup>†</sup>	1.54 (0.51) <sup>‡</sup>	1.16 (0.51) <sup>†</sup>
Adjusted R2	0.30	0.33	0.31	0.32

<sup>\*</sup>P < 0.1.

<sup>†</sup>P < 0.05.

<sup>‡</sup>P < 0.01.

<sup>###</sup>The dependent variable in the regression models is the Care Management Index. The Care Management Index is specific to each target population and equals the number of care management processes used by a particular organization for that population. The range for patients with asthma and diabetes is 0–8. The range for children and adolescents is 0–7.

ref indicates referent.

We found several organizational characteristics and several factors external to the organizations that were associated with CMP use. First, high level of involvement with Medicaid was associated with greater adoption of care management for chronic illness and preventive care. Organizations focused on serving Medicaid patients used more CMPs than “mainstream” organizations that primarily serve patients with commercial or Medicare insurance. This difference was independent of the type of organization (medical group, IPA, community clinic or health system), health plan activities, and external incentives. This finding is consistent with reports elsewhere that although “managed care” is lightening dramatically in the commercial sector, it continues to be an important tool for health care organizations in Medicaid.<sup>23</sup> Another possible explanation is that organizations with a single primary payer are able to focus on care management for their particular patient populations in ways that organizations with multiple payers cannot.

We found that community clinics and primary care clinics associated with community hospitals, academic medical centers, and public (county) hospital systems used more CMPs for asthma and diabetes than did IPAs. This finding is consistent with prior research demonstrating that physicians working in more integrated practice organizations use more CMPs than physicians in small practice settings linked together by IPAs.<sup>24</sup> Higher use of chronic care management by traditional “safety net” organizations may also be attributed to their historical commitment to improving the coordination and accessibility of care for low-income populations. Another explanation for the use of CMPs by community clinics may be the availability of federal programs and funds to support the development and implementation of these initiatives.<sup>25</sup>

Several factors external to the organizations were consistently associated with higher CMP use. The first was the concomitant use of CMPs by Medicaid health plans. Care management can be used by both health plans and by provider organizations and little is known about the interface of these efforts. We hypothesized that provider organizations would not use CMPs if the Medicaid HMOs with whom they contracted already used comparable care management tools. However, we found that the existence of HMO care management programs was positively, rather than negatively, associated with CMP use by provider organizations, suggesting that insurer efforts stimulated rather than replaced efforts by provider organizations. Consistent with the call by the Institute of Medicine for novel payment mechanisms that reward higher quality care, the presence of financial and nonfinancial incentives for improved clinical performance were also associated with greater use of care management.

Our findings can be compared with the 2001 National Study of Physician Organizations.<sup>5</sup> Similar to the national study, we found external incentives (both financial and nonfinancial) to be strongly associated with CMP use. These findings provide encouragement to budding “pay for performance” initiatives to improve quality.<sup>26,27</sup> Although the prior study found information technology infrastructure to be consistently associated with CMP use, we found a link between IT and CMP use only for the care of patients with asthma.

Our study has several limitations. First, we achieved a response rate of 64.4%, which is comparable to other surveys of physician leaders in the published literature.<sup>5,28,29</sup> Respondents and nonrespondents did not differ in key characteristics; however, the information about the nonrespondents was somewhat limited. There is the possibility of response bias, ie, that organizations more engaged in care management would be more likely to respond to the survey. This would result in an overestimate of the prevalence of CMP use. However we would not expect this to affect the associations between our dependent and independent variables for the respondent population. Second, our analysis is limited to California and it is not known whether these findings can be generalized to other states, some of which lack physician organizations serving Medicaid patients (although all have community clinics and hospital-based clinics). Third, it is possible that organizational leaders might overstate their use of CMPs, although we made every attempt to structure our questions to minimize false positive responses about CMP use. Overstatement of CMP use would not explain the variation that we found across multiple parameters internal and external to the organizations. Fourth, there is some overlap between categories of organizations, such as when some community clinics contract through an IPA rather than through a clinic consortium for Medicaid managed care patients. Fifth, the cross-sectional study design does not allow us to control for any unobserved factors that might be correlated with both CMP use and our independent variables. Finally, this study did not endeavor to analyze whether use of care management improves patient outcomes.

## CONCLUSION

The Institute of Medicine and others have increased the nation’s focus on improving the efficiency and quality of health care through system improvements and organizational change.<sup>1</sup> Discussions of primary care redesign emphasize the need to develop and implement improved processes for chronic illness and preventive services. These initiatives are especially important and challenging for organizations serving low-income populations. Although physicians caring for Medicaid managed care patients do so through several types of contracting vehicles, this is the first study that directly compares the care management efforts of these organizations. We found that physician and other provider organizations with a large proportion of Medicaid managed care enrollees, with greater financial stability, and with stronger financial and nonfinancial incentives used more care management processes than organizations with fewer resources, less involvement with Medicaid managed care, and weaker external incentives. This reproduces in the context of Medicaid managed care findings reported elsewhere for organizations serving commercially insured and Medicare patients. While association does not prove causation, these findings are consistent with the nation’s current strategies for developing incentives that stimulate improvements in the delivery of chronic care and preventive services.



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