

# Comparison of Provider- and Plan-Based Targeting Strategies for Disease Management

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Americans are increasingly plagued by chronic disease,<sup>1</sup> and evidence suggests that not all patients are receiving self-care support for managing their disease.<sup>2,3</sup> Care management is a patient-centered approach to “assist patients and their support systems in managing medical conditions more effectively,”<sup>4</sup> and includes patient education, goal setting, and self-management support. Active involvement of patients in their care is fundamental to the Patient-Centered Medical Home<sup>5-8</sup> (PCMH) Model and the Chronic Care Model.<sup>9-11</sup> However, not all individuals with chronic disease require services beyond the usual care received from their providers. Therefore, methods for successfully targeting patients to engage them in care management are increasingly important to providers, health plans, and employer groups who must optimally allocate resources.

Targeting involves identifying patients who may benefit from care management services and offering these services to them. The structure, targeting strategies, and care delivery mechanisms of care management programs are based on the goals of the organizations administering the programs. Health plans offer disease management programs to reduce costs associated with chronic disease–related adverse events among their members; their targeting strategies are driven by assessments of predicted cost risk from claims data and by employer customer preferences. Outreach and care management are delivered by trained registered nurses, primarily by phone. Although health plan disease management programs have been effective for some populations,<sup>12-15</sup> they are criticized for not being integrated with the patient’s primary care physician (PCP).<sup>16,17</sup>

Alternatively, many primary care practices and physician groups are developing care management programs that are coordinated with patients’ ongoing care. These programs combine in-person, electronic, and phone-based management, and utilize care managers who are either embedded within the practice or located off-site. Patients are offered

## ABSTRACT

**Objectives:** We aimed to describe and contrast the targeting methods and engagement outcomes for health plan–delivered disease management with those of a provider-delivered care management program.

**Study Design:** Health plan epidemiologists partnered with university health services researchers to conduct a quasi-experimental, mixed-methods study of a 2-year pilot. We used semi-structured interviews to assess the characteristics of program-targeting strategies, and calculated target and engagement rates from clinical encounter data.

**Methods:** Five physician organizations (POs) with 51 participating practices implemented care management. Health plan member lists were sent monthly to the practices to accept patients, and then the practices sent back data reports regarding targeting and engagement in care management. Among patients accepted by the POs, we compared those who were targeted and engaged by POs with those who met health plan targeting criteria.

**Results:** The health plan’s targeting process combined claims algorithms and employer group preferences to identify candidates for disease management; on the other hand, several different factors influenced PO practices’ targeting approaches, including clinical and personal knowledge of the patients, health assessment information, and availability of disease-relevant programs. Practices targeted a higher percentage of patients for care management than the health plan (38% vs 16%), where only 7% of these patients met the targeting criteria of both. Practices engaged a higher percentage of their targeted patients than the health plan (50% vs 13%).

**Conclusions:** The health plan’s claims-driven targeting approach and the clinically based strategies of practices both provide advantages; an optimal model may be to combine the strengths of each approach to maximize benefits in care management.

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care management by a member of the practice team, such as a PCP, care manager, or medical assistant.

### Provider-Delivered Care Management Pilot Program

In 2010, a large Midwestern health plan partnered with 5 physician organizations (POs) to implement a 2-year Provider Delivered Care Management (PDCM) pilot program. The pilot aimed to improve the health of chronically ill health plan members by financially supporting POs and their affiliated primary care practices in delivering care management, essentially reducing the number of members managed by the health plan's internal disease management program. Two POs used pilot funding to develop new care management programs, while 3 expanded their existing programs. POs assumed full responsibility for administering their programs. This work developed from the plan's overall approach of partnering with primary care to improve the quality of care. This includes a PCMH program that offers incentives to POs for increasing medical home-related capabilities, including care management, within primary care practices.<sup>18</sup>

While many recognize the importance of targeting strategies for successful care management<sup>19</sup>—including the potential benefit of predictive modeling<sup>20-22</sup>—there is sparse literature examining targeting options. In this quasi-experimental, mixed-methods study, we aimed to describe and contrast the targeting methods of the health plan model with the PDCM models to address the gap in the literature. The study was approved by the Michigan State University and the University of Michigan Institutional Review Boards.

## METHODS

### Study Population

The 5 POs selected 52 of their primary care practices for the PDCM pilot—those with the capability and resources to deliver care management—with the majority ( $n = 42$ ) having earned PCMH designation from the health plan.<sup>23</sup> Given their advanced level on the PCMH spectrum, they were not representative of the nonselected practices within the pilot POs; however, they are likely similar to other PCMH practices with care management capabilities. One practice dropped out of the study in the first year and was excluded from analyses. Adult (18 years and older) health plan members were eligible for the study when they were

### Take-Away Points

- Physician organizations were highly variable and differed from the health plan in their approach to targeting patients and delivering care management.
- Care management programs administered in conjunction with patients' primary care clinical settings yielded a higher percentage and different subgroup of patients who were targeted compared with a health plan's disease management program, with only a 7% overlap.
- Both provider-delivered and health plan-delivered care management offer advantages: the former benefits from a personal relationship with patients and important clinical information, while the latter has patients' overall healthcare utilization history, including with providers unknown to primary care.

identified as having a care relationship with a participating PCP in one of the selected practices at some time during the 2-year pilot, and had health plan-delivered disease management coverage under their employer group benefit. A care relationship was inferred via a claims-based algorithm that assessed 24 months of professional claims data for specific evaluation and management services to determine the PCP most responsible for a member's care.

A monthly list of eligible members was sent to each PO, along with demographic information (ie, birth date, gender), claims-derived risk score, chronic disease identifiers via the proprietary clinical analysis tool "Impact Intelligence" (Optum, Eden Prairie, Minnesota), and previous 12-month counts of emergency department visits and hospitalizations. This study included only the members from the monthly lists that were accepted by the POs into the PDCM pilot; a member was accepted when 3 criteria were met (Table 1). Accepted members did not necessarily receive care management, but were eligible to receive care management through their PCP's practice. Administrative and/or data analytic staff from the POs were responsible for collecting and reporting monthly care management activity data from the practices for their accepted populations.

### Quantitative Data Collection and Analysis

We calculated target and engagement rates for each PO's accepted populations based on reported encounters with care managers (Table 1). The target rate was the number of accepted members that had an outreach attempt, an outreach encounter, or a care management encounter divided by the number of accepted members. The engagement rate was the number of members that had at least 1 care manager encounter divided by the number of targeted members. Two POs each employed 2 different targeting methods; each was treated as a subgroup in analyses. We excluded from the analyses accepted patients who did not remain on the eligible patient

■ **Table 1.** Definitions of Key Terms and Calculated Rates

Term	Definition
Accepted	A health plan member was “accepted” into the pilot by a Physician Organization (PO) when the PO: 1) verified that the member was a patient in a pilot-participating practice; 2) verified that the patient had 1 or more of 5 chronic diseases included in the pilot and in the health plan’s disease management program (asthma, chronic obstructive pulmonary disease, congestive heart failure, diabetes, or ischemic heart disease); and 3) affirmed that the affiliated practice had the capacity to deliver care management to the patient should it be needed.
Outreach encounter	Initial contact with a patient for purposes of engaging him or her in care management. If contact was attempted, but patient not reached, the encounter was an outreach attempt.
Care management encounter	Contact with a patient in which care management services were delivered. These included self-management support and training, health education, care coordination, clinical management, pre-discharge outreach, and post discharge follow-up. As the pilot was to specifically study the care management activity performed by care managers, encounters delivered by physicians were excluded. The encounter data collected consisted of the date, mode of delivery (telephone, e-mail/mail, in person), and length of encounter.
Targeted	A patient was considered “targeted” for care management once the PO reported an outreach attempt, outreach encounter, or care management encounter.
Targeted rate	Calculated as the number of targeted patients (numerator) divided by the number of accepted patients (denominator).
Engaged	A patient was considered “engaged” in care management once he or she had at least 1 care management encounter with a care manager.
Engagement rate	Calculated as the number of engaged patients (numerator) divided by the number of targeted patients (denominator).

lists for at least 2 months after their acceptance date ( $n = 284$ , or 4%).

Health plan members accepted into the PDCM were removed from the plan’s disease management targeting process; therefore, in order to compare the plan’s targeting mechanism with the POs’ methods, the plan’s targeting criteria were retrospectively applied to the claims of the accepted population to identify which members would have met the plan’s targeting criteria had they not been accepted into the PDCM. Thus, among the accepted population, patients either: 1) met PO/practice-based targeting criteria, 2) met plan-based targeting criteria, 3) met both sets of targeting criteria, or 4) were not targeted. We performed  $t$  tests and  $\chi^2$  tests to compare patient characteristics and target rates of the POs with those of the health plan. Since the pilot patients were managed by the POs rather than the plan, we compared PO engagement rates with the plan’s overall estimated engagement rate of members not in the PDCM.

### Qualitative Data Collection and Analysis

This study included data from an extensive qualitative analysis of the care management programs, collected as part of a larger comparative effectiveness study. The research team interviewed PO leaders and staff, and conducted observations at 25 of the 51 practices across all 5

POs, purposefully selected to maximize diversity across practices. Hour-long semi-structured interviews with multiple practice members were conducted to elicit detail regarding their care management programs and targeting strategies. Similarly, interviews were held with 2 nurses and the program supervisor for the health plan to obtain information on the plan’s program and targeting method.

A Likert-type scale score sheet was used to quantify the presence or absence of specified care management features, including the process of accepting patients, the training and background of the care manager(s), how and by whom care management was offered to the patient, and the location, frequency, and topics covered in care management visits. Extensive notes were taken to describe each feature, and a summary report was given to each practice for member-checking.

All data were transcribed and placed into the qualitative software program ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany). Three qualitative researchers coded the data after extensive group review to determine appropriate codes and establish consistency of coding. Quotation reports by POs were produced for the relevant codes and reviewed by the research team (3 coders, plus 3 other team members [including JSH]) to determine the processes of identifying and offering care management for each PO and to corroborate the scaled score items.

**Table 2.** Characteristics of the Primary Care Practices and Their Accepted Patients Among the Participating Physician Organizations in the Provider-Delivered Care Management Pilot

	Total	PO A	PO B	PO C1 <sup>a</sup>	PO C2 <sup>a</sup>	PO D1	PO D2	PO E
<b>Practice characteristics</b>								
Number of participating practices	51	8	17	5	10	6 <sup>b</sup>	5	
Number of participating physicians	254	24	24	62	55	15 <sup>b</sup>	74	
Mean number of physicians per practice	5.0	3.0	1.4	12.4 <sup>c</sup>	5.5	2.5 <sup>b</sup>	14.8 <sup>c</sup>	
<b>Patient characteristics</b>								
Total accepted	6988	629	895	876	1876	316	782	1614
Percent female	50.09%	48.79%	43.69%	51.71%	54.45%	50.00%	50.51%	48.02%
Mean age	51.72	52.42	50.78	51.14	50.98	52.12	50.86	53.50
Mean risk score <sup>d</sup>	2.85	3.00	2.86	2.78	2.75	3.11	2.75	2.95
<b>Chronic illness (%)</b>								
Asthma	34.96%	29.89%	25.59%	39.95%	48.99%	37.03%	34.78%	24.54%
Congestive heart failure	6.71%	6.20%	3.13%	5.37%	6.93%	5.06%	3.32%	10.72%
COPD	7.68%	12.08%	8.49%	9.36%	1.33%	5.06%	8.31%	11.77%
Diabetes	53.62%	62.16%	50.61%	52.63%	46.22%	57.28%	48.85%	62.70%
Ischemic heart disease	22.88%	20.51%	31.17%	17.58%	19.35%	22.78%	25.58%	23.79%
<b>Number of chronic illnesses (%)</b>								
1 out of 5	79.38%	75.52%	83.69%	79.11%	80.70%	78.80%	83.12%	75.40%
2 out of 5	16.39%	18.76%	14.19%	17.58%	16.15%	17.09%	14.07%	17.29%
3 or more out of 5	4.24%	5.72%	2.12%	3.31%	3.14%	4.11%	2.81%	7.31%

COPD indicates chronic obstructive pulmonary disease; PO, physician organization.

<sup>a</sup>One PO, but 2 separate models of care management, divided by discipline.

<sup>b</sup>Numbers were reported together because the 2 different models of care management (centralized and practice-based) were divided by specific care managers rather than by specific practices.

<sup>c</sup>Some practices were residency sites, thus increasing the average of providers.

<sup>d</sup>Represents a patient's prospective risk of having high healthcare costs relative to a general population. A risk score of 1 indicates that the patient has a risk equal to the average risk in the general population; a risk score of 1.1 indicates that the patient's risk is 10% higher than the population average.

## RESULTS

### Practice and Population Characteristics

Practices were in geographically diverse locations within the Lower Peninsula of Michigan, ranging from rural to urban settings. **Table 2** describes the characteristics of the 51 pilot practices and the 6988 accepted patients included in this study. The POs varied in the number and size of participating practices, ranging from solo-physician to large multi-physician practices. The mean age of accepted patients was 52 years, and the majority of patients (54%) had diabetes.

### Targeting Process

The health plan's routine targeting process for care management involves setting thresholds that are dynamic and determined, in part, by claims-based algorithms that predict members' future risk of incurring high costs. This commercially available Impact Intelligence program is used by other health plans for similar purposes and is likely generalizable to those groups. Customer groups con-

tract with the plan to target all, or a percentage of, their higher-risk members in chronic disease groups. Targeted members are placed on a list for outreach by one of the health plan nurses who contacts members via phone. Three phone call attempts and a letter are completed before determining that a patient is unreachable.

The targeting process varied among POs (**Table 3**). The care managers in PO B were located centrally at an office site and provided services for 1 or more practices via phone. Conversely, the care managers in POs C and E were embedded within the practices, meaning that they were members of the practice care team and worked directly and collaboratively with the PCPs. POs A and D used a combination of the two. For all POs during the pilot, the list of accepted patients was reviewed by a designated person (usually the care manager, but sometimes a medical assistant or panel manager) and discussed with the practice physician(s), who together identified appropriate patients for care management. In a few cases, the physician provided blanket approval, instructing the care manager to "offer care management to all the patients," but more often,

**Table 3.** Characteristics of the Chronic Disease Care Management Programs of the Health Plan and 5 Physician Organizations in the Provider-Delivered Care Management Pilot

	Health Plan	PO A	PO B	PO C1	PO C2	PO D1	PO D2	PO E
<b>Location of care managers (centralized, embedded, or both)</b>	Centralized	Both	Centralized	Embedded	Embedded	Centralized	Embedded	Embedded
<b>Role and mode of offering the care management to the patient</b>	RN care manager via phone	RN care manager via phone	Physician in visit, then referral with RN care manager via phone	Physician in visit	Panel manager via phone	RN care manager via phone and physician in visit	Physician in visit	Physician in visit
<b>Care manager role delivering the care management</b>	RN care manager	RN care manager	RN care manager	RN practice nurse	PharmD care manager	RN care manager	RN or medical assistant	RN care manager
<b>Mode of care management delivery</b>	Phone	Phone	Phone	In person and phone	In person	In person and phone	In person and phone	In person and phone

PharmD indicates doctor of pharmacy; PO, physician organization; RN, registered nurse.

the physician identified specific patients whom he or she thought would benefit and would be willing to participate.

Diabetes and asthma were a primary focus of the care management programs, given the prevalence of these conditions in the patient populations. Although generally the programs were similar, there was some variability in the types of activities they emphasized—some focused more on care coordination, while others focused more on behavior change. However, detailed information about the scope of the programs was not collected.

### Target and Engagement Results

Table 4 reports the patient characteristics of the total accepted population and those who met the health plan’s targeting criteria (ie, would have been targeted by the health plan had they not been enrolled in PDCM) compared with those who were actually targeted by POs. Members who met both plan and PO target criteria are included in both groups. Since the groups are not mutually exclusive, we tested an interaction effect between the 2 targeted groups, which was nonsignificant for all variables except asthma. In further comparisons, the group that met health plan target criteria had a significantly lower percentage of females, a lower prevalence of asthma yet a higher prevalence of the other 4 conditions, and was more likely to have more than 1 chronic condition than the PO-targeted group.

The mean risk score among those who met health plan target criteria was significantly higher than those targeted by POs (4.3 vs 2.9). This result was expected because the POs targeted a larger proportion of accepted members than did the health plan, and the health plan specifically used the risk

score to target those with the highest risk. Although all POs were provided with this risk score, none of the POs used this score exclusively to identify patients for care management. Only 1 PO (D1/D2) targeted patients specifically based on a standardized risk calculation—one derived from a health assessment. Instead, most providers and their teams targeted patients for care management based on their clinical and relational knowledge of the patient. This included indicators of poorly controlled clinical values (eg, high A1C), psychosocial issues (eg, lack of family support or resources), and patient motivation for participation.

Table 5 reports for each PO the members who met plan target criteria, those who met both plan and PO criteria, and those targeted and engaged by the PO (not mutually exclusive groups). On average, a larger percent of accepted patients were targeted by POs than met plan target criteria (38% compared with 16%). Although the percent of patients who met plan target criteria was fairly consistent across POs (14%-18%), the percent targeted by POs varied widely by PO (11%-93%). With the exception of 2 POs (B and E), the other participating POs consistently targeted a larger proportion of the accepted population than the proportion that met health plan target criteria. Two of those POs (A and D) only offered care management to patients with this health plan, whereas the others offered care management to all patients. The overlap of patients who met both plan and PO target criteria was 7.1% of all accepted patients, which represented 19% of PO-targeted patients and 45% of plan-targeted patients.

Finally, the engagement rates varied among and within POs (Table 5). For example, the 2 different target strategies (physician offering in the context of a clinical visit vs

**Table 4.** Characteristics of Patients Accepted and Targeted in the Provider-Delivered Care Management Pilot

Patient Characteristics	Total Accepted by POs	Met Health Plan Target Criteria <sup>a</sup>	Targeted by POs <sup>a</sup>
<b>Total accepted</b>	6988	1099	2625
<b>Percent female</b>	50.09%	44.49%	48.84% <sup>b</sup>
<b>Mean age, <math>\pm</math>SD</b>	51.72	53.62 $\pm$ 11.02	53.04 $\pm$ 10.44
<b>Mean risk score,<sup>c</sup> <math>\pm</math>SD</b>	2.85	4.30 $\pm$ 3.84	3.05 $\pm$ 2.67 <sup>b</sup>
<b>Chronic illness (%)</b>			
Asthma	34.96%	19.29%	30.06% <sup>b</sup>
Congestive heart failure	6.71%	14.74%	6.17% <sup>b</sup>
COPD	7.68%	10.19%	6.63% <sup>b</sup>
Diabetes	53.62%	73.79%	65.26% <sup>b</sup>
Ischemic heart disease	22.88%	30.21%	23.28% <sup>b</sup>
<b>Number of chronic illnesses (%)</b>			
1 out of 5	79.38%	65.42%	75.05%
2 out of 5	16.39%	23.84%	19.77%
3 or more out of 5	4.24%	10.74%	5.18% <sup>b</sup>

COPD indicates chronic obstructive pulmonary disease; PO, physician organization.

<sup>a</sup>Columns are not mutually exclusive.

<sup>b</sup> $P < .05$ .

<sup>c</sup>Represents a patient's prospective risk of having high healthcare costs relative to a general population. A risk score of 1 indicates that the patient has a risk equal to the average risk in the general population; a risk score of 1.1 indicates that the patient's risk is 10% higher than the population average.

phone outreach) employed by the 2 groups of practices (C1 and C2) within the same PO resulted in vastly different engagement rates (71% and 20%, respectively). Patient engagement in PDCM was consistently higher than the engagement reported for the health plan's disease management program, which was 13% of members not in PDCM and targeted by the plan during the same time period.

## DISCUSSION

In summary, we found that POs and their participating practices overall targeted more patients for care management than the percent who met health plan target criteria. The varied target methods resulted in different groups of patients targeted, with only 7% of patients meeting both PO and plan target criteria. Freund et al (2011) compared predictive modeling with provider targeting to contrast methods that identify patients most likely to benefit from care management.<sup>24</sup> They found that predictive modeling identified patients at significantly higher risk for future healthcare utilization, whereas the providers selected patients with significantly higher rates of prior participation in intensified care programs. They concluded that identification of patients most likely to benefit from and participate in care management programs may be facilitated by a combination of predictive modeling and selection by PCP.<sup>24,25</sup>

We found that practices' target strategies were variable, and reliant upon "clinician judgment." This area deserves further exploration. PCPs or care managers selecting pa-

tients because they think they are likely to participate, and not because they are most in need, may not be the best use of care manager resources. They may also fail to offer care management to patients they think won't participate, but be incorrect. One PO reported believing that physicians were an effective "participation screener"; such screening would purportedly prevent the care manager from wasting time reaching out to patients who don't tend to participate. The PO (D1/D2) that used a risk assessment score automatically offered care management to patients with a moderate- or high-risk score. This type of system may mitigate the problem of bias in offering care management, and in fact, this PO had the highest target rates.

In terms of outreach, the primary care practice in particular, and to some extent the PO, have an advantage because they can utilize their personal relationship with a patient to encourage engagement as part of care. It is quite a different matter to be called by a nurse from a health plan versus having your PCP walk you down the hall to the care manager after saying something like, "We practice as a team here and Nancy will be helping you with your diabetes." The interview data revealed that most clinical staff members (including PCPs and care managers) believed that offering care management in the context of an in-person clinical visit and having the care manager onsite for referral was most effective in engaging patients. However, at the start of this work, a variety of approaches were tried among POs based on the circumstances of each PO and its associated practices. In some POs, centralizing care management and

**Table 5.** Number and Percent of Patients Accepted, Targeted, and Engaged in the Provider-Delivered Care Management Pilot, by Physician Organization

	Total Accepted by POs		Total That Met Health Plan Target Criteria <sup>a</sup>		Targeted by Both Health Plan and PO <sup>a</sup>		Total Targeted by PO <sup>a</sup>		Engaged by PO	
	n		n	% of Accepted	n	% of Accepted	n	% of Accepted	n	% of PO Targeted
<b>Total</b>	<b>6988</b>		<b>1099</b>	<b>15.73%</b>	<b>497</b>	<b>7.11%</b>	<b>2625</b>	<b>37.56%</b>	<b>1300</b>	<b>49.52%</b>
PO A	629		108	17.17%	81	12.88%	416	66.14%	269	64.66%
PO B	895		125	13.97%	19	2.12%	151	16.87%	48	31.79%
PO C1	876		129	14.73%	45	5.14%	261	29.79%	185	70.88%
PO C2	1876		275	14.66%	169	9.01%	787	41.95%	160	20.33%
PO D1	316		50	15.82%	49	15.51%	293	92.72%	200	68.26%
PO D2	782		122	15.60%	96	12.28%	537	68.67%	339	63.13%
PO E	1614		290	17.97%	38	2.35%	180	11.15%	99	55.00%

PO indicates physician organization.  
<sup>a</sup>Categories are not mutually exclusive.

operating independent from the practice was thought to be more efficient than involving practice team members.

Our qualitative results suggest that care management offered by physicians does increase engagement in the program; however, not all physicians are willing to do this work, or are able to do it well—with “well” being defined as, for instance, consistently, or in a manner that patients find agreeable. Additionally, the practical limitations of reaching patients only by phone, whether they were referred by their physician or not, were highlighted as areas of concern for engagement. A more intentional exploration of these approaches would benefit the field. Another advantage of the PO models was that the complete medical record could be examined. One care manager noted, “Patients can’t lie to you about their weight or blood pressure because you can see it right there in their record.”

Targeting strategies should yield actionable information for providers by identifying those patients with the most need and/or the most to gain. The health plan has the advantage of knowing the utilization/claims history of the patient, which includes services from providers that are unknown to the patient’s PCP; this information identifies patients with high healthcare utilization and/or costs. Yet, the health plan lacks several advantages that the primary care environment offers, including first-hand knowledge of the patient’s clinical diagnoses and health risk status; personal, social, and financial situation; and healthcare preferences. Clinical information is valuable in identifying patients with chronic disease, and can overcome misclassification errors related to claims data. Importantly, given the proximate nature of primary care to patients’ healthcare needs, PCPs and/or primary care-based care managers are potentially more likely than

health plans to identify health problems early and before they result in expensive adverse events. Targeting patients to intervene early in their disease progression may be most effective in producing desirable behavior change.

Targeting patients at different points in their health continuum may also partly explain the lower mean risk score among PO-targeted patients compared with those targeted by the plan. Additionally, it is possible that patients at highest risk—as identified by the plan via high medical costs—have overwhelming health issues and may be less likely to engage in care management than those at a lesser or moderate risk level. Although engagement is probably related to certain aspects of the care management program, it may also reflect characteristics of the population targeted. These issues emphasize the importance of considering more than just target and engagement rates to infer the effectiveness and value of a care management program.

**Limitations**

We recognize limitations of our study, including that patients from only 1 health plan were studied. Although target and engagement rates may be similar for other groups of insured patients in these practices, uninsured patients may have different experiences. Also, we limited “targeted” and “engaged” to specifically refer to contact with a care manager, excluding care management encounters with a PCP, which may have been equivalent. It is also possible that the chronic condition of some patients may have required specialty care and/or been beyond the scope of the practices’ care management, thus affecting targeting or engagement. This was not a randomized controlled trial and the data are the result of a natural experiment. Therefore, comparisons across groups may include inherent important differences

that may contribute to the results. Additionally, our care management activity data may have been incomplete due to the data collection difficulties that some POs experienced during the pilot. Because we considered patients with at least 1 care management encounter as “engaged,” and did not study specific patient outcomes or evaluate the effectiveness or duration of the care management that was delivered, we do not have evidence to pronounce one program superior to another.

## CONCLUSIONS

In summary, we found that primary care practices identified a larger proportion of patients for care management than did the health plan. Our study had good variability in the care management programs, which illustrated different ways of targeting patients and the effect on engagement. Future research is needed to investigate the benefit of combining the best of both approaches—data-driven risk identification strategies, and clinically based information from the primary care setting.

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**Authorship Information:** Concept and design (AMA, JSH, ZL, MT); acquisition of data (AMA, H-CC, JSH); analysis and interpretation of data (AMA, H-CC, ZL, JSH, MT); drafting of the manuscript (AMA, JSH, ZL, MT); critical revision of the manuscript for important intellectual content (AMA, JSH); statistical analysis (H-CC, ZL); obtaining funding (JSH); administrative, technical, or logistic support (AMA, JSH, MT); and supervision (AMA, JSH).

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