

# An Examination of the Relationship Between Care Management With Coaching for Activation and Patient Outcomes

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Approximately 117 million—or half of American adults—currently live with a chronic disease, and 1 in 4 live with multiple chronic conditions.<sup>1</sup> A major contributor to chronic diseases and their attendant costs is an individual's poor health behaviors<sup>2</sup>; additionally, patients with chronic disease often do not adhere to the medication or treatment plans designed by their providers.<sup>3</sup> This lack of adherence frequently leads to clinical crisis, unnecessary death, and expensive treatment services, such as preventable emergency department (ED) visits and hospital admissions.<sup>4,5</sup> A growing body of research suggests that patient health behaviors that contribute to these problems can be improved by engaging patients so they will take a more active role in their health and healthcare<sup>6-16</sup>; consequently, an important question in healthcare today is how to engage patients to do so.

Given their financial risk and unique position to facilitate population health management, health plans have an important role to play in engaging patients and improving patient behaviors. One potential means that health plans may use to improve patient engagement entails the use of active care management (CM) programs. Despite the growing use of CM programs<sup>17</sup> in general, there is surprisingly little research regarding specific interventions that attempt to promote patient engagement<sup>18</sup> and their association with utilization metrics that reflect patient behaviors.

The purpose of this study was to investigate whether enrollment in a health plan–sponsored CM program that included coaching for activation (CFA) was associated with patient outcomes. CFA is an intervention used by care managers that includes tailored coaching based on an individual's level of patient activation—patient activation refers to the knowledge, skills, confidence, and motivation possessed by patients to not only make effective decisions, but also take action to maintain or improve one's health.<sup>19,20</sup>

## METHODS

### Intervention

Care management is a voluntary program available to patients who require additional clinical services for managing their chronic

## ABSTRACT

**OBJECTIVES:** A growing body of research has established the benefits of patient activation, which is defined as the knowledge, skills, confidence, and motivation to make effective decisions and take action to maintain or improve one's health. Consequently, healthcare stakeholders of all types continue to seek ways to improve patient activation. The purpose of this study was to empirically examine whether enrollment in a health plan–sponsored care management (CM) program that included coaching for activation (CFA) was associated with utilization, medication adherence, and clinical outcomes.

**STUDY DESIGN:** Cross-sectional, quantitative study of commercially insured enrollees in a Midwest-based health plan.

**METHODS:** Poisson, logistic, and ordinary least squares regression models were used to test the relationships between CM programs and outcomes.

**RESULTS:** The benefit of measuring patient activation and offering CFA was associated with reduced healthcare utilization and better clinical outcomes. Relative to respondents in the CFA CM group (ie, intervention), respondents in the usual CM group experienced 18.29% more emergency department visits, 97.78% more hospital admissions, a higher glycosylated hemoglobin level ( $\beta = 0.48$ ;  $P < .001$ ), and higher systolic blood pressure ( $\beta = 1.19$ ;  $P < .01$ ).

**CONCLUSIONS:** These findings suggest that coaching interventions based on activation level may help care managers engage in more effective interactions that strengthen a patient's role in managing his or her healthcare. Programs that are more targeted in their application, rather than uniformly developed and implemented, may be an important factor in reducing utilization and improving clinical outcomes.

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### TAKEAWAY POINTS

This study investigates the benefits of a coaching for activation intervention and its associated outcomes.

- ▶ Relative to respondents in the intervention group, the usual care group experienced 18.29% more emergency department visits, 97.78% more hospital admissions, higher glycosylated hemoglobin levels, and higher systolic blood pressure.
- ▶ Health plan coaching interventions based on patient activation may increase effective interactions, thereby strengthening a patient's role in managing his or her healthcare.
- ▶ Programs more targeted in their application, rather than uniformly administered, may be an important factor when implementing policy and healthcare reform, especially in caring for chronically ill populations.

disease. Patients are enrolled through self-referral, provider-referral, plan-driven population segmentation, or transitions in care (eg, discharge from a hospital). Population segmentation is a health plan-based tool that uses historical claims data and other variables, such as age and gender, to identify at-risk populations based on the complexity of their chronic disease(s) and behavioral risk factors. Enrolled patients are assigned to care managers based on primary care providers.

In May 2013, the CM team at a nonprofit health plan in the Midwest implemented CFA via a program that featured coaching based on an enrollee's level of patient activation. Based on the evidence suggesting a correlation between activation levels and health outcomes, CFA was introduced as a new initiative to enhance patient engagement. Initial assessments were conducted in 1 of 2 ways: interactive voice recognition or directly by a care manager employed by the health plan. Both methods were completed via telephone. Subsequently, patients in CM were assigned to 1 of 2 groups based on the presence of a Patient Activation Measure (PAM) score (ie, if patients had a PAM score, they were assigned to the CFA CM group; if patients did not have a PAM score, they were assigned to the usual CM group).

For both groups, the same care managers worked with patients; however, in the CFA CM group, they tailored their interactions based on the patient's level of activation. For example, a CFA approach for a patient with diabetes would be different for a level 1 patient compared with a highly activated level 4 patient. An appropriate coaching goal for a level 1 patient with diabetes might be to develop basic knowledge of good and bad foods. On the other hand, an appropriate coaching goal for a level 4 activated patient entails more complicated behaviors, such as replacing bad foods with good and replacing poor eating behaviors with better ones. In contrast, coaching and goal setting occurs in the usual CM program, but it is not conditional based on a PAM level.

All care managers were either registered nurses or licensed practical nurses with additional PAM training through Insignia Health. The purpose of the training was to increase knowledge about patient activation and its implications for patient outcomes, orient each CM program to the CFA approach, and demonstrate

skills through roleplaying. Ongoing in-service activities were used to reinforce this training during monthly team meetings.

### Study Population

The study sample was selected from the plan participants over a 19-month timeframe. The analytic sample was restricted to commercially insured enrollees in order to limit variations in utilization across different patient populations reflected in different insurance types (eg, Medicare, Medicaid). The analytic

sample was further limited to an adult population (18 years or older). These steps resulted in the inclusion of 17,797 enrollees in the study, with 1520 enrolled in the CFA CM program and the remaining 16,277 patients enrolled in the usual CM group.

### Data Sources and Measures

There were 4 primary data sources used in the study: an electronic charting tool, an administrative claims data system, demographic and socioeconomic data extracted from marketing data, and a proprietary data repository that links laboratory results to the patient data file.

The dependent variables included utilization, medication adherence, and clinical outcomes. The outcome variables were constructed based on the 6-month period following enrollment in the CM program. Utilization was quantified with 2 variables: the total number of ED visits and inpatient hospital admissions. Adherence to medication management was defined as  $\geq 80\%$  refill rate for prescribed medications and operationalized as a dichotomous outcome. The 4 clinical measures were: glycosylated hemoglobin (A1C), low-density lipoprotein (LDL), systolic blood pressure (SBP), and diastolic blood pressure (DBP). In cases where enrollees had multiple measurements, an average was constructed across all eligible values.

The primary independent variable, type of care management, was operationalized dichotomously comparing usual CM with CFA CM as the reference. The analysis controlled for several demographic and socioeconomic characteristics, including age, gender, education, annual household income, and family composition. **Table 1** provides more details on how each variable was operationalized.

### Analytic Strategy

The unit of analysis was the enrollee. The multivariate analysis assessed whether outcomes varied as a function of the care management group and included 3 multivariable regression models. However, these models differed in their specification based on the different types of dependent variables. In the case of utilization outcomes, a Poisson model was used, as ED visits and hospital admissions were both measured as counts. For adherence, a logistic regression model was used due to the dichotomous nature of the prescription refill variable. Finally, for clinical outcomes, an ordi-

**TABLE 1.** Descriptive Characteristics Coaching for Activation: Independent and Dependent Variables

Independent Variable (patient characteristics)	Coaching for Activation CM (n = 1520)	Usual CM (n = 16,277)	Significance (independent t test and $\chi^2$ test)		
Age, years: mean $\pm$ SD	55.36 $\pm$ 10.05	50.10 $\pm$ 12.71	$P < .001$		
Gender, n (%)			$P = .37$		
Female	722 (47.5%)	7929 (48.7%)			
Male	798 (52.5%)	8348 (51.3%)			
Education, n (%)			$P = .33$		
Total	847	8884			
<High school degree	4 (0.5%)	55 (0.6%)			
High school degree	699 (82.5%)	7132 (80.3%)			
Bachelor's degree	137 (16.2%)	1641 (18.5%)			
$\geq$ Master's degree	7 (0.8%)	56 (0.6%)			
Annual household income, n (%)			$P = .07$		
Total	728	7294			
<100% FPL	32 (4.4%)	421 (5.8%)			
100%-133% FPL	32 (4.4%)	265 (3.6%)			
134%-200% FPL	73 (10%)	579 (7.9%)			
>200% FPL	591 (81.2%)	6029 (82.7%)			
Family composition, n (%)			$P = .22$		
Total	738	7360			
Lives alone	182 (25%)	2023 (28%)			
2 people in household	232 (31%)	2160 (29%)			
3-4 people in household	324 (44%)	3177 (43%)			
Dependent Variable	N	Mean $\pm$ SD	N	Mean $\pm$ SD	
Number of ED visits	1520	0.81 $\pm$ 3.92	16,277	0.84 $\pm$ 1.89	$P = .76$
Number of admissions to hospital	1520	0.47 $\pm$ 1.11	16,277	0.82 $\pm$ 1.14	$P < .001$
Medication adherence		Compliant: 675 (77%) Noncompliant: 202 (23%)		Compliant: 5127 (73.6%) Noncompliant: 1841 (26.4%)	$P < .05$
A1C	867	7.88 $\pm$ 1.59	4412	7.45 $\pm$ 1.70	$P < .001$
LDL	729	92.41 $\pm$ 32.31	4880	97.51 $\pm$ 35.41	$P < .001$
SBP	924	127.27 $\pm$ 12.88	7989	125.10 $\pm$ 13.62	$P < .001$
DBP	924	75.81 $\pm$ 7.92	7985	76.31 $\pm$ 8.75	$P = .07$

A1C indicates glycated hemoglobin; CM, care management; DBP, diastolic blood pressure; ED, emergency department; FPL, federal poverty level; LDL, low-density lipoprotein; SBP, systolic blood pressure; SD, standard deviation.

nary least squares (OLS) model was used due to the continuous nature of these outcomes. For ease of interpretation, the incidence rate ratio was calculated for the ED visits and hospital admissions from the Poisson model and odds ratios were calculated for the adherence outcome. Beta coefficients were reported for the OLS models related to the clinical outcomes.

## RESULTS

Of the 1520 patients/enrollees in the CFA group, the mean baseline patient activation score was 66.4 (range = 0-100), with a median of 64.9. The largest number of patients/enrollees reported PAM scores at level 4 (n = 695; 49%), followed by level 3 (n = 342; 23%) and level 2 (n = 339; 22%). The fewest number of patients/enrollees reported PAM scores in the level 1 range (n = 144; 9%). This distribution is consistent with the results of other studies that have examined patient activation.<sup>18-20</sup>

Significant associations were detected between CM groups and utilization outcomes. Relative to enrollees in the CFA CM group, enrollees in the usual CM group experienced 18.29% more ED visits ( $P < .001$ ) and 97.78% more hospital admissions ( $P < .001$ ) (Table 2). CFA CM was not significantly associated with medication adherence. Relative to enrollees in the CFA CM, enrollees in the usual CM program had higher A1C levels ( $\beta = 0.48$ ;  $P < .001$ ) and SBP levels ( $\beta = 1.19$ ;  $P < .01$ ), but lower LDL levels ( $\beta = -4.25$ ;  $P < .01$ ) (Table 3). DBP was not significantly associated with the type of coaching received.

Additional analyses were conducted to evaluate the association of activation levels (1-4) on the study outcomes. PAM levels were not associated with better outcomes, with the exception of A1C (results not shown). Specifically, relative to enrollees in PAM level 4, A1C levels were higher for enrollees in PAM level 1 ( $\beta = 0.91$ ;  $P < .001$ ), PAM level 2 ( $\beta = 0.27$ ;  $P < .001$ ), and PAM level 3 ( $\beta = 0.11$ ,  $P < .01$ ).

## DISCUSSION

Our analysis found that CM with CFA was associated with lower healthcare utilization

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**TABLE 2.** Regression Results for the Relationship Between Coaching for Activation: ED and Hospital Admissions (Poisson) and Medication Adherence (Logistic)

	ED Visits		Hospital Admissions		Medication Adherence	
	IRR	SE	IRR	SE	OR	SE
Intercept		0.21		0.16	0.97	0.54
Predictor variables of primary interest						
Usual CM	18.29%***	0.05	97.78%***	0.06	0.82	0.12
CFA CM	Ref	Ref	Ref	Ref	Ref	Ref
Control variables						
Age						
Number of years	-1.98%***	0.001	-0.60%***	0.001	1.03***	0.004
Gender						
Female	30.87%***	0.03	10.96%***	0.03	0.93	0.08
Male	Ref	Ref	Ref	Ref	Ref	Ref
Education						
<High school degree	87.01%**	0.24	-47.74%**	0.24	0.36	0.62
High school degree	51.59%*	0.19	-26.51%*	0.13	0.89	0.47
Bachelor's degree	34.58%	0.20	-19.18%	0.14	1.07	0.47
≥Master's degree	Ref	Ref	Ref	Ref	Ref	Ref
Annual household income						
<100% FPL	32.18%***	0.05	0.30%	0.06	0.90	0.16
100%-133% FPL	23.99%***	0.06	-7.87%	0.07	0.76	0.20
134%-200% FPL	34.58%***	0.04	13.88%**	0.05	0.97	0.14
>200% FPL	Ref	Ref	Ref	Ref	Ref	Ref
Family composition						
Lives alone	13.77%***	0.03	5.02%	0.03	0.84*	0.09
2 people in household	4.81%	0.03	4.60%	0.03	1.08	0.09
3-4 people in household	Ref	Ref	Ref	Ref	Ref	Ref

CFA indicates coaching for activation; CM, care management; ED, emergency department; FPL, federal poverty level; IRR, incidence rate ratio; OR, odds ratio; Ref, referent; SE, standard error.  
\*\* indicates  $P < .05$ ; \*\*\* indicates  $P < .01$ ; \*\*\*\* indicates  $P < .001$ .

(ie, ED visits, hospital admissions) and better clinical values for 2 outcomes: A1C and SBP. These findings suggest that coaching interventions that are based on activation level may help care managers engage in more effective interactions that strengthen a patient's role in managing their healthcare. For sponsors and developers of care management programs, these findings suggest that the programs that are more targeted in their application—rather than uniformly developed and implemented—may be more effective at producing desired outcomes.

Given the research showing an association between adherence to treatment care plans<sup>6-11</sup> and better health outcomes,<sup>12-15</sup> another question that arose from these findings is whether care management with CFA does, in fact, produce higher levels of patient activation, or whether patient activation alone is suffi-

cient. Because the care management program with CFA considered in this study was only recently implemented, the number of enrollees with repeated patient activation scores was small and we were not able to adequately test changes in patient activation following participation in the program. This represents an important area for future research. As mentioned above, results from additional analyses indicated that patient activation by itself was not significantly associated with better outcomes in this patient population, with the exception of A1C levels. Together, these findings suggest that the care management program and patient activation may work synergistically to produce better outcomes; patients may achieve the best outcomes when efforts to improve patient activation are supported by health plan coaching.

In contrast, there was no significant difference between CFA CM and usual CM enrollees with respect to medication adherence. One explanation for this finding could be that the impact on medication adherence was counteracted by benefit designs that result in high co-pays, coinsurance, and/or deductibles. Consistent with this explanation, some research has found that newly diagnosed patients, or patients with newly prescribed medications, were at high risk for not obtaining their medication due to first-fill failures, higher co-payment, and type of insurance.<sup>21</sup> Assuming benefit-design decisions influence some service types and behaviors more than others, it is possible that the effects of such decisions were felt more acutely in the area

of prescription drugs. It is also possible that the impact of higher cost sharing may have inadvertently impacted prescription refill compliance sooner than other metrics, such as utilization and clinical outcomes.

In contrast to expectations, this study found a significant negative association between CFA CM and LDL. One possible reason for this finding can be linked to the initial program design and the timing of implementation. In February 2013, the initial focus was on enrollees with diabetes; therefore, the CFA CM program was first implemented for patients with diabetes and later expanded to enrollees with other chronic diseases. The phased implementation of this program for conditions like hypertension and congestive heart failure meant that members of the CM team may have had less experience delivering CFA services to patients with these

**TABLE 3.** Regression Results for the Relationship Between Coaching for Activation: A1C, LDL, SBP, DBP (ordinary least squares)

	A1C		LDL		SBP		DBP	
	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE
Intercept	8.47***	0.13	121.55***	2.61	111.91***	0.67	76.50***	0.44
Predictor variables of primary interest								
Usual CM	0.48***	0.06	-4.25**	1.38	1.19**	0.46	-0.40	0.30
CFA CM	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Control variables								
Age								
Number of years	-0.02***	0.002	-0.35***	0.05	0.23***	0.01	-0.03**	0.008
Gender								
Female	0.18**	0.05	-8.62***	0.93	2.31***	0.28	1.21***	0.19
Male	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Education								
<High school degree	-0.05	0.40	-3.18	7.84	1.44	2.61	2.41	1.71
High school degree	0.03	0.06	-1.43	1.17	0.57	0.35	1.00***	0.23
Bachelor's degree	-0.16	0.09	-1.10	1.67	-0.89	0.51	0.90**	0.33
≥Master's degree	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Annual household income								
<100% FPL	0.10	0.14	0.55	2.80	1.89*	0.90	1.13*	0.59
100%-133% FPL	0.46**	0.17	0.77	3.60	0.39	1.05	-0.21	0.69
134%-200% FPL	0.21	0.12	3.31	2.40	0.34	0.75	-0.36	0.49
>200% FPL	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Family composition								
Lives alone	0.12	0.08	-0.11	1.54	0.34	0.47	-0.11	0.31
2 people in household	0.004	0.07	0.23	1.45	-0.06	0.45	-0.45	0.29
3-4 people in household	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref

A1C indicates glycated hemoglobin; CFA, coaching for activation; CM, care management; DBP, diastolic blood pressure; FPL, federal poverty level; LDL, low-density lipoprotein; Ref, referent; SBP, systolic blood pressure; SE, standard error.

\*\* indicates  $P < .05$ ; \*\*\* indicates  $P < .01$ ; \*\*\*\* indicates  $P < .001$ .

conditions. Thus, the negative relationship between CFA and LDL levels—a measure of dietary and health compliance for patients with cardiovascular conditions—may reflect an experiential learning effect whereby things “get worse before they get better,” as CM team members engaged in trial-and-error efforts to identify effective techniques for working with enrollees.<sup>22,23</sup> If so, patients with these conditions may not have exhibited the same levels of improvement in behaviors, and subsequent lab values, because the CM team members were at different points on the learning curve with respect to cardiovascular conditions compared with patients with diabetes.

For sponsors and administrators of care management programs, the study findings suggest that bundling CM with CFA might be beneficial for managing the health and healthcare of chronically ill populations. As such, administrators may want to consider obtaining patient activation scores online as part of a health risk assessment for new enrollees, and annually upon reenrollment.

Doing so is likely important for identifying whether CM and CFA are needed and for maximizing the effectiveness of implemented programs (eg, PAM scores can change throughout a person's life due to life stressors).<sup>24</sup> The benefits of these data from a population health management perspective, however, must be balanced against the cost of data collection.

### Limitations

There are several limitations that should be considered when interpreting the study findings. First, the study compared 2 types of care management: one that included coaching based on patient activation level and the other based on usual care. Due to the phased implementation (ie, initially targeting patients with diabetes and later all patients with any chronic condition) and retrospective nature of this study, it was not feasible to randomly assign enrollees to these 2 groups, so selection bias may exist. Further, although the multivariable models control for some differences between

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the 2 groups, not all potentially confounding variables (eg, disease severity) were available, and therefore, could not be included as covariates. Second, the analysis focused on commercial patients, and the study population was primarily male and younger (ie, aged 50-55 years). Focusing on this population ensured greater homogeneity among study participants and, thus, helped account for other confounders; however, it also limited the generalizability of the study findings. Third, because the same nurses provided CM services to both the CFA and the usual CM groups, it is possible that nurses' interactions with and coaching of patients in the usual CM group could be influenced by their CFA training, despite the fact that those patients did not receive the CFA intervention. Lastly, there may be other programmatic factors that influenced the outcomes. For example, the consistency of coaching may have varied among care managers, thus allowing for variations in intervention implementation in ways that systematically affected the outcomes.

### Future Research

The aforementioned limitations highlight several opportunities for future research. This study focused on utilization, medication adherence, and clinical outcomes; however, there are other outcomes that may be of interest, including total cost of care per PAM level, enrollment in health programs (eg, nutrition counselling, smoking cessation), or more subjective assessments (eg, patient satisfaction, quality of life). Other researchers may also consider the care management intervention itself, such as the interaction style between the care manager and enrollees (eg, trust, mutual respect) or other patient populations, such as Medicare and Medicaid, in addition to different healthcare settings (eg, hospital, ambulatory) to assess the study's generalizability.

## CONCLUSIONS

These findings suggest that coaching interventions that are based on activation level may help care managers engage in more effective interactions that strengthen a patient's role in managing his or her healthcare. For sponsors and developers of care management programs, these findings suggest that the programs that are more targeted in their application—rather than uniformly developed and implemented—may be an important factor in reducing utilization and improving clinical outcomes. ■

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