Behavior-Based Diabetes Management: Impact on Care, Hospitalizations, and Costs

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ABSTRACT

OBJECTIVES: To (1) examine the impact of the Diabetes Care Rewards (DCR) program on adherence to care standards and (2) evaluate the economic impact of adherence to care standards.

STUDY DESIGN: A retrospective observational cohort study design with propensity matching. Additional covariates adjustment was used to minimize residual imbalance.

METHODS: Utilization and cost data were compared between individuals enrolled vs individuals eligible for but not enrolled in the DCR program using a standard mean difference. Individuals were employees or their dependents from self-insured companies throughout the United States. Outcomes included adherence to the care standards, service utilization, and costs.

RESULTS: A total of 3318 propensity-matched participants were included. Primary analysis revealed that enrolled members increased adherence to semiannual glycated hemoglobin, annual lipid, and annual urine albumin-creatinine ratio testing. Additionally, enrolled members experienced less utilization of high-acuity services and increased rates of physician visits. In a secondary analysis, the enrolled group was associated with greater pharmaceutical costs but lower medical costs.

CONCLUSIONS: A behavioral science– and incentive-based diabetes management program was associated with greater rates of adherence to recommended diabetes monitoring care standards, increased routine clinic visits, decreased hospital admissions, and decreased inpatient days. Anticipated increases in pharmaceutical expenditures were offset by overall lower medical expenditures. Results indicate the economic benefits of adherence to evidence-based standards for diabetes care.

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Diabetes has a major adverse impact on productivity, disability, and health care costs.[1-4] The American Diabetes Association (ADA) recently updated estimates of the economic burden of diagnosed diabetes, reporting a total estimated cost in 2017 of $327 billion, including $237 billion in direct medical costs and $90 billion in reduced productivity.[5] For employers, the indirect costs of diagnosed diabetes include increased absenteeism ($3.3 billion) and reduced productivity while at work ($26.9 billion). Much of the medical cost of diabetes is related to comorbidities and complications arising from inadequate management of the disease. To help mitigate the adverse consequences of poor control of diabetes, the ADA provides evidence-based standards of care for persons with diabetes.[6] Unfortunately, despite availability of these care standards and expanded therapeutic options, most people with diabetes demonstrate gaps in clinical care, low adherence to glucose monitoring, and inadequate management of cardiovascular risk factors.[7-9] The proportion of patients meeting standards for diabetes care, such as glycated hemoglobin (A1C), blood pressure (BP), and low-density lipoprotein cholesterol levels, has not improved significantly between 2005 and 2016.[10] Only 1 in 6 individuals with diabetes in the United States is achieving concomitant goals for A1C, BP, and cholesterol, as well as avoiding tobacco use.[11]

Individuals with diabetes who are actively engaged in the management of their condition have fewer and less serious adverse health outcomes and avoid unnecessary hospitalizations compared with those who are not as engaged.[12,13] Preventing unnecessary hospitalizations can significantly reduce overall health care spending.[14,15] One promising approach harnesses the evidence base from behavioral science and behavioral medicine research.[16,17] The use of structured incentives to engage individuals in health behaviors is an evidence-based behavioral science approach. Successful incentive-based interventions require careful attention to design and implementation.[18] Incentives must be contingent, timely, and sufficiently large to both engage individuals and sustain the target health behaviors over time. This study examines the impact of the Diabetes Care Rewards (DCR) program, a behavioral science– and incentive-based care management program designed to increase

patient engagement in the management of their diabetes by rewarding timely completion of evidence-based standards of care.[19] The DCR program was developed to address the increasing burden of unmanaged diabetes on employee health and productivity and to reduce costs to self-insured employers and their covered employees and dependents. The program was first implemented in 2007 for a financial services company with offices located across the United States. The program utilizes proven principles of behavioral science, is provider-centric, and incorporates ADA standards for diabetes education and self-management support using a structured diabetes health action plan (DHAP) care guide. It was hypothesized that the program would increase the proportion of persons with diabetes completing evidence-based diabetes screening evaluations in addition to reducing total medical costs and overall hospitalization rates.

TAKEAWAY POINTS

This study evaluated a commercially available diabetes care management program for members of self-insured health plans across the United States.

- Adherence to diabetes care standards can be improved significantly by deploying an approach to care management based on behavioral science and incentives.
- The pattern of health care service utilization improved with decreased hospital admissions and hospital days while outpatient physician visits increased for those members enrolled in the diabetes care management program.
- The study provides a business case for employers and health plans to promote patient engagement through use of contingent incentives, leading to better health outcomes and lower plan costs.

METHODS

Design and Setting

We conducted a retrospective observational cohort study to compare utilization and cost data between individuals enrolled vs individuals eligible, but not enrolled, in the DCR program. Individuals were employees or their dependents (ie, members) from 26 self-insured companies throughout the United States. Self-insured companies cover the medical and pharmaceutical expenses of their employees and their beneficiaries, rather than outsourcing these costs to a third-party health insurance provider. The 26 companies were clients of Abacus Health Solutions that participated in the co-pay waiver incentive of the DCR program.

Study Cohort

The enrolled cohort was composed of members of any age or gender enrolled in the DCR program. Eligibility for enrollment required a diagnosis of diabetes, using claims-based *International Classification of Diseases, Ninth Revision* (*ICD-9*) or *Tenth Revision* (*ICD-10*) diagnosis codes, and presence of a 24-month block of continuous enrollment with at least 1 medical or pharmacy claim during that period. This 24-month block included 12 months of claims data prior to DCR program enrollment and 12 months of claims data following enrollment. The unenrolled group was composed of individuals with a diagnosis of diabetes, using claims-based *ICD-9* or *ICD-10* diagnosis codes or by identifying individuals taking 1 or more glucose-lowering medications, who were eligible for the DCR program but who did not enroll (see **eAppendix Table 1** [eAppendix available at **ajmc.com**]). Members in the control group were also required to have 24 months of continuous claims data. Both groups were engaged using multiple efforts in the forms of mailings to the home for employees and covered dependents, and employees in both groups also received employer postal mail, employer email, and exposure to workplace posters and materials promoting program engagement.

Intervention

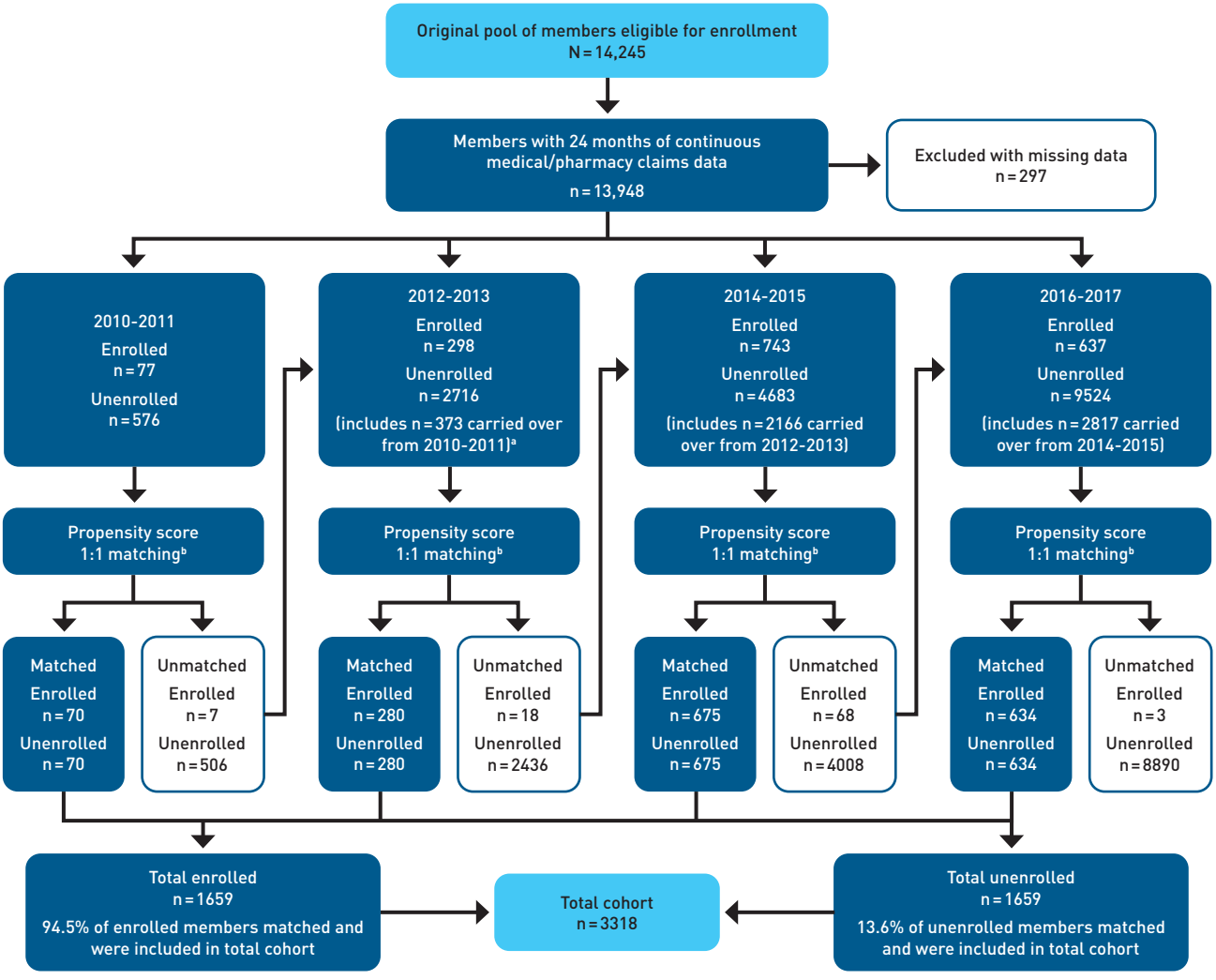
The DCR program provides incentives in the form of pharmacy co-pay waivers to cover out-of-pocket expenses for diabetes medications and supplies. Pharmacy co-pay waivers were contingent on members having an active relationship with their primary care physician or endocrinologist and documenting completion of recommended diabetes care processes: (1) semiannual testing of A1C, (2) annual lipid panel, (3) annual urine albumin-creatinine ratio (ACR), (4) annual eye exam, and (5) annual foot exam. The DCR program utilizes a patented system grounded in behavioral science for contingent activation and deactivation of incentives. Through integration with each member's pharmacy benefit, co-payments for diabetes medications and supplies were waived at the point of sale if the member wass actively adherent to all program criteria; otherwise, co-payments were required. Pharmacies were provided a data feed of information regarding each participant's adherence status, which was updated daily.

To receive the co-pay waiver incentive, members were required to complete an annual 30- to 45-minute telephonic assessment by a trained certified diabetes nurse educator or clinical pharmacist to develop a written DHAP that is shared with and signed off by their diabetes treatment provider. Using motivational interviewing, these trained clinical staff complete the DHAP as a structured interview using guidelines for diabetes self-management education and support as promoted by the ADA.[20] The DHAP addresses core aspects of diabetes self-management, identifies barriers and challenges to health-related goals, and provides training on stimulus-control techniques. Telephonic follow-up is scheduled for 3 months but is adjusted by the nurse or pharmacist according to participant needs.

Data Analysis

Enrollment status was defined as enrolled vs unenrolled in the DCR program. Propensity score matching was used to identify the unenrolled group, as the enrolled group was self-selected by the member and possibly confounded by variables such as demographics

FIGURE. STROBE Diagram of Cohort Construction



[a]Beginning with the 2012-2013 time block, members who were unmatched and unenrolled after propensity score matching in the previous 2010-2011 time block and who also had 24 months of continuous claims data within the 2012-2013 time block were carried into that time block. This process was applied to the subsequent 2014-2015 and 2016-2017 time blocks.

[b]The same propensity score matching algorithm and tolerance used in the 2010-2011 block was used in each of the 3 remaining time blocks.

and comorbidities. Covariates included in the propensity score matching model were calendar time, age, region, sex, comorbidities (preintervention insulin use status and Elixhauser Comorbidity Index score[21]), and preintervention total medical costs capped at $200,000 parameterized as quartiles.[15] All costs were adjusted to 2018 US$ using the Consumer Price Index inflation calculator for health care services from the US Department of Labor.

To adjust for these baseline (initial 12-month, pre–index date) characteristics, control members were matched by propensity scores with match tolerance set at 0.10 (0, exact match; 1.0, any control would match any intervention member) using a nearest neighbor approach, and analysis was conducted on the resulting matched sample. Enrolled members were assigned to 2-year time blocks based on the calendar year at the onset of their 24-month claims interval. Unenrolled members were allocated to the earliest 2-year time block for which they had 24 months of continuous claims data and underwent 1:1 propensity score matching with the enrolled members. Those who remained unmatched and unenrolled after propensity score matching and had 24 months of continuous claims data in the next 2-year time block were then carried forward into the next 2-year time block. The process of carrying forward those unmatched and unenrolled members was applied to the 2012-2013, 2014-2015, and 2016-2017 time blocks (**Figure** and **eAppendix Figure**). Those who were unmatched and unenrolled after propensity score

matching in the 2016-2017 time block were excluded from the study (n = 8890); however, no members were excluded due to nonoverlapping propensity scores between the 2 groups.

For the intervention group, the index date was the date of enrollment into the DCR program. The outcomes were ascertained during the 12 months following the index date and baseline information was ascertained from the 12 months preceding the index date. For the control group, each member had an index date for data inclusion that overlapped within 12 months of their matched intervention group member. The outcomes of interest were (1) receipt of routine diabetes screening measures (semiannual A1C, annual lipid panel, and annual urine ACR), (2) service utilization (hospital admission, hospital days [counts, truncated to 60 days], and outpatient office visits [counts]), and (3) costs (pharmacy and medical [pharmacy and medical measured per member per month, capped at $200,000 for medical costs]). Capping medical costs is an established method used by health plans to attenuate the impact of catastrophic claim costs and has been used in recent studies of diabetes.[15]

Characteristics between the enrolled and unenrolled groups were compared and differences between the groups were assessed using a standardized mean difference (SMD).[22] Analyses were further adjusted for covariates that had an SMD greater than 0.10 to adjust for residual imbalances in the matched sample.[22,23] In the analysis of primary outcomes, namely medical care, services, and costs, we employed outcome models in the matched sample (ie, adjusted for some covariates included in the propensity score) to allow for further adjustment of possible covariate imbalance by total preintervention costs and region.[23,24] Pharmacy and medical costs for the year were divided by 12 to calculate per-member per-month costs. To allow the model to be more flexible, we included total preintervention cost as a continuous variable with quadratic splines and centered this variable on its mean.[25] Models for the receipt of medical care and service outcomes were adjusted for preintervention total costs and geographic region. Similarly, models for cost outcomes adjusted for the preintervention total costs, region, and the propensity score. For comparison, we also presented the matched, unadjusted analyses. Results adjusted for other imbalances in preintervention variables were comparable (see eAppendix). Binary outcomes were modeled using a log-binomial or logistic regression, count outcomes were modeled using negative binomial regression or a zero-inflated Poisson regression, and costs were modeled using gamma regression. When log-binomial models did not converge, log-Poisson models were used to estimate risk ratios.[26] Analyses were performed using SPSS version 25 (IBM) and R version 3.6.1 with RStudio version 1.2.1335 (R Project for Statistical Computing).

RESULTS

Study Cohort

A total of 14,245 members with diabetes were eligible for enrollment into the DCR program between August 1, 2010, and December 27, 2017. Of this initial pool, 13,948 had 24 months of continuous claims data.

TABLE 1. Preintervention Baseline Characteristics in a Matched Sample of Enrollees and Nonenrollees in the Diabetes Care Rewards Program From 26 Self-insured Companies in the United States, 2012-2017 (N = 3318)

Characteristic	Enrolled n = 1659	Unenrolled n = 1659	|SMD|
Age in years, mean (SD)[a]	53.4 (14.2)	54.7 (14.7)	0.09
Gender, n (%)[a]			0.02
Female	706 (42.5)	691 (41.7)	
Male	953 (57.4)	968 (58.3)	
Region, n (%)[a]			0.17
Northeast	975 (58.7)	1062 (64.0)	
Midwest	123 (7.4)	97 (5.9)	
South	408 (24.6)	413 (24.9)	
West	153 (9.2)	87 (5.2)	
Insulin status, n (%)[a]			0.01
Insulin independent	1167 (70.3)	1175 (70.8)	
Insulin dependent	492 (29.7)	484 (29.2)	
Preintervention total cost quartiles, n (%)[a,b]			0.13
$0-<$3674	415 (25.0)	415 (25.0)	
$3674-<$8231	426 (25.7)	403 (24.3)	
$8231-<$18,629	433 (26.1)	396 (23.9)	
≥$18,629	385 (23.2)	445 (26.8)	
Elixhauser Comorbidity Index score,[a] mean (SD)	11.54 (10.87)	13.39 (13.01)	0.07

SMD, standardized mean difference.

[a]Characteristics that were incorporated into the 1:1 propensity score matching.

[b]Amounts greater than $200,000 were truncated to $200,000.

The Figure shows the STROBE diagram of the construction of the cohort. After the process of 1:1 propensity score matching, a total of 3318 members were matched: 1659 members in the enrolled group and 1659 members in the unenrolled group. Descriptive statistics regarding the preintervention cohort are provided in **Table 1**. Members were mostly male, middle-aged, from the Northeast, and not prescribed insulin. When comparing baseline characteristics in the matched sample using an SMD, there were modest differences by region (SMD, 0.17) and preintervention total cost (SMD, 0.13). The enrolled group was more likely to be from the Midwest (7.4% vs 5.9%) and West (9.2% vs 5.2%) compared with the unenrolled group. The enrolled group had lower mean (SD) preintervention total costs ($16,137 [$26,497] vs $21,928 [$38,504]).

Table 2 displays the estimated effects of enrollment in the DCR program on each of the medical care and service outcomes in the matched sample, both unadjusted and adjusted for preintervention total costs and region. After adjustment for preintervention total costs (with a spline) and region, enrolled members had an increased likelihood of adherence to the semiannual A1C (risk ratio [RiR], 1.32; 95% CI, 1.25-1.40), annual lipid panel (RiR, 1.09; 95% CI, 1.05-1.14), and annual urine ACR (RiR, 1.38; 95% CI, 1.29-1.47). Enrolled members had a lower estimated risk of hospital admissions (RiR, 0.62; 95% CI, 0.51-0.75), lower rate of hospital admissions per calendar year (rate

TABLE 2. Estimated Effects of Diabetes Care Rewards Program on Medical Care and Service Outcomes in a Matched Sample of Enrollees and Nonenrollees From 26 Self-insured Companies in the United States, 2012-2017 (N = 3318)[a]

Outcome	Unadjusted	Adjusted for region and preintervention total cost (continuous)	Adjusted for region and preintervention total cost (continuous with quadratic spline)
	Risk ratio (95% CI)	Risk ratio (95% CI)	Risk ratio (95% CI)
Receipt of medical care (yes vs no)			
A1C test	1.31 (1.23-1.39)	1.35 (1.27-1.43)[b]	1.32 (1.25-1.40)[b]
Lipid panel	1.09 (1.04-1.14)	1.10 (1.05-1.15)[b]	1.09 (1.05-1.14)[b]
Urine ACR test	1.36 (1.27-1.45)	1.40 (1.31-1.50)[b]	1.38 (1.29-1.47)[b]
Service			
Hospital admission (yes vs no)	0.54 (0.45-0.65)	0.63 (0.52-0.76)[b]	0.62 (0.51-0.75)[b]
Physician visit (yes vs no)	1.18 (1.14-1.23)	1.20 (1.15-1.25)[b]	1.19 (1.15-1.24)[b]
	Odds ratio (95% CI)	Odds ratio (95% CI)	Odds ratio (95% CI)
Hospital admission (yes vs no)	0.49 (0.40-0.61)	0.57 (0.46-0.71)	0.56 (0.45-0.70)
Physician visit (yes vs no)	1.92 (1.64-2.25)	2.03 (1.73-2.38)	2.01 (1.71-2.37)
	Rate ratio (95% CI)	Rate ratio (95% CI)	Rate ratio (95% CI)
Hospital stay length[c] (days per 12 months)	0.54 (0.37-0.80)	0.65 (0.45-0.94)[d]	0.66 (0.43-1.01)
Hospital admission[e] (admits per 12 months)	0.35 (0.27-0.44)	0.47 (0.37-0.59)	0.46 (0.37-0.58)
Physician visits[f] (per 12 months)	1.30 (1.16-1.45)	1.43 (1.30-1.57)[d]	1.39 (1.26-1.52)

A1C, glycated hemoglobin; ACR, albumin-creatinine ratio.

[a]All comparisons are enrolled vs nonenrolled. Effect estimates are displayed as risk ratios or odds ratios for binary outcomes and rate ratios for count outcomes with corresponding 95% CIs.

[b]These log-binomial models did not converge and log-Poisson models, which provide consistent but not fully efficient estimates of the risk ratio, were used.

[c]Due to the large number of participants with no hospital admissions (and 0 days for length of hospital stay), this model was fit using a zero-inflated negative binomial regression and corresponding 95% CIs were obtained using a bootstrap resampling procedure.

[d]Due to model convergence issues, region was included as a binary variable (Northeast vs elsewhere).

[e]Due to the large number of patients with no hospital admissions, this model was fit using a negative binomial generalized linear model and corresponding 95% CIs were obtained using model-based standard error.

[f]Due to the large number of participants with no physician visits, this model was fit using a zero-inflated negative binomial regression and corresponding 95% CIs were obtained using a bootstrap resampling procedure.

ratio [RaR], 0.46; 95% CI, 0.37-0.58), and lower rate of inpatient days per calendar year (RaR, 0.66; 95% CI, 0.43-1.01). Enrolled members also had almost a 40% increase in the rate of physician visits per calendar year (RaR, 1.39; 95% CI, 1.26-1.52). Results for the medical care and service outcomes were comparable after adjustment in the outcome model for preintervention total costs, region, age, and Elixhauser Comorbidity Index score (see eAppendix Table 1).

The unadjusted and adjusted estimated effects of enrollment in the DCR program on cost outcomes are presented in **Table 3**. Adjusting for the propensity score, region, and preintervention total cost (spline), the enrolled group demonstrated greater pharmaceutical costs (average per-member per-month cost difference of $67.41; 95% CI, $44.97-$89.85) but lower hospital costs (average per-member per-month cost difference of −$129.10; 95% CI, −$230.77 to −$27.34). Results for the cost outcomes were comparable after adjustment for preintervention total costs, region, age, and Elixhauser Comorbidity Index score (see **eAppendix Tables 2** and **3**).

DISCUSSION

In this real-world study, individuals with diabetes who were enrolled in an incentive-based care management program demonstrated increased adherence to recommended diabetes care standards, increased provider outpatient visits, decreased hospital admissions, and decreased inpatient hospital days. The program was associated with greater pharmaceutical expenditures, but this was offset by lower total medical costs. These findings confirm the hypothesis that a behavioral science– and incentive-based approach to diabetes, incorporating contingent and meaningful rewards to promote engagement with diabetes care teams, can improve adherence to diabetes care while significantly reducing the use of high-acuity health services.[27]

The DCR program was designed and evaluated specifically with health plans and employers—especially those that are self-insured, for which both productivity and cost benefits are priorities—and provides a health plan–based incentive for initial and continued engagement in completing ADA care standards. Members are provided an enhanced plan benefit (ie, co-pay reductions) for being actively engaged in the program, with this incentive contingent upon the member's adherence to the standards of diabetes care, which could be completed only through collaboration between the member and their health care provider(s). With respect to improving recommended diabetes care standards, participation in the DCR was associated with greater adherence to A1C and urine ACR testing compared with lipid panel testing. This finding likely reflects the additional requirement for 12-hour fasting and venous blood draw for a lipid exam as opposed to obtaining an A1C level, which does not require fasting and can be obtained by point-of-care testing.

Regarding provider engagement, those members enrolled in the DCR program experienced almost a 40% increase in the number of

TABLE 3. Estimated Effects of Diabetes Care Rewards Program on Cost Outcomes in the Matched Sample of Enrollees and Nonenrollees From 26 Self-insured Companies in the United States, 2012-2017 (N = 3318)[a]

Outcome	Unadjusted	Adjusted for propensity score	Adjusted for propensity score, region, and preintervention total cost (continuous)	Adjusted for propensity score, region, and preintervention total cost (continuous with quadratic spline)
Cost (per member per month)	**Cost ratio (95% CI)**	**Cost ratio (95% CI)**	**Cost ratio (95% CI)**	**Cost ratio (95% CI)**
Pharmacy	0.87 (0.76-1.00)	0.88 (0.76-1.01)	1.37 (1.22-1.53)	1.43 (1.27-1.62)
Medical	0.58 (0.51-0.67)	0.58 (0.51-0.67)	0.80 (0.69-0.92)	0.79 (0.67-0.91)
Cost (per member per month)	**Cost difference in US$ (95% CI)**	**Cost difference in US$ (95% CI)**	**Cost difference in US$ (95% CI)**	**Cost difference in US$ (95% CI)**
Pharmacy	−86.86 (−176.10 to 2.39)	−77.50 (−167.77 to 12.77)	75.03 (52.66-97.40)[b]	67.41 (44.97-89.85)[c]
Medical	−650.50 (−827.24 to −473.77)	−653.39 (−830.35 to −476.44)	−124.90 (−225.80 to −23.91)[b]	−129.10 (−230.77 to −27.34)[d]

[a]All comparisons are enrolled vs nonenrolled. Effect estimates are displayed as cost ratios and average cost differences with corresponding 95% CIs.

[b]The model adjusted for propensity score, preintervention total costs, and region did not converge for the gamma regression with an identity link, so this model excluded the propensity score.

[c]The model adjusted for propensity score, preintervention total costs (spline), and region did not converge for the gamma regression with an identity link, so this model excluded the propensity score and included a binary term for region (Northeast vs elsewhere).

[d]The model adjusted for propensity score, preintervention total costs (spline), and region did not converge for the gamma regression with an identity link, so this model excluded the propensity score, included a quadratic term for preintervention total costs (instead of the spline), and included a binary term for region (Northeast vs elsewhere).

primary care provider visits, suggesting more active and effective management of their diabetes, resulting in less need for hospital-based services. This is reflected by the reduction in hospital admissions and total inpatient days. These results are consistent with recently published findings by Zhang et al that showed a positive association between the frequency of contact with a patient's primary care provider and both a decrease in A1C level and lower rates of 10-year occurrence of cardiovascular events.[28]

Being enrolled in the DCR program was associated with greater medication use and pharmaceutical expenses. Interestingly, the estimated cost difference indicated a higher pharmacy cost among those enrolled once we adjusted for preintervention total cost and region compared with those not enrolled. We anticipated an increase in pharmacy costs, as the DCR program was aimed at increasing engagement in care. Although pharmacy costs were higher for enrolled members than for unenrolled members, this study was unable to capture pharmacy rebates from manufacturers and pharmacy benefit managers to self-insurers. The cost-benefit analysis of this program weighs pharmaceutical expenses against the costs of hospitalizations and other high-acuity services. Rebates decrease the final costs of pharmacy expenditures and, if available, would result in an even more favorable cost-benefit ratio of the DCR program.

Strengths and Limitations

Strengths of this study include matching enrolled members to eligible unenrolled members using propensity score matching.[22,23] Matching on patient characteristics such as age, sex, Elixhauser Comorbidity Index score, geographic region, and insulin use offers some protection against comparing heterogeneous cohorts by ensuring that both study cohorts contained members with certain similar baseline characteristics. Additional strengths include a novel but practical and feasible incentive structure that scaled across multiple diverse self-insured employers.

As an observational study that utilized administrative claims data, this analysis is subject to inherent limitations, including selection bias. Members who enrolled are likely different from those who did not enroll, which is unavoidable in retrospective studies of voluntary programs. To address this limitation, members were propensity score matched in the analysis, which is a valid approach to control for measured confounders, including insulin dependence, to compare members whose disease state has or has not advanced to the point of requiring insulin therapy. When adjusting for covariates in an outcome model to control for residual imbalance between the groups, the outcome model needs to be correctly specified. To address this concern, we flexibly modeled covariate functional forms and conducted sensitivity analyses for covariates included in the outcome model. Because this study was reliant on administrative claims data alone, comparisons between clinically reported and laboratory values of enrolled vs unenrolled members could not be made. Additionally, identifying those with diabetes could be done only by using *ICD-9* and *ICD-10* codes (see eAppendix) or by identifying individuals taking 1 or more glucose-lowering medications.

CONCLUSIONS

By creating behavioral activation with a contingent financial incentive and promoting ongoing participant-provider interactions, the DCR program reported here reduced rates of gaps in care, high-cost health care utilization, and total medical costs from the perspective

of health plans and self-insured employers. Consequently, a business case exists for health plans to promote patient engagement through use of contingent incentives, with the goal of leading to better health outcomes and lower plan costs. ■

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