Evaluating the impact of a pay-for-outcomes program rewarding primary care physicians for optimal LDL-C management

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Background

Introduction

It is well known that increased access to primary care physicians (PCPs) and coordinated, consistent care for treatment and prevention improve healthcare and promote healthier patients.[1,2] However, little evidence exists regarding the impact of incentivizing physicians on the clinical outcomes of their patients. Within the Humana Medicare member population, a Pay-for-Outcomes (P4O) program was implemented from 1/1/2010 through 12/31/2010, rewarding PCPs whose patients achieved or maintained low-density lipoprotein cholesterol (LDL-C) levels at or below 100 mg/dL. The impact of this program has not yet been formally evaluated.

Objectives

This study was an exploratory analysis of Medicare members evaluating the impact of the P4O program for participants relative to a matched control cohort for the following outcomes measures:

- maintaining or reaching LDL-C level at or below 100 mg/dL
- total healthcare costs pre- versus post-P4O program initiation.

Methods

- The retrospective cohort study utilized member enrollment, medical, pharmacy, and laboratory claims data from Humana.
- The intervention cohort comprised Medicare Advantage HMO members whose designated PCPs were participating in the P4O program. A control cohort was identified from Medicare Advantage HMO members in the same or nearby regions whose PCPs were not participating in the P4O program.
- P4O cases were matched to controls in a 1:3 ratio based on propensity score matching. To assure that the two groups were similar in terms of baseline patient characteristics, we matched on the following baseline variables: cardiovascular (CV) risk,[3] age, gender, ethnicity, RxRiskV comorbidity score,[4,5] utilization of LDL-C screening, availability of LDL-C values from laboratory claims, CV-related hospital stay and ER visit, and healthcare spending. The RxRiskV is a comorbidity index derived from drug claims data and has been validated to predict healthcare utilization and cost (the average in a Veterans Administration population with hypertension treated with anti-hypertensive medications was approximately 2).[5]
- Logistic regression was conducted to estimate the odds ratio of achieving or maintaining LDL-C goal for the P4O participants relative to the non-P4O controls.
- The impact of the P4O intervention on total healthcare costs was assessed through a difference-in-difference (DID) generalized linear model with a log link and gamma distribution (generalized estimation equation method accounted for repeated measures).

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Results

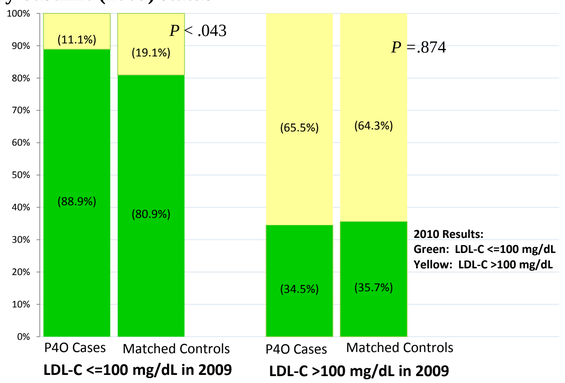
Table 1 Demographic and clinical characteristics of P4O cases and matched controls (all members with continuous coverage in 2009-2010)

	P4O Cases (n=1,715)	Matched Controls (n=5,145)
Age, years (mean, SD)	71.2 (8.4)	71.5 (9.4)
Gender (Women)	57.0%	56.1%
Race (White)	93.4%	93.5%
Participant-to-physician ratio*	33.0 (16.7)	32.4 (20.4)
Physician type (% internist)	42.2%	43.0%
Low Income Subsidy status	7.4%	8.1%
RxRiskV Score (mean, SD)[4,5]	3.2 (2.2)	3.1 (2.4)
Number of unique meds at baseline (mean, SD)	7.5 (5.0)	7.5 (5.3)
Baseline use of cholesterol meds**	54.2%	47.4%
Baseline LDL-C screening	69.7%	67.9%
Baseline medical spending (mean, median)	$5,242 ($1,664)	$5,350 ($1,757)
Baseline CV-related hospitalization	7.6%	7.7%
Baseline CV-related ER visit	6.8%	6.9%
Moderate CV risk[3]	27.7%	27.7%
High CV risk[3]	47.4%	47.4%
Baseline diabetes diagnosis	27.9%	27.3%

***P< .05; **P< .01*

- A total of 1,715 P4O program participants with continuous enrollment in 2009 and 2010 were identified in the Humana member administrative claims data. For each of the continuously enrolled participants, there were 3 matched controls, or 5,145 non-P4O participants (Table 1).
- Overall, the baseline characteristics of the P4O participants and non-P4O controls were well-matched (Table 1).
- 75% of the P4O participants were at moderate or high CV risk[3] (Table 1).

Figure 1 Members reaching or maintaining LDL-C goal in 2010, by baseline (2009) status



Only members who had LDL-C measures in both 2009 and 2010 were included in this figure (n= 172 for P4O cases and n= 742 for matched controls).

- Among members with LDL-C values in 2010, 65.0% of P4O cases vs. 57.3% of matched controls reached or maintained goal in 2010 ($P<.01$).
- Among members with LDL-C values in both 2009 and 2010, 71.5% of P4O cases and 63.5% of matched controls reached or maintained goal in 2010 ($P=.047$).
- For members with LDL-C values in both years, the difference was driven primarily by members whose LDL-C levels were less than 100 mg/dL at baseline (in 2009) and who maintained goal in 2010 (Figure 1).

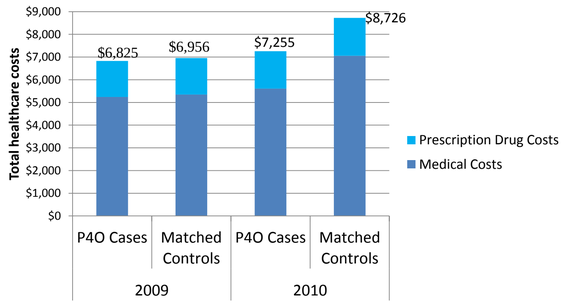
Table 2 Odds ratios and 95% confidence intervals for impact of P4O on reaching or maintaining goal by CV risk*

	Odds Ratio	95% Confidence Limits	
P4O vs. Control at low CV risk	0.73	0.39	1.36
P4O vs. Control at moderate CV risk	1.01	0.62	1.65
P4O vs. Control at high CV risk	1.57	1.09	2.28

Based on logistic regression results, where other control variables were age, gender, ethnicity, RxRiskV comorbidity score, and baseline use of cholesterol medication. All members with laboratory values in 2010 were included in this analysis. Sample size = 1,891.

- P4O participants had higher odds of achieving or maintaining LDL-C goal if they were high CV-risk patients. No difference was observed in achieving or maintaining goal among the low or moderate CV-risk patients (Table 2).

Figure 2 Mean total healthcare costs



Unadjusted GLM model with log link and gamma distribution (GEE method to account for repeated measures). Note medical costs include all-cause medical costs and prescription drug costs include all prescription drugs (n=1,715 for P4O cases and n=5,145 for matched controls).

- In the DID total healthcare cost model, the P4O program was associated with a reduced increase in total costs relative to 2009, in comparison with non-participation (increase in total healthcare costs of $430 for P4O cases vs. $1,770 for matched controls, $P<.01$, Figure 2).

Discussion

- Results suggest that the P4O initiative slowed the growth of healthcare costs when compared with a control group, which may be driven by a higher proportion of Medicare patients maintaining their LDL-C goal.
- The impact of the P4O program on healthcare utilization and costs might have a lag time; thus, the evaluation period for this study may not capture the complete impact of the program. For example, the majority of the cost savings might occur after 2010 instead of within 2010, the program implementation year.

Limitations

- The P4O program included one target level of LDL-C (100 mg/dL) that may not align with national guidelines for all patients, and as such may have influenced overall results. Future P4O programs and research may find it beneficial to consider such findings.
- Although a significantly larger proportion of P4O cases than matched controls reached or maintained LDL-C goal, sample sizes were small, calling for further work with larger sample sizes.
- Laboratory claims data were available for 20% of the sample, which limited the ability to conduct longitudinal analyses.
- Baseline use of cholesterol medication was higher among P4O cases than matched controls, which may have biased the results. However, all models estimating the impact of P4O were adjusted for this difference.
- Members new to Humana in 2010 had no medical claims data for the baseline year 2009. Therefore, these members were excluded from the primary analyses of this study.
- To better evaluate the impact of the P4O program on members reaching or maintaining their LDL-C goals, ideally LDL-C levels should be measured immediately before the intervention start and again at the end of the intervention period. These measures are not available because obtaining a baseline LDL-C measure was not part of the program requirement. The focus of the current study was an exploratory analysis rather than to test a hypothesis.

Conclusions

Overall, this P4O program was effective in maintaining or achieving LDL-C goal, with the largest impact being driven by members maintaining their goal and those who were at high CV risk. Additionally, total healthcare costs rose less in the P4O participant group than in the matched control group. Although these results suggest that a P4O initiative may have had an impact on Medicare patients, further research is needed over a longer period of time, with a larger sample size, and in other populations to determine the applicability of these results.

References

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- Margaret Pasquale and Yihua Xu are employees of Competitive Health Analytics, Inc., a wholly owned subsidiary of Humana Inc. Competitive Health Analytics received payment to conduct this study.
- Michael Bullano is an employee of AstraZeneca, which funded this study. Christine Divers was an employee of AstraZeneca at the time of this study.
- Jennifer Weber is an employee of Humana Inc., whose member data were evaluated in this study.