Proactive Pharmacist Call Program: Assessing the Impact of a Predictive Model-Driven Medicare Member Outreach on Adherence and Star Ratings

S.W. Champaloux PhD, MPH[1]; S. Dauer, PharmD, MS, MBA[1]; P.P. Gleason, PharmD[1,2].   [1]Prime Therapeutics LLC, Eagan, MN, United States; [2]University of Minnesota College of Pharmacy, Minneapolis, MN, United States.

BACKGROUND

- Quality of Medicare plans are determined by the Centers for Medicare & Medicaid Services (CMS) Star Ratings. Medication adherence is a major component of Medicare Star Ratings and is measured across three drug categories: oral diabetes drugs, renin angiotensin system (RAS) hypertension drugs and cholesterol lowering drugs (statins).[1,2]

- The Medicare pharmacist call program was developed to improve medication adherence and Star Ratings by identifying and calling members who would benefit the most from proactive outreach.

- The program identified individuals who had a high probability of Star Rating medications calendar-year non-adherence from a predictive model, and rank-prioritized each member for a pharmacist call.

- Medication adherence has many different components and the project initially examined over 400 potential predictors including benefit design and medication adherence history from pharmacy claims for the predictive model.[3]

- Medication adherence probabilities were used to develop a member ranking. The ranking included opportunities such as converting a member from receiving a 30-day medication supply to a 90-day supply (i.e., extended supply) and members using multiple Star drug categories.

- Members sorted by rank were assigned a pharmacist who conducted telephonic outreach daily starting from the highest ranked members.

- Limited published information is available assessing the impact of predictive modeling driven pharmacist telephonic Medicare Star Rating medication adherence interventions.[4,5]

OBJECTIVE

- To assess the impact of the Medicare pharmacist call program on CMS Star drug categories adherence comparing post-period (2018) adherence versus pre-period (2017) adherence with a concurrent control group.

METHODS

Study Population

- 1.4 million Blue Cross Blue Shield Medicare members representing over 40 Medicare Advantage and Prescription Drug Plan contracts were initially examined.

- The proactive pharmacist call program began in February 2018 and continued through December 2018.

- Members in a Medicare contract that opted in to the pharmacist call program were defined as the proactive pharmacist call group.

- A control group was established from Medicare members in contracts that did not participate in the pharmacist call program.

- Members were included for the study using the following:
  1. CMS Star Criteria for calendar year adherence
     - Qualified in both years (2017 and 2018) for any of the three CMS Star adherence categories: oral diabetes mellitus (D), RAS (R) and statins (S)
     - Two fills during the year
  2. Continuous enrollment for calendar years 2017 and 2018
  3. No pharmacy claims for insulin in 2017 and 2018
- We identified a final analytic sample using the above criteria (Figure 1).

Study Outcomes

- Yearly percentage of members adherent was defined using CMS Star criteria; members were considered adherent if they had a proportion of days covered (PDC) ≥80% within the CMS Star drug category at calendar year-end.

Statistical Analysis

- A difference-in-difference statistical comparison was conducted on yearly adherence, for each of the three CMS Star adherence drug categories, in 2017 vs. 2018.

- Baseline characteristics for each group were examined.

- Multivariate modeling was used to adjust for gender, age, ZIP code derived sociodemographics, benefit design, refill program, quality based networks, Medicare Advantage vs. Prescription Drug Plan, and deductible. A generalized estimating equation was implemented with a logistic link function and binomial distribution for each drug category. Odds ratios were generated for each Star category and statistical significance was set at p<0.05. SAS 9.4 (SAS Institute Inc., Cary, NC) was used for all analyses.

- Assuming a causal relationship, the percentage of adherence impact attributed specifically to the pharmacist call can be identified. The percentage of adherence impact from 2017 to 2018 attributed to the pharmacist call program, known as attributable risk (AR), was calculated based on the odds ratios and multiplied by the percentage of members who received an authenticated pharmacist call.[6]

RESULTS

Analytic Member Study Population Identification

- Of the 1.4 million total Medicare members in the population, 580,222 met inclusion criteria; proactive pharmacist call group (n=155,174) and control group (n=425,028). A member could have up to three Star category drug class opportunities. The members meeting inclusion criteria translated into the following number of unique Star drug category opportunities; pharmacist call group: N=243,155 and controls: N=673,123 (Figure 1).

- Member attrition for both the proactive pharmacist call and control groups is presented in Figure 1. The final analytic populations are delineated here by drug category.

- The pharmacist call group had (out of 243,155 opportunities):
  - 30,350 for diabetes,
  - 101,840 for RAS, and
  - 111,177 for statins.

- The control group had (out of 673,123 opportunities):
  - 85,213 for diabetes,
  - 285,709 for RAS, and
  - 301,989 for statins.

- The difficulty in improving the diabetes Star measure relative to RAS or statins Star measures was known prior to implementation, therefore diabetes opportunities were intentionally prioritized for more consultations (18% vs. 13% for RAS or statins).

- Baseline characteristics (Table 1) for the proactive pharmacist call and control groups were examined. All factors were adjusted for in the multivariate analysis.

- The pharmacist call group had a higher percentage of Medicare Advantage Prescription Drug (MAPD) members and contracts in the refill program compared to the control group.

- The control group resided in ZIP codes that were comprised of a lower percentage of whites compared to the pharmacist call group.

- The change in adherent members increased for each drug category compared to controls, ranging from 0.8% – 1.3% points (Table 2).

- All three Star drug categories had statistically significant higher adjusted odds of adherence from 2017 to 2018 for pharmacist call versus controls (Table 3).
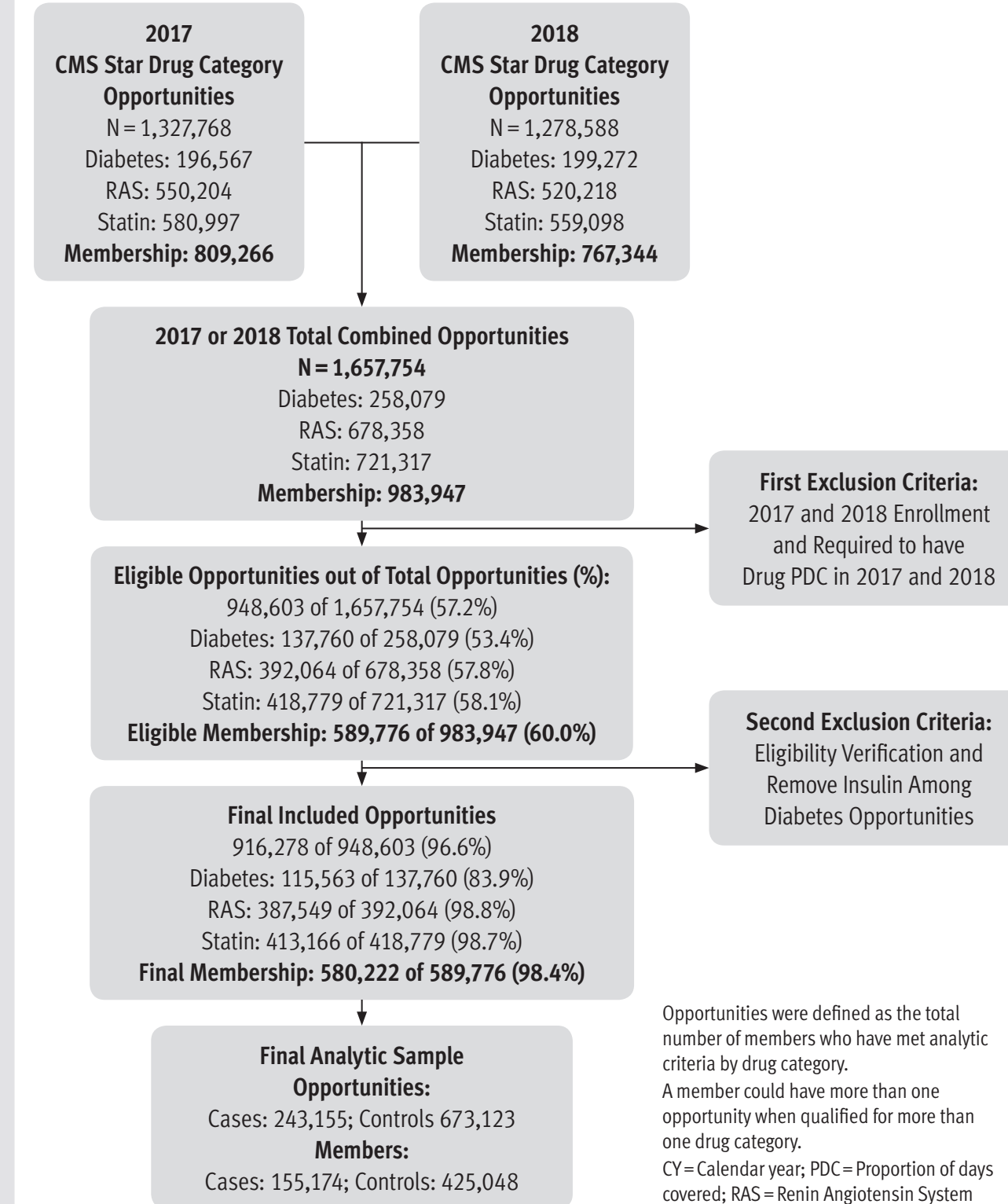
  - Diabetes: had a statistically significant odds ratio of 1.07, p<0.01, and an impact percentage of 6.5% attributed to the pharmacist call. The number of members who received an authenticated call in the participating contracts was 5,575 for diabetes. The Star Rating percentage point impact attributed to pharmacist call was estimated at: 1.12 percentage points (Table 4).

  - RAS: had a statistically significant odds ratio of 1.08, p<0.01, and an impact percentage of 7.4%. The number of members who received an authenticated call in the participating contracts was 12,943 for RAS. The Star Rating percentage point impact attributed to pharmacist call was estimated at: 0.94 percentage points (Table 4).

  - Statins: had a statistically significant odds ratio of 1.10, p<0.01, and an impact percentage of 9.1%. The number of members who received an authenticated call in the participating contracts was 13,962 for statins. The Star Rating percentage point impact attributed to pharmacist call was estimated at: 1.14 percentage points (Table 4).

FIGURE 1

Member Attrition Flow Diagram

2017 CMS Star Drug Category Opportunities
N=1,327,768
Diabetes: 196,567
RAS: 550,204
Statin: 580,997
Membership: 809,266

2018 CMS Star Drug Category Opportunities
N=1,278,588
Diabetes: 199,272
RAS: 520,218
Statin: 559,098
Membership: 767,344

2017 or 2018 Total Combined Opportunities
N=1,657,754
Diabetes: 258,079
RAS: 678,358
Statin: 721,317
Membership: 983,947

First Exclusion Criteria:
2017 and 2018 Enrollment and Required to have Drug PDC in 2017 and 2018

Eligible Opportunities out of Total Opportunities (%):
948,603 of 1,657,754 (57.2%)
Diabetes: 137,760 of 258,079 (53.4%)
RAS: 392,064 of 678,358 (57.8%)
Statin: 418,779 of 721,317 (58.1%)
Eligible Membership: 589,776 of 983,947 (60.0%)

Second Exclusion Criteria:
Eligibility Verification and Remove Insulin Among Diabetes Opportunities

Final Included Opportunities
916,278 of 948,603 (96.6%)
Diabetes: 115,563 of 137,760 (83.9%)
RAS: 387,549 of 392,064 (98.8%)
Statin: 413,166 of 418,779 (98.7%)
Final Membership: 580,222 of 589,776 (98.4%)

Final Analytic Sample Opportunities:
Cases: 243,155; Controls 673,123
Members:
Cases: 155,174; Controls: 425,048

Opportunities were defined as the total number of members who have met analytic criteria by drug category.
A member could have more than one opportunity when qualified for more than one drug category.
CY = Calendar year; PDC = Proportion of days covered; RAS = Renin Angiotensin System

TABLE 1

Baseline Characteristics: Pharmacist Call and Control Groups

CMS Star Drug Category Opportunity-Level	Pharmacist call (n=243,155)	Control (n=673,123)
Drug category		
Diabetes	30,319 (12.5%)	85,244 (12.7%)
RAS	101,743 (41.8%)	285,806 (42.5%)
Statins	111,093 (45.7%)	302,073 (44.8%)
Age (Jan. 1, 2018)	73.0	73.8
Gender (% Female)	123,968 (51.0%)	355,856 (52.9%)
Percent whites — ZIP code derived	79.1%	75.8%
Household income — ZIP code derived	$53,914	$61,518
Percent HS degree — ZIP code derived	88.5%	87.5%
2018 plan type		
MAPD	183,653 (76%)	297,579 (44%)
PDP	59,502 (24%)	375,544 (56%)
2018 deductible	5,316 (2%)	100,229 (15%)
Star benefit design*		
Both years	73,414 (30%)	79,793 (12%)
2018 only	94,674 (39%)	4,968 (1%)
Neither	75,067 (31%)	588,362 (87%)
Quality-based network	238,373 (98%)	250,305 (37%)
2018 refill contract	243,155 (100%)	334,562 (50%)

RAS = Renin Angiotensin System, HS = High School, MAPD = Medicare Advantage, PDP = Prescription Drug Plan
All characteristics are adjusted for in multivariate analysis
*Star benefit design lowered member cost share for generics in the CMS Drug Category to </= $2 for a 30-day supply.

TABLE 2

Calendar Adherence Year-Over-Year (2017 vs. 2018) by Drug Category

CMS Star drug category	Pharmacist call — Unadjusted change (%) 2017 (pre) to 2018 (post)	Control — Unadjusted change (%) 2017 (pre) to 2018 (post)	Unadjusted % point difference, p-value
Diabetes (N=115,563)	84.8% to 84.8%	85.8% to 85.0%	0.8%, <0.01*
Percentage pts change	0.0%	-0.8%	
RAS (N=387,549)	88.0% to 87.4%	88.4% to 86.9%	0.9%, <0.01
Percentage pts change	-0.6%	-1.5%	
Statins (N=413,166)	84.1% to 85.4%	85.3% to 85.3%	1.3%, <0.01*
Percentage pts change	1.3%	0.0%	

*For all outcomes, statistical significance was set at p<0.05,
% = percentage, Pts = points, RAS = Renin Angiotensin System

TABLE 3

Adherence Each Drug Category: Adjusted Outcomes, Odds Ratio

CMS Star drug category	Pharmacist call — Adjusted change pre to post period odds ratio	Control — Adjusted change pre to post period odds ratio	Adjusted difference-in-difference odds ratio
Diabetes	1.00 (0.96 – 1.04)	0.94 (0.92 – 0.96)	1.07 (1.02 – 1.11)*
RAS	0.94 (0.92 – 0.96)	0.87 (0.85 – 0.88)	1.08 (1.05 – 1.11)*
Statins	1.10 (1.08 – 1.13)	1.00 (0.99 – 1.02)	1.10 (1.08 – 1.13)*

Adjusting for gender, age, ZIP code sociodemographics, Tier 6 benefit design, refill program, Medicare Advantage vs. Prescription Drug Plan, and deductible
*Logistic binomial analysis. For all outcomes, statistical significance was set at p<0.05, RAS = Renin Angiotensin System

TABLE 4

Pharmacist Call Star Improvement: Applying Attributable Risk to Pharmacist Call

CMS Star drug category	Billable outreach† (percent of total opportunity)	Estimated members‡ impacted by pharmacist call	Estimated improvement percentage point^
Diabetes	5,575 outreaches of 30,319 (18%)	363	1.12 points**
RAS	12,943 outreaches of 101,743 (13%)	958	0.94 points
Statins	13,962 outreaches of 111,093 (13%)	1,271	1.14 points

RAS = Renin Angiotensin System
†Billable outreach are members who received a pharmacist call for an opportunity
‡Estimated members whose adherence was impacted, defined as preventing member from becoming non-adherent or moving member from non-adherent to adherent, attributed to the pharmacist call
^A percentage point can make the difference between a 3 to 4 or 4 to 5 Star Rating.
**Diabetes members had a higher percentage of pharmacist calls compared to RAS or statins and therefore had a larger estimated percentage point impact relative to other categories

LIMITATIONS

- The variation from contract to contract in adherence programs creates a challenge in estimating the impact of a specific program while adjusting for all other existing programs. Attempts were made to address this challenge by adjusting for other adherence programs and benefit design influences in a multivariate model.

- When conducting a difference-in-difference analysis, we were only able to examine members who had a PDC value in both the pre-period and post-period. Therefore, we cannot be certain how adherence differs for new initiators in 2018. Our cohort restrictions may lead to a variation in year-over-year adherence and these restrictions limit the generalizability of our findings.

- It is unknown what other adherence programs were occurring among health plans. In 2018, predictive information was sent to all Medicare contracts and clients may have used this information in concert with their own programs.

- Administrative pharmacy claims have the potential for miscoding and include assumptions of member actual drug use.

- The assumption of causality to determine Star estimates is challenged by the study design which measures associations and cannot conclude causality.

- Members in hospice care were not excluded from the analysis.

CONCLUSIONS

- The results suggest Medicare members adherence was improved from the proactive pharmacist call in each CMS Star drug category. Identifying and proactively outreaching to members informed by a predictive model can significantly improve adherence and Star Ratings by 0.9 – 1.1 percentage points.

- The epidemiologic concept of attributable risk turned an odds ratio into a more understandable percentage point improvement. Reporting the study results using adjusted percentage point increase helps plans better understand the program impact controlling for other adherence factors.

- With the narrowing of adherence Star thresholds, a one percentage point gain can help make a substantial improvement and perhaps move a contract from 3.5 Star Rating to a 4 Star Rating.

- The predictive model and proactive pharmacist call are two components that work together. The predictive model helps the proactive pharmacist call reach the people most likely to benefit from a pharmacist outreach. For a program to work well, both components need to be working effectively.

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