Medication Therapy Management (MTM) Comprehensive Medication Review (CMR) Impact Assessment

C. I. Starner[1], Y. Qiu[1], K. Harris[1], P. P. Gleason[1] [1]Prime Therapeutics LLC, Eagan, MN, USA.

No external funding provided for this research

Background

- Poor medication adherence is a major cause of hospitalization, poor health care outcomes and increased overall health care costs.[1]
- Centers for Medicare and Medicaid Services (CMS) require Medicare Part D prescription drug plan (PDPs, aka, Part D) sponsors to have established Medication Therapy Management (MTM) programs ensuring optimum therapeutic outcomes and reduced risk of adverse events.[2]
- A systematic review and meta analysis published in 2015 concluded that MTM interventions may reduce medication related problems, including nonadherence, however evidence is insufficient for improving health outcomes.[3]
- In the United States, CMS started measuring adherence as part of their PDP and Medicare Advantage Star Rating program in 2011. For PDPs, the three adherence measures are 28% of the overall Plan Star rating.
- It is important to assess the impact of MTM services on adherence in the three Star ratings drug categories: statins, diabetes and renin angiotensin system antagonists (RAS) for clinical program improvement and improved patient outcomes.
- Prime Therapeutics, a pharmacy benefits manager providing contracted Part D services for more than one million members enrolled with Blue Cross and Blue Shield PDPs, provides MTM services to eligible members.
- Our objective was to assess the impact of MTM services on adherence in three drug categories: statins, diabetes and RAS antagonists.

Methods

- Pharmacy claims data for 1.2 million Medicare members were queried in 2013 to determine eligibility for MTM services based on the CMS criteria:
  1. Have three or more of the conditions (based on drug proxy): asthma, chronic obstructive pulmonary disease (COPD), depression, diabetes, heart failure, high blood pressure, high cholesterol, osteoarthritis, osteoporosis
  2. Take six or more prescriptions (to treat one of the above conditions), AND
  3. Spend more than $3,144 on medication in 2013.
- Members identified for intervention were those members who received a comprehensive medication review (CMR) at any time in 2013.
- The comparison group included members who did not respond to multiple attempts at outreach.
- Exclusions in hierarchical order were: 1) hospice, 2) deceased, 3) disenrolled from plan, and 4) opted out of MTM services.
- In the diabetes category, members with an insulin claim were excluded.
- We calculated adherence based on the three CMS Star metric adherence drug categories: oral diabetes (diabetes), cholesterol (statins) and hypertension (RAS antagonists) medications.
- Pharmacy claims were queried for the presence of a claim (index date) for a statin, diabetes or RAS medication on the same day as the CMR or any time after (Figure 1).
- If a claim was found, members were required to be continuously enrolled for one year from that first claim following their CMR date (Figure 1).
- For the comparison group, pharmacy claims were queried for an index claim at any time in 2013 and members were required to be continuously enrolled in all of 2013.
- For both groups, members were required to have a second claim within the drug category to be included in the analysis.
- Members could be identified in one or more of the drug categories.
- Members were defined as no low income subsidy (LIS) or LIS in one or more months in 2013.

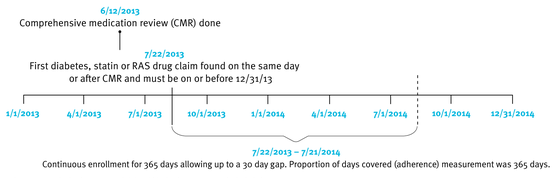
Outcomes by drug category

- Adherence measurement methods used in this analysis are based on those used by CMS. However, we required members to have two claims from the drug category with no rule about when the first claim was found in the measurement period.
- Adherence was reported as a dichotomous (yes or no) variable, defined as a proportion of days covered (PDC) ≥ 80% in the post-period.
- Adherence PDC was also reported as a continuous variable between 1% and 100%, reported at a member level and then averaged across members.

Statistical methods

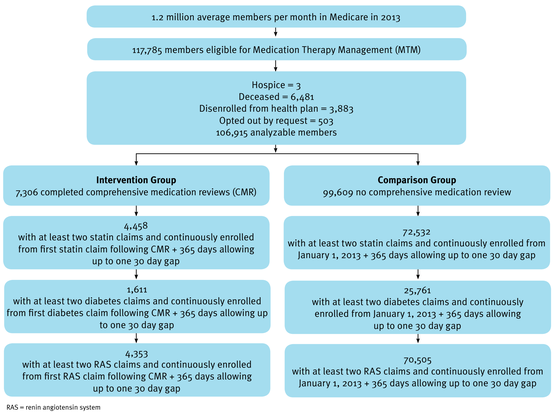
- Baseline characteristics and demographics of members were reported separately for each of the three drug categories.
- Unadjusted bivariate adherence comparisons between intervention and comparison groups were conducted using t-test for continuous variables and chi-square test for categorical variables.
- Logistic regression models were run for each category to compare the proportion of members adherent in the intervention and comparison group adjusting for age, gender, ZIP code derived education, race and income, Pharmacy Risk Group score[4] (a proxy for severity of illness), number of drug categories member identified in, Medicare Advantage compared to PDP only plans, and LIS status.
- The logistic regression models were repeated after 1:1 matching in intervention and comparison groups because of the large sample size in each comparison group. 1:1 matching was performed by 5-year age band, PDP contract group, LIS status and number of drug categories member identified in.
- Analyses were conducted separately for each drug category.

Figure 1: Example Timeline of Methods for Intervention Group Member Identification*



*members were required to have a second claim within the drug category to be included.

Figure 2: Flow of Members in Analysis



RAS = renin angiotensin system

Results

- 117,785 Medicare members out of 1.2 million (10%) were eligible for MTM services in 2013.
- After applying hierarchical exclusions, 106,915 members were analyzed.
- Members excluded:
  - Hospice = 3
  - Deceased = 6,481
  - Disenrolled from health plan = 3,883
  - Opted out by request = 503
- 7,306 (6.8%) members had a CMR in 2013 and were the intervention group and 99,609 (93.2%) did not have a CMR and were the comparison group.
- Figure 2 shows the number of members in the intervention and comparison group within each drug category.
- After continuous enrollment criteria and CMS adherence criteria applied:
  - Diabetes members: Intervention = 1,611 and comparison = 25,761
  - Statin members: Intervention = 4,458 and comparison = 72,532
  - RAS antagonist members: Intervention = 4,353 and comparison = 70,505
- Table 1 shows member characteristic differences between intervention and comparison group within each drug category.

Unadjusted post-period adherence (Table 1)

- Diabetes category: the adherence rate was an absolute 3.7 percentage points higher in the intervention group (86.7% vs. 83.0%, p = 0.0001). The average PDC was 92% vs. 90%, p <0.0001 for the intervention and comparison groups, respectively.
- Statins category: the adherence rate was 2.5 percentage points higher in the intervention group (77.8% vs. 75.3%, p = 0.0002). The average PDC was 87% vs. 86%, p <0.0001 for the intervention and comparison groups, respectively.
- RAS inhibitors: the adherence rate was an absolute 2.2% percentage points higher in the intervention group (81% vs. 78.8%, p = 0.0006). The average PDC was 89% vs. 87%, p <0.0001 for the intervention and comparison groups, respectively.

Multivariable regression model (Table 2)

- The results from the logistic regression models show the probability of whether a member in each of the three Star measure drug categories was adherent (PDC ≥ 80%) or not (PDC < 80%) in the post-intervention period:
  - The odds of being adherent to oral diabetes medication were 40% higher for members in the intervention group versus the comparison group (odds ratio [OR] = 1.4; 95% confidence interval [CI] 1.2 to 1.6; p < 0.001).
  - The odds of members being adherent to statin medication during the post intervention period were 20% higher in the intervention group (OR = 1.2; 95% CI 1.1 to 1.3, p < 0.001).
  - The odds of being adherent to RAS antagonist medication were 20% higher for members in the intervention group versus the comparison group (OR = 1.2; 95% CI 1.1 to 1.3, p = 0.0003).
- The matched 1:1 logistic regression models showed similar statistically significant results.
  - The odds of being adherent to oral diabetes medication were 30% higher for members in the intervention group versus the comparison group (p = 0.0267).
  - The odds of members being adherent to statin medication during the post intervention period were 10% higher in the intervention group (p = 0.0466).
  - The odds of being adherent to RAS antagonist medication were 20% higher for members in the intervention group versus the comparison group (p = 0.001).

Conclusions

- A completed CMR as part of MTM services for Medicare members was associated with statistically significantly higher proportion of adherent members across three drug categories:
  - 40% higher in the diabetes category
  - 20% in both statin and RAS categories
- Health plans should continue to encourage their members to participate in MTM services in order to improve adherence and ultimately their Star ratings.
- These findings should be validated through a prospective randomized trial to eliminate the potential bias in this study of using patient CMR opportunity non-response as the comparison group.

Table 1. Overall Member Characteristics in Three Drug Categories

	Diabetes			RAS Antagonist			Statin		
Characteristic	Intervention (n = 1,611)	Comparison (n = 25,761)	P value	Intervention (n = 4,353)	Comparison (n = 70,505)	P value	Intervention (n = 4,458)	Comparison (n = 72,532)	P value
Age <68 yrs	23.5%	25.6%	0.1471	22.7%	24.9%	<.0001	22.4%	24.6%	<.0001
68 – 72 yrs	27.7%	28.0%		26.8%	26.3%		27.1%	26.4%	
73 – 79 yrs	29.7%	27.5%		29.5%	26.8%		30.4%	27.3%	
80+ yrs	19.1%	18.9%		21.0%	22.0%		20.1%	21.6%	
Avg Age (SD)	73.2 (7.6)	72.7 (8.5)	0.0274	73.5 (7.8)	73.2 (8.9)	0.0867	73.4 (7.7)	73.2 (8.7)	0.1565
Female	54.7%	53.1%	0.2247	41.3%	43.1%	0.0182	42.9%	44.5%	0.0325
ZIP code % White <75%	26.3%	24.9%	0.0093	24.0%	23.9%	<.0001	23.8%	24.1%	<.0001
75 – 87%	24.2%	26.8%		22.9%	26.2%		23.9%	26.4%	
87 – 94%	21.2%	22.9%		22.6%	23.0%		22.5%	23.1%	
94%+	28.2%	25.5%		30.5%	26.9%		29.8%	26.4%	
ZIP code % degree <16%	26.8%	26.7%	0.2913	26.7%	25.7%	0.0704	25.4%	25.4%	0.0502
16 – 22%	22.0%	22.2%		23.1%	22.5%		22.8%	22.1%	
22 – 35%	26.6%	24.8%		25.5%	25.4%		26.5%	25.3%	
35%+	24.6%	26.3%		24.7%	26.5%		25.4%	27.1%	
ZIP code Income <$42,000	27.2%	27.4%	0.0282	26.8%	26.6%	<.0001	26.2%	26.2%	0.0004
$42,000-<$50,000	26.4%	24.0%		26.9%	24.4%		25.8%	24.1%	
$50,000-<$63,000	22.9%	22.2%		22.9%	22.9%		23.8%	22.8%	
$63,000+	23.5%	26.4%		23.4%	26.1%		24.2%	26.9%	
PRG Score 0-<4	28.9%	32.0%	0.0606	20.3%	21.7%	0.0583	19.2%	20.9%	0.0033
4 – <6	30.0%	29.7%		28.1%	28.0%		26.8%	27.5%	
6 – <9	27.9%	25.8%		31.7%	30.2%		32.2%	30.1%	
9+	13.2%	12.5%		19.9%	20.1%		21.9%	21.5%	
Part D	74.0%	78.7%	<.0001	74.8%	79.4%	<.0001	74.7%	79.4%	<.0001
Medicare advantage	26.0%	21.4%		25.3%	20.6%		25.3%	20.6%	
No LIS	84.3%	82.6%		83.5%	81.6%		84.0%	81.7%	
Any month with LIS	15.7%	17.4%	0.0839	16.5%	18.4%	0.0018	16.0%	18.3%	0.0002
No other drug categories	0.1%	4.1%		14.9%	11.9%		17.1%	14.2%	
One other drug category	30.7%	26.6%	<.0001	45.0%	45.4%	<.0001	44.0%	44.3%	<.0001
Two other drug categories	61.6%	69.4%		40.1%	42.7%		38.9%	41.5%	
PDC ≥ 80%	86.7%	83.0%	0.0001	81.0%	78.8%	0.0006	77.8%	75.3%	0.0002

SD = standard deviation, LIS = low income subsidy, PDC = proportion of days covered, PRG = pharmacy risk group score, RAS = renin angiotensin system

Table 2. Logistic Regression Results – Impact of MTM CMR Services on Proportion of Members Adherent (PDC ≥80%) to Therapy

	Relative Risk (95% CI) Proportion of days covered ≥80%	P Value
All Members Included		
Diabetes Intervention group	1.4 (1.2 – 1.6)	<.0001
RAS Intervention group	1.2 (1.1 – 1.3)	0.0003
Statin Intervention group	1.2 (1.1 – 1.3)	<.0001
1:1 Matched Model		
Diabetes Intervention group	1.3 (1.0 – 1.5)	0.0267
RAS Intervention group	1.1 (1.0 – 1.2)	0.0466
Statin Intervention group	1.2 (1.1 – 1.3)	0.0010

CI = Confidence Interval, PDC = proportion of days covered; RAS = renin angiotensin system

Limitations

- Administrative pharmacy claims include assumptions of member actual medication use.
- Data are limited to a Medicare population; therefore findings may not be generalized to commercial or Medicaid populations.
- Differences found in adherence between the intervention and comparison groups may be influenced by healthier lifestyles or other unknown confounders in the intervention group because the comparison group was members who did not respond to requests for a CMR. Lifestyle information is unavailable in administrative claims data and therefore could not be included as a covariate in this study.
- We defined adherence using the PDC ≥ 80 percent which is an arbitrary cut point, however this cut point has frequently been used in previous research.
- We did not evaluate medical cost avoidance or the impact on health care utilization because medical claims data were not available.

References

1. Sokol MC, McGuigan KA, Verbrugge RR, Epstein RS. *Med Care* 2005;43(6):521-30.
2. CMS Star ratings. www.cms.gov.
3. Viswanathan M et al. *JAMA Int Med* 2015;175(1):76-87.
4. Winkleman R, Mehmud S. Society of Actuaries 2007:1-70.

1305 Corporate Center Drive, Eagan, MN 55121
AMCP, October 26, 2015, Orlando, FL, USA

Catherine Starner, 612.777.5073
cstarner@primetherapeutics.com

03001148