Medicaid Missed Refill Letter Intervention Impact on Refill Rate versus Randomized Control

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BACKGROUND

- Medicaid is an under-researched population which presents outreach challenges.
- The Medicaid Missed Refill letter campaign was a Medicaid member outreach intended to address chronic medication gaps among members utilizing asthma, depression and oral diabetes drugs.
- The letter provided information for members on the importance of taking their medication as prescribed and provided help to overcome impediments to refill medications.
- According to a comprehensive U.S. meta-analysis, depression is associated with poor medication adherence across a range of chronic diseases. This makes adherence to anti-depressants important in the treatment of many chronic diseases.[1]
- Little is known about the refill rate impact of a Medicaid member letter encouraging refilling a chronic medication from a health plan.

OBJECTIVE

- To assess the Medicaid Missed Refill letter campaign impact on refill rates compared to a randomized control group among three drug categories: asthma, depression and oral diabetes.

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METHODS

- The Missed Refill program began Oct. 15, 2018 and weekly identification reports were generated through Dec. 17, 2018.
  - Every week, members were identified by:
    1. presence of at least seven days of a missed refill for an asthma, depression or diabetes medication,
    2. history of at least two maintenance fills for the chronic medication (i.e., asthma, depression or diabetes) within the last 365 days, and
    3. a relatively poor adherence to the chronic medication, defined by their proportion of days covered (PDC) (25% – 85%) within the last 365 days, see Figure 1.
- Identified members were sent a letter within seven days after identification.
  - For those who had refilled, the number of days required to refill their prescription from identification was reported.
  - If a member had not refilled their prescription 25 days after identification, they were defined as "not having refilled" their prescription. Rationale for the 25 days cut point was member action would likely be taken within two weeks after the letter was received. In addition, the 25-day period was confirmed by the Kaplan Meier plot figures. All observations that occurred 25 days after identification were censored.
  - A refill percentage was calculated for members in both the campaign and control group.

Study Population

- Among 390,000 Medicaid members from one mutual legal reserve company owning multiple Blue Cross and Blue Shield plans, those with a seven day gap in drug supply for asthma, depression or diabetes medications were identified weekly from Oct. 15, 2018 through Dec. 17, 2018 (10 weeks).
- Members who met program missed refill criteria were identified and randomly assigned to the Missed Refill program (i.e., the campaign) or a control group, 70% of opportunities were assigned to campaign and 30% to controls.
- Members were excluded from the analysis if they were not continuously enrolled from identification to 40 days after or if the member was randomized to both the campaign and control groups. The member could be assigned to both groups if the member had more than one missed refill during the 10-week campaign period.

Outcomes Measurement

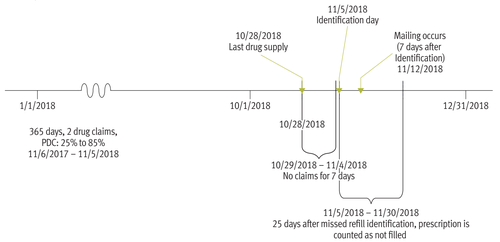
- A refill was defined as a matched drug claim within 25 days after gap identification. The matched claim was determined at a Generic Product Indicator (GPI) 6 level indicating the member had a refill within the same drug family, for example serotonin reuptake inhibitors (SSRIs) are in the same GPI 6 level.
- Refill percentage was defined as the percentage of the campaign or controls who refilled a prescription within 25 days after gap identification.
- A member's time to refill was defined as the number of days needed from identification to refill the prescription.

Statistical Analysis

- Statistical comparisons were made on refill percentages and refill rates on the campaign compared to randomized controls.
- A t-test was used to determine whether the campaign and controls had a statistically significant difference in refill percentages. Refill rates were displayed using a Kaplan-Meier curve with a Log-rank test by disease category.
- A Log-rank test determines whether the difference of refill distributions between groups was statistically different. Followed by a Cox proportional hazards regression conducted to generate refill rate Hazard Ratios.
- All statistical testing significance was set at $p<0.05$. SAS 9.4 (SAS Institute Inc., Cary, NC) was used for all analyses.

FIGURE 1

Example of Medicaid Missed Refill Identification



Medicaid missed refill identification occurred from Oct. 15, 2018 to Dec. 17, 2018 (10 weekly identification periods)

RESULTS

Analytic Study Population Identification

- During the 10-week period, 10,890 of 390,000 Medicaid members (3%) met the missed refill identification criteria for an asthma, depression or diabetes medication.
- After applying exclusion criteria, the final analytic sample contained:
  - 9,140 refill opportunities (8,783 members) identified,
  - 6,375 opportunities for members intervened upon with a refill reminder letter as part of the Missed Refill program (campaign) and 2,765 were controls.
  - 3,282 were from the asthma drug category, 3,999 from the depression drug category, and 1,859 were from the diabetes drug category. Refer to Figure 2 for detailed counts by campaign and controls.
- 0.5% of missed refill member mailings were returned to sender.
- Baseline characteristics for the campaign and control group were examined by drug category.
  - Randomization appeared to create comparable groups as most characteristics were not statistically different ($p>0.05$).
  - The only exception was that asthma members in the control group lived in ZIP codes with a higher percentage of whites compared to asthma members in the campaign group (Table 1).
- **Asthma medications refill rate** began to diverge at 12 days after identification with the campaign group having a statistically significant 15.0% higher refill rate compared to controls, $p=0.04$ (Table 3).
- **Depression medication refill rate** began to diverge 10 days after the Missed Refill identification with the campaign group showing a higher refill rate and continuing to accelerate until 25 days after identification (Figure 3).
  - Campaign had a 5.8-point higher refill percentage (48.8% vs. 43.0%, $p<0.001$) (Table 2).
  - 18.0% higher refill rate, statistically significant, compared to controls within the 25-day follow-up (Table 3).
- **Diabetes medications refill rate** began to diverge at eight days after identification with the campaign group having a 14.0% higher refill rate compared to controls which was approaching statistical significance, $p=0.07$ (Table 3).

TABLE 1

Asthma, Depression and Diabetes Descriptive Statistics of Campaign and Controls after Randomization by Drug Category

Opportunity-level asthma	Campaign n (%)/(Std) N = 2,279	Controls n (%)/(Std) N = 1,003	p-value
Age at identification	29.8 (21.0)	28.9 (20.6)	p = 0.25
Gender – male	1,014 (44.5%)	459 (45.8%)	p = 0.50
Median household income	$53,971 ($19,969)	$54,653 ($19,562)	p = 0.37
Percentage high school degree	82.5 (10.5)	82.5 (10.6)	p = 0.89
Percentage whites	56.1 (28.6)	59.2 (27.9)	p < 0.01
Depression	**Campaign N = 2,819**	**Controls N = 1,180**	**p-value**
Age at identification	45.0 (13.6)	44.7 (13.3)	p = 0.54
Gender – male	855 (30.3%)	372 (31.5%)	p = 0.45
Median household income	$56,216 ($21,056)	$56,640 ($21,093)	p = 0.56
Percentage high school degree	84.6 (10.1)	84.3 (10.3)	p = 0.25
Percentage whites	61.8 (28.2)	61.6 (28.2)	p = 0.85
Diabetes	**Campaign N = 1,277**	**Controls N = 582**	**p-value**
Age at identification	52.2 (12.6)	51.9 (12.8)	p = 0.74
Gender – male	475 (37.2%)	227 (39.0%)	p = 0.46
Median household income	$54,067 ($20,284)	$54,890 ($19,920)	p = 0.41
Percentage high school degree	82.3 (10.4)	81.9 (10.3)	p = 0.47
Percentage whites	55.6 (27.5)	55.5 (27.0)	p = 0.99

Baseline characteristics of members with an asthma, depression and diabetes drug opportunity.
ZIP code derived variables were median household income, percentage high school degree, percentage white.
T-test and chi-square test were used for statistical tests.
Abbreviations: Std = standard deviations.

TABLE 2

Refill Percentage — Campaign versus Control

Drug category	25-day refill percentage	Difference, p-value (Percentage points)
Asthma		
Campaign (N = 2,279)	36.0	3.9, p = 0.03*
Controls† (N = 1,003)	32.1	
Depression		
Campaign (N = 2,819)	48.8	5.8, p < 0.01*
Controls† (N = 1,180)	43.0	
Diabetes		
Campaign (N = 1,277)	53.0	4.9, p = 0.05
Controls† (N = 582)	48.1	

Examining percentage point differences in refill percentage for cases compared to controls.
†Controls were created from randomization at identification.
Tests were conducted using t-tests, *statistically significance p-value <0.05

FIGURE 2

Missed Refill 2018 Medicaid Analysis Attrition Table — Campaign and Controls

Missed Refill Program
Medicaid Members
N = 390,000

Total Opportunities 2018

	Campaign	Controls*
Depression	4,038	1,732
Diabetes	1,861	856
Asthma	3,095	1,398
Total	8,994	3,986

Enrollment During Refill Window and Meeting All Analytic Criteria† (Opportunities)

	Campaign	Controls
Depression	2,819	1,180
Diabetes	1,277	582
Asthma	2,279	1,003
Total	6,375	2,765

Medicaid Pilot Oct. 15, 2018 to Dec. 17, 2018.
*Weekly randomization occurred which assigned 70% of identified opportunities to the campaign and 30% to the controls.
Diabetes was defined specifically as utilizing oral diabetes medications.
†Members were excluded from the analysis if they were not continuously enrolled from identification to 40 days after or if the member was randomized to both the campaign or control groups. Members would be assigned to both groups if the member had more than one missed refill during the 10-week campaign period.

TABLE 3

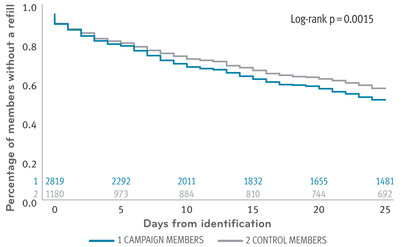
Outcomes: Cox Proportional Regression (Censored After 25 Days)

Outcome	Campaign vs. controls Hazard ratio (95% CI)	p-value
Asthma refill rate	1.15 (1.01 – 1.30)	p = 0.04*
Depression refill rate	1.18 (1.06 – 1.30)	p < 0.01*
Diabetes refill rate	1.14 (0.99 – 1.31)	p = 0.07

Refill rates were defined as the time a member takes to refill a prescription, post identification
*Statistical significance, p-value <0.05
Abbreviations: 95% CI = 95% confidence interval

FIGURE 3

Depression: Percentage of Refills by Day — Campaign versus Control: Kaplan Meier Curve



Statistical testing was conducted using a Log-rank test which tested differences in refill distributions between groups

LIMITATIONS

- This study has the potential for misclassification bias due to being unable to identify members paying cash for their medication or receiving medication from pharmaceutical manufacturer patient assistance programs.
- Members could be switching medications to combination products or discontinuing medication. Diabetics could be using multiple medications or progress to insulin.
- It is unknown what other adherence programs were occurring among clients.
- This study did not assess medication adherence.

STRENGTHS

- A strength was the randomization study design. Randomization aids in development of comparable campaign and control groups.
- The 40-day study eligibility period requirement worked well for this Medicaid population where members are less likely to be eligible the entire year compared to Commercial or Medicare populations.

CONCLUSIONS

- To our knowledge, this is the first randomized controlled study assessing the impact of a refill reminder letter from a health insurer to Medicaid insured individuals. Our findings of one in 200 letters returned to sender and the significant refill rate increase of 15.0% to 18.0% for depression and asthma medications demonstrate the value of this program.
- Another interpretation of the study findings is for every six depression letters mailed and for every seven asthma letters mailed, one additional Medicaid member refilled their medication faster during the 25-day period compared to the randomized controls.
- The 14.0% higher diabetes medication refill rate for the campaign compared to randomized control group was approaching statistically significant and nearly identical to the effect size seen among the depression (18.0%) and asthma (15.0%) drug category comparisons.
- Our finding that the depression medication Missed Refill program improved depression medication refill rates, is especially important as previous research has demonstrated depression medication adherence is correlated with higher adherence to other chronic conditions medications.[1]
- Health plans should consider a missed refill letter campaign to increase chronic medication refill rates among Medicaid members.
- Further research is needed to determine if the Missed Refill program increased Medicaid recipient's medication adherence.

Reference: Grenard, JL, Munjas BA, Adams JL, *et al.* Depression and medication adherence in the treatment of chronic diseases in the United States: a meta-analysis. *J Gen Internal Med* 2011;26:1175-82.

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