

Cost-effectiveness for Early Diabetic Medication Adherence for New-starts

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Background

- According to the World Health Organization, 50% of medications for chronic disease are not taken as prescribed which can lead to poor clinical outcomes for patients.
- Many studies have shown an association between diabetic medication adherence and increased pharmacy spend, which occurs as an artifact of increased prescription fills.^{2,3,4}
- Additionally, there have been several publications that show an association between increased medication adherence and decreased medical spend.^{3,4}
- To our knowledge, there is little to no research showing the impact of early medication adherence on switching or adding medications and the subsequent impact on patient and plan paid amounts.

Objectives

- To examine the relationship between early medication adherence and switching or adding therapy for patients with type 2 diabetes
- To examine the relationship between early medication adherence and member and plan paid amounts over an 18 month period post Metformin initiation

Methods

Inclusion Criteria

- Patients were enrolled in a commercial Rx plan
- Patients had to be classified as a new-start to Metformin with no claims history of other diabetic medications within 6 months prior to the first claim for Metformin
- Patients could not concurrently start on multiple diabetic medications (initial regimen had to be Metformin only)
- Patients had to be continuously enrolled with no gaps in coverage during the study period
- Patients were between ages 18 and 64

Outcome Measures

- Count of days to switch or add number of days from first Metformin claim up to the first claim for any other diabetic medication
- Patient paid/Plan paid sum of all diabetic medication costs during the 18 months post Metformin initiation calculated as per member per month (PMPM) costs

Independent Measures

• Adherence - was calculated as the proportion of days covered (PDC), where PDC was calculated across all oral diabetic medications over the first twelve months post Metformin initiation and dichotomized at an 80% threshold

Analytic Plan

- Survival analysis Cox regression was used to examine the relationship between early medication adherence and switching or adding medications
- Cost analysis Linear regression was used to compare mean patient paid and plan paid costs between adherent (ADH) and non-adherent (N-ADH) patients
- A statistically significance threshold of 0.05 was employed to all performed analyses.

Results

- The eligible sample consisted of 5,494 new-starts (57% female, mean age 49 ±11, mean Chronic Disease Score 4.3 ±2.1).
- Thirty-eight percent of the sample were adherent (ADH) to their oral diabetic medication regimen.
- ADH members were more likely to be men, be older, and have higher comorbid burden (p < 0.05; see Table 1).

Table 1. Descriptive Statistics for Demographic & Outcome Measures

	Non-adher	ent(N-ADH)	Adherent(ADH)		
	Mean/%	SD/Count	Mean/%	SD/Count	
Female	60%	2039	52%	1084	
Age	48	11	52	9	
CDS	4.25	2.07	4.43	2.02	
Days to switch/add	220	141	306	190	
Patient paid PMPM	\$7.86	\$20.86	\$6.41	\$14.89	
Plan paid PMPM	\$36.67	\$121.60	\$19.89	\$103.43	

Cost Analysis

- ADH members were more likely to have:
- o Significantly lower patient paid amounts (β = -1.4, p = 0.006)
- o Significantly lower plan paid amounts (β = -16.8, p < 0.001)

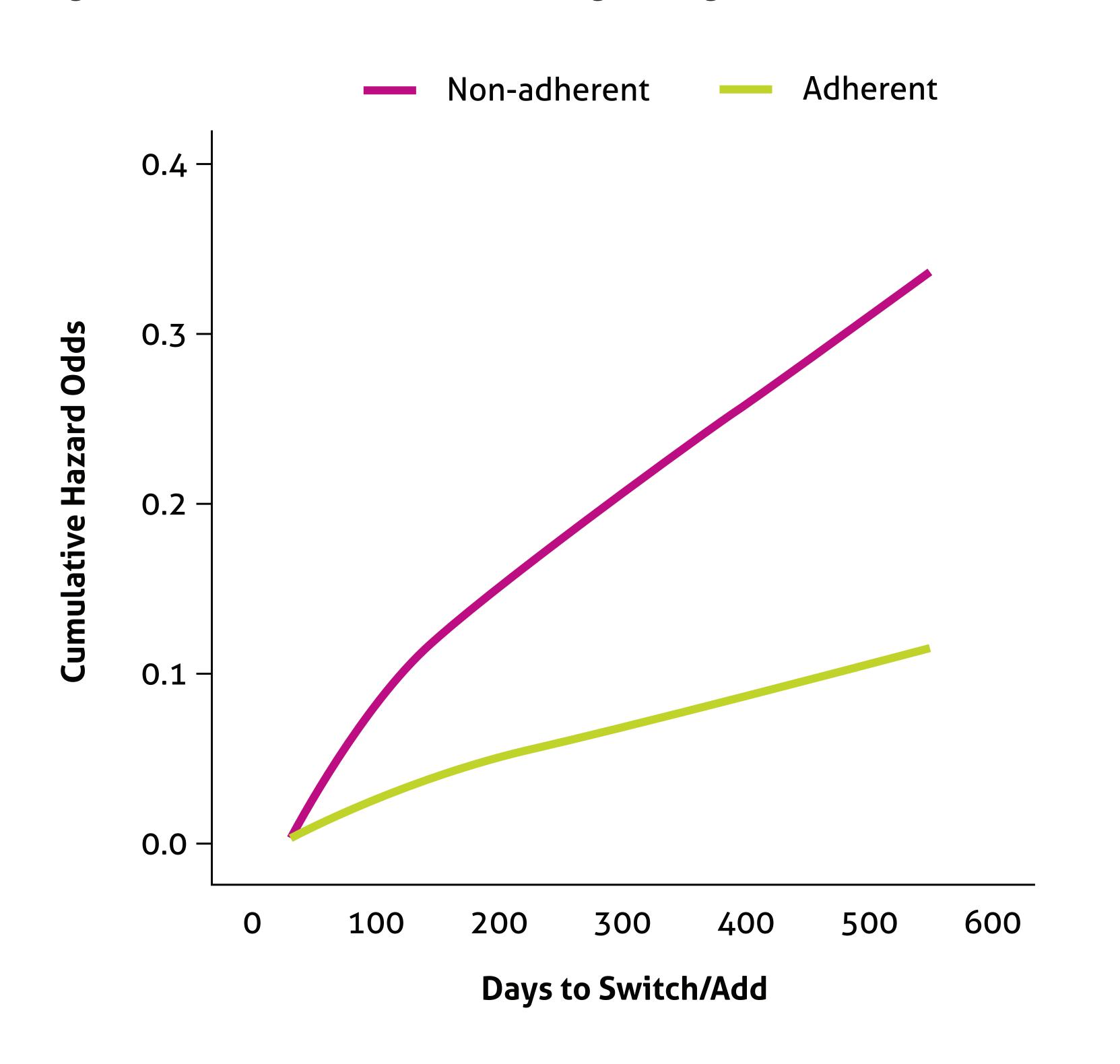
Survival Analysis

- Non-adherent (N-ADH) patients were more likely to switch or add therapy (OR = 2.94; 95% C.I. = 2.54, 3.39; see Figure 1)
- ADH patients took significantly longer to switch or add therapy (p < 0.001; see Table 1)

Table 2. Costs Stratified by Switching or Adding Medication

	Metformin Only		Switch		Add	
	Mean	SD	Mean	SD	Mean	SD
Days to switch/add	-	_	345	157	199	136
Patient paid PMPM	\$3.19	\$5.10	\$15.56	\$24.81	\$24.26	\$38.18
Plan paid PMPM	\$6.81	\$81.95	\$82.79	\$101.46	\$125.33	\$182.64

Figure 1. Hazard Function for Switching/Adding Diabetic Medication



Discussion

- When examining the relationship between medication adherence and associated medication costs it is important to consider the context. Patients who are adherent to first line medications are less likely to switch or add therapy, which maintains lower overall drug costs over time.
- N-ADH patients are three times more likely to switch or add medication relative to ADH patients.
- For patients, switching medications is associated with an average PMPM that is ~5 times higher, and adding medications is associated with an average PMPM that is ~8 times higher than Metformin alone (see Table 2).
- For plans, switching medications is associated with an average PMPM that is ~12 times higher, and adding medications is associated with an average PMPM that is ~18 times higher than Metformin alone (see Table 2).
- Patients who are adherent also take longer to switch or add medication when additional therapy was needed, meaning that members that are adherent to their Metformin regimen have more days on Metformin alone.

Limitations

- This study is limited to patients enrolled in commercial pharmacy plans, and results may not generalize to other lines of business.
- This study is focused on patients with diabetes, and results may not generalize to other disease conditions.

Conclusion

• This study shows that adherence to first-line therapies decreases the likelihood of switching or adding medication and increases time to switch or add medication, while also containing costs.

References

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