Renin Angiotensin System Antagonist Medication Adherence in the Massachusetts All Payer Claims Database by Primary Refill Method Among Individuals with Documented Hypertension in 2012

Amy Bettano, MPH[1]; Sylvia Hobbs, MPH[2]; Betty Harney[2]; Laura Nasuti, MPH PhD[1]

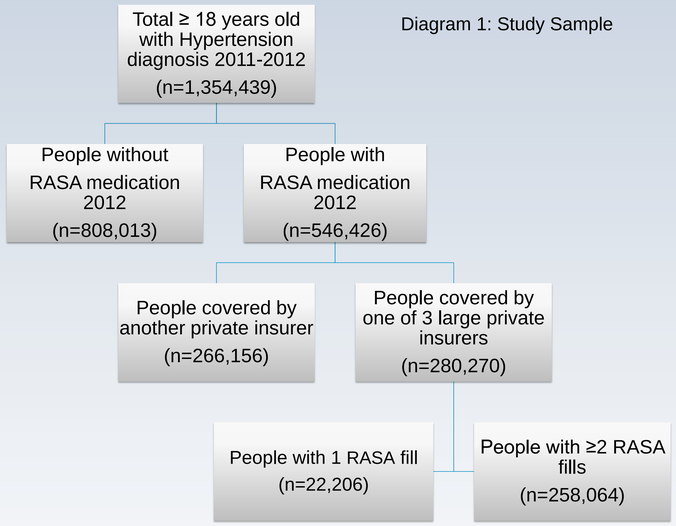
[1]Massachusetts Department of Public Health, [2]Center for Health Information and Analysis

Introduction and Research Objectives

With the absence of a universal health system in the United States, statewide All Payer Claims Databases (APCD) provide an important aggregation of health care utilization data for residents over time and across health plans. In 2003, WHO released a report on medication adherence which noted that intervention efforts to improve the quality of life for those with chronic illness should ~~be~~ focus~~ed~~ on increasing adherence rates to recommended medical treatments[1]. Additionally, it is well-documented that adhering to medication regiments for chronic conditions can reduce sequelae and their indirect and direct costs[2].

Using the CY 2012 claims data, the Massachusetts' All Payer Claims Database (MA APCD) was examined to evaluate the rate of adherence to Renin Angiotensin System Antagonist (RASAs) medications among patients with documented hypertension and to understand factors that affect adherence. Specifically, the rates of refill adherence were compared between MA residents using mail-order pharmacies to refill their prescriptions versus residents using store-based pharmacies to obtain prescription refills.

Diagram 1: Study Sample



Study Design

RASA prescription claims filled in 2012 for three large commercial insurance companies were extracted from the MA APCD; the Pharmacy Quality Alliance's drug list was used to identify RASAs. Pharmacy claims were linked to patients with hypertension diagnoses documented in medical claims to create the study population of individuals with diagnosed hypertension taking a prescription RASA (Diagram 1). The resulting sample represented 37% of all RASA commercial insurance claims for patients with diagnosed hypertension. Individuals needed to refill their RASA prescription at least twice during the year for their adherence to be measured. Adherence metrics were calculated using the proportion of days covered[3] from the first prescription fill date during 2012 until the end of the calendar year. Individuals covered for at least 80% of that time period were considered to be adherent to their RASA prescriptions[4].

Principal Findings

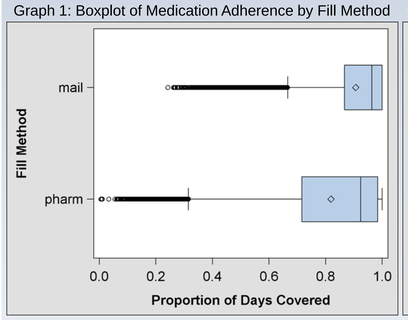
The study population contained 258,064 individuals of whom 186,825 (72%) were adherent to their RASA prescriptions in 2012. The mean age of the study population was 61 and approximately 56% of individuals were male. Twenty seven percent of individuals primarily used mail order refills and 72% primarily used pharmacy refills; the remaining one percent had an equal number of pharmacy and mail order refills.

Table 1: Cost of Copay per 30-day RASA supply

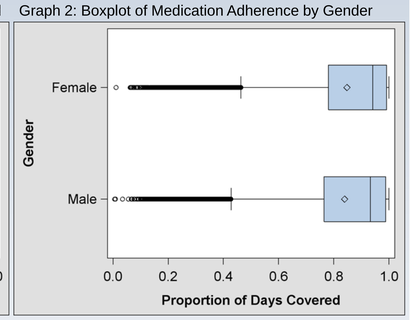
Effect	Generic	Name Brand
Mail-order	$ 3.87	$ 16.60
Pharmacy	$ 6.65	$ 27.75
Cost Difference	$2.78	$ 11.15

Costs differed between the primary refill methods; the average co-copay per 30-day RASA supply was $2.78 cheaper for generic mail-order prescriptions and $11.15 cheaper for brand-name mail-order prescriptions than the corresponding pharmacy prescriptions (Table 1).

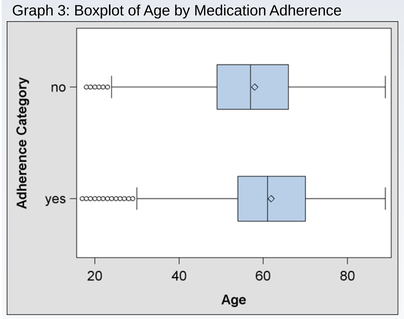
Graph 1: Boxplot of Medication Adherence by Fill Method



Graph 2: Boxplot of Medication Adherence by Gender



Graph 3: Boxplot of Age by Medication Adherence



In individual variable analyses gender, age, and primary refill method all had statistically significant associations with medication adherence. All three variables were then analyzed in a multiple logistic regression model.

In the model, each year increase in age was associated with a statistically significant 2% greater odds of being adherent to a RASA medication regimen whereas being female was associated with a 1.6% decrease in the odds of adherence compared with being male (although this difference was not statistically significant with the addition of the other variables). When controlling for age and gender, individuals using mail-order prescriptions had statistically significant 2.2 times the odds of adhering to their medication regimen than individuals predominately using pharmacy refills (Table 2).

Conclusions

Even among individuals covered by commercial health insurance and with the same class of antihypertensive medications, there are differences to be observed in the MA APCD in their rate of refill adherence to their prescribed medication by their primary refill method. The overall calculated level of 72% medication adherence is above the oft-cited chronic condition average medication adherence rate of 50%[1]; however the population examined in this review was only a subset of residents on commercial insurance and are not a representative sample of the entire MA APCD.

Analyses found that increasing age led to greater medication adherence rates whereas gender was not statistically associated with a change in adherence in private health insurance claims. Additionally, adherence was higher and costs were lower to fill RASAs through mail order methods rather than a pharmacy refill.

Table 2: Odds Ratios for Adherence

Effect	Odds Ratio	95% Confidence Interval	
Mail-order fill vs Pharmacy fill	2.192	2.143	2.243
Female vs Male	0.984	0.966	1.002
Age	1.022	1.022	1.023

Relevance to policy, delivery, or clinical practice

Medication adherence can lead to long term reductions in treatment costs and complications for hypertensive patients. Refill rates suggest that patients using mail order refills may have better adherence; as such insurance companies might want to further incentivize mail order medication refills. However, it is important to remember that pharmacy claims document what was given to the patient and not if the drug was taken. Further research is needed to determine if higher refill rates in mail order programs are associated with better management of hypertension and improvements in quality of life. Additionally, Medicaid data should be examined to see if the correlations found in private health insurance claims also hold true for public health insurance claims.

References

[1]Sabaté, E., & World Health Organization. (2003). *Adherence to long-term therapies: Evidence for action*. Geneva: World Health Organization.

[2]Sokol, M.C., McGuigan, K.A., Verbrugge, R.R., Epstein, R.S. (2005). *Impact of Medication Adherence on Hospitalization Risk and Healthcare Cost.* Med Care 43(6), 521-530.

[3]Nau, D. P. (2016). Proportion of Days Covered (PDC) as a Preferred Method of Measuring Medication Adherence. Retrieved January 1, 2016, from http://www.pqaalliance.org/images/uploads/files/PQA%20PDC%20vs%20%20MPR.pdf

[4]Leslie, R. S. (2007). Using Arrays to Calculate Medication Utilization. SAS Global Forum 2007 Paper 043-2007. Retrieved December 1, 2015, from http://www2.sas.com/proceedings/forum2007/043-2007.pdf