Adherence to Chronic Medication Therapy Associated with 90-day Supplies Compared to 30-day Supplies

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Background

- Health services research studies have demonstrated a correlation between medical adherence and reductions in use, total costs, and mortality rates among individuals with diabetes, hypertension and hypercholesterolemia.1
- Chronic medication therapy is administered to half of the patients in the United States, on average, take their medicines as directed by their doctor and pharmacist.2
- In 2010, research by Kaiser Permanente northern California found individuals filling 90-day supplies were required to use mail pharmacy after two 30-day supplies of oral diabetes medication via the mail had higher adherence rates than individuals filling 90-day supplies at a retail pharmacy.3
- In 2005, a study showed patients receiving 90-day supplies of chronic medications through a mail pharmacy had significantly higher adherence rates compared to those buying 30-day supplies at their local pharmacy during a 270-day follow-up. The authors believed the convenient refilling process, refill reminders and the need for less frequent refilling all contributed to improved adherence.4
- A limitation of the 2007 study was a follow-up period of less than a year and individuals filling 90-day supplies were required to use mail pharmacy after two 30-day supplies at their local pharmacy.

Objective

- Using a population that was not required to fill their prescriptions on an as needed basis, we compared adherence within three chronic medication classes (diabetes, hypertension and hypercholesterolemia) within three groups: those filling 90-day supplies via their local pharmacy or compared to thrice-90-day supplies via their local pharmacy with a 270-day follow-up and a 540-day follow-up.

Methods

- This analysis used eligibility and pharmacy claims data from 1,346,693 commercially insured members in January 2007, who were newly enrolled in the Kaiser Permanente of northern California health plan for 3 or more months in the entire year of 2007 and did not have a mandatory mail requirement. These members were available for the 270-day follow-up analysis. The 540-day follow-up included 905,736 members who were continuously enrolled from January 1, 2007 through December 31, 2009.
- Members with a claim for a prescription for a cholesterol lowering drug or hypertension was excluded to ensure there was a cumulative 90-days supply of any drug within the drug class. Drug supply was identified using date of prescription fill and the days supply entered by the pharmacist. The average of PDC values were calculated for the initial 30-day supply, follow-up and a 540-day follow-up.
- Descriptive and multivariate logistic models were used to estimate the odds ratio between 90-day supply compared to the 30-day supply (reference group) and adherence (PDC ≥ 80%) controlling for members characteristics, current or new initiator (defined as no therapy in the 180-days prior to the index claim), total number of different therapy subclasses within the therapy class and initial therapy drug class claim as a generic.
- Additional inclusion criteria required that members be 18 years of age or older as of January 1, 2007.
- To increase the comparability between the 30-day supply and 90-day supply groups, those in the 30-day supply group were required to have at least a cumulative 90-days supply during the follow-up period for any one of the chronic therapy classes.
- Adherence was measured using the proportion of days covered (PDC). The main outcome measure was unadjusted mean PDC adherence rates with 90-day supplies versus 30-day supplies. The primary outcome assessed was the proportion of members with an average PDC ≥ 80%.

Results

- As shown in Table 1, the multivariate model adjusting for members characteristics, current or new user status, number of different subclasses utilized and generic medication utilization found significantly lower rates of adherence (PDC ≥ 80%) for 30-day supply groups, odds ratios (95% confidence intervals) of 0.89 (0.82 to 0.96) hypertension and 0.85 (0.79 to 0.92) hypercholesterolemia.
- As shown in Table 2, the multivariate model adjusting for members characteristics, current or new user status, number of different subclasses utilized and generic medication utilization found significantly lower rates of adherence (PDC ≥ 80%) for 30-day supply groups, odds ratios (95% confidence intervals) of 0.84 (0.71 to 0.99) diabetes.
- As shown in Table 3, the multivariate model adjusting for members characteristics, current or new user status, number of different subclasses utilized and generic medication utilization found significantly lower rates of adherence (PDC ≥ 80%) for 30-day supply groups, odds ratios (95% confidence intervals) of 0.70 (0.59 to 0.83) hypertension and 0.79 (0.67 to 0.95) diabetes.

Conclusions

- Members filling their cholesterol-lowering, hypertension and diabetes medication with 90-day supplies had statistically significantly higher adherence, as calculated by the PDC method, at 270-days follow-up and this significantly higher adherence persisted at 540-days follow-up suggesting that the process of filling a prescription is one potential adherence barrier.
- These findings suggest 90-day supplies improve adherence for chronic medication therapy, which may result in improved patient care. Randomized controlled clinical trials are required to quantify the patient care impact and confirm these findings.

References


No external funding provided for this research

Limitations

- This study does not allow for determination of cause and effect.
- There are many reasons for an individual to become non-adherent to their chronic medication therapy due to the process of filling a prescription is one potential adherence barrier.
- This study is potentially biased as members self-selected their use of 90-day supplies and they may be inherently different than members who select 30-day supplies.
- Pharmacy claims data are intended for administrative and payment information purposes and as such they may represent information that is incomplete or inaccurate for the purpose of research. Our analysis assumes that the day supply as entered by the pharmacist in the record is accurate and the member consumed the medication.
- Our pharmacy data are limited to a specific geographical region in the Midwest and may not be generalized to Medicare or Medicaid populations or other geographical regions.

Table 1. Characteristics and Proportion Days Covered (PDC) ≥ 80% adherence rates by 90-day vs 30-day supply

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>90-day Supply</th>
<th>30-day Supply</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>83.7% (17.2)</td>
<td>87.9%* (15.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male</td>
<td>16.3% (23.0)</td>
<td>12.1% (27.2)</td>
<td></td>
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<tr>
<td>Initial Claim was a Generic, %</td>
<td>65.1%</td>
<td>75.0%*</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>New to Therapy, %</td>
<td>8.3%</td>
<td>5.6%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Adherence ≥ 80%, %</td>
<td>79.5% (21.0)</td>
<td>84.0%* (18.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male</td>
<td>81.7% (21.1)</td>
<td>85.7% (19.6)</td>
<td></td>
</tr>
<tr>
<td>Initial Claim was a Generic</td>
<td>75.9%</td>
<td>84.6%*</td>
<td>&lt;0.001</td>
</tr>
<tr>
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<td>85.5%* (19.4)</td>
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Logistic Regression Models Max-rescaled R-Squared for each model was 0.064 cholesterol lowering, 0.103 hypertension and 0.132 diabetes.
- C-statistic was 0.626 for cholesterol lowering, 0.672 for hypertension and 0.691 for diabetes indicating weak to fair predictive value.