The Effect of Switching on Persistence and Compliance: A Comparison of Five Statins

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BACKGROUND
In the past decade, statins have been shown to reduce the number of vascular events when used in primary and secondary prevention. Despite the benefits of statins, patients’ adherence to prescribed medication regimens is poor. In a 2001 study carried out among participants treated with statins, the overall medication possession ratio (MPR) was 0.80 throughout the two years after the first prescription for statins. Similar results were obtained in a 2002 study in Washington state. In both studies, adherence dropped progressively over time, reaching 0.60 by the end of 12 months. Switching from one statin to another may also affect patient adherence. In a study carried out among patients using statins, a lower percentage of patients who switched medication continued with treatment. The effect of switching on compliance was found to be stronger than the effect of continuing treatment on compliance. These findings suggest that patient adherence may be influenced by the initial statin prescribed.

OBJECTIVE
To examine how switching statins affects compliance and persistence.

METHODS
Study Design/Data Source
Analytic study, MedImpact Healthcare Systems claims database
Study Cohort
MedImpact Medicaid and Medicare beneficiaries in Washington state between April 2001 and June 2004
• All patients were new statin users as defined by a one-year wash-out period before filling the first prescription for statin.
• All patients have been continuously eligible for benefits for two years between April 2001 and June 2004, and finally for one year before the first statin prescription and for one year after the first prescription.
• The beginning date for this analysis was selected based on previous research. The date of study entry is defined by the index date.
• A patient was considered a new user of statins if he or she had filled a new prescription for a statin drug in a different drug class or if he or she had not filled any prescription for a statin drug in the year before index date.
• Patients with a history of statin use were excluded from the analysis.
• To examine the switching behavior of statin users, we conducted a cross-sectional analysis of new users of statin drugs.
• We selected patients who fills prescriptions covering more than 30 days of supply from the sample and examined their distribution of three-month supply prescription among drugs. Patients who filled only one prescription for a statin were excluded from analysis.

OUTCOMES MEASURES AND COVARIATES
• Compliance: measured with the medication possession ratio (MPR), the statistic of choice to measure the probability that the first dose of a new drug is taken [3]. The MPR is defined as the number of days of supply that were dispensed by the pharmacy divided by the number of days of supply prescribed. Patients are considered compliant if their MPR is ≥ 0.80.
• Persistence: measured by the NNT to discontinuation, defined as the time the patient fills the first prescription for a statin and the last refill at the end of follow-up.
• Measure of switching: the Statin Switching Group Indicator (SSGI), in which treatment can change from the index statin to another statin or no change. This indicator is defined by a binary variable time to discontinuation, or to gap, is less than 180 days or 360 days.
• Switching indicators: a binary variable for switching to another statin (SSGI = 1) and a binary variable for continuing treatment (SSGI = 0).
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STATISTICAL ANALYSIS
The effect of potential selection bias due to non-random treatment assignment is assessed with a propensity score analysis. The propensity score (PS) is the estimated conditional probability of treatment assignment, the propensity score (PS) method is used to adjust for pre-treatment differences between switchers and non-switchers. Table 1 contains demographic characteristics, health status, and average copays. Table 2 contains average MPR, proportions of patients with time to discontinuation, or to gap, is less than 180 and 360 days.

TABLE 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Atorvastatin</th>
<th>Fluvastatin</th>
<th>Lovastatin</th>
<th>Pravastatin</th>
<th>Simvastatin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>54.7</td>
<td>57.4</td>
<td>64.6</td>
<td>64.1</td>
<td>72.2</td>
</tr>
<tr>
<td>Female (%)</td>
<td>35.3</td>
<td>38.9</td>
<td>40.5</td>
<td>40.5</td>
<td>39.2</td>
</tr>
<tr>
<td>Comorbidities (%)</td>
<td>39.1</td>
<td>35.3</td>
<td>37.7</td>
<td>37.7</td>
<td>37.7</td>
</tr>
</tbody>
</table>

The effect of switching on persistence, measured as probability that time to discontinuation, or to gap, is less than 180 days or 360 days. Adjusted with propensity score weights. Probabilities above are relative to non-switchers. Switching increases the probability patients will discontinue or experience a gap in treatment before 180 and 360 days.

Table 2

<table>
<thead>
<tr>
<th>Statin</th>
<th>Probability of discontinuation &lt; 180 days</th>
<th>Probability of discontinuation &lt; 360 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atorvastatin</td>
<td>.087</td>
<td>.087</td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>.066</td>
<td>.066</td>
</tr>
<tr>
<td>Lovastatin</td>
<td>.066</td>
<td>.066</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>.057</td>
<td>.057</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>.067</td>
<td>.067</td>
</tr>
</tbody>
</table>

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REFERENCES