Medication refill persistence: Does prescription cost-sharing matter?

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Statistical Services
IMS Health
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Objective

- To investigate the influence of prescription cost-sharing on medication refill persistence by using two antihypertensive therapeutic classes: ACEs (angiotensin converting enzyme inhibitors) and ARBs (angiotensin II receptor blockers)
Methods

- A retrospective observational cohort study

Data Source:

- A Midwest commercial insurer’s medical and pharmacy administrative claims data supplemented with public files
Methods (Cont’d)

Subjects

- New users of ACEs or ARBs
  - Individuals who started treatment with ACE or ARB single agents between January 1 and June 30, 2004 with no ACE or ARB single agents or combinations dispensed in the six months preceding the index date

Inclusion criteria:

- Continuous enrollment
- No health group, benefit, or cost-sharing change
- Having at least 28 days supply totally
- Age $\geq 18$ on the index date
- No long-term care after the index date
- No diagnosis of dementia
Methods (Cont’d)

- Measures of refill persistence
  - Total gap (total number of days without ACEs or ARBs) during the first six months of treatment
  - Proportion of days covered (PDC) less than 80% during the first six months of treatment
    - \[ PDC = \frac{180 - \text{Total gap}}{180} \]
  - Number of days to the first gap of more than 15 days from the index date until the end of 2004
Methods (Cont’d)

- Behavioral model of health services use (Andersen, 1995)
  - Predisposing characteristics
  - Enabling resources
  - Need factors

- Statistical analyses
  - The Tobit model
  - Logistic regression
  - Survival analysis

- STATA 8.0 (StataCorp, College Station, TX)
Results - Descriptive

- N=1,549

- Per 30 day average cost-sharing:
  - $12.26 ± $7.49 ($0.00 - $42.62)

- Refill persistence
  - Total gap: 47 days ± 52 days (0 – 152 days)
  - PDC<80%: n=679 (43.8%)
  - Time to the first gap of more than 15 days:
    - n=910 (58.8%)
    - 163 days ± 109 days (7 – 365 days)
## Results – The Tobit Model

<table>
<thead>
<tr>
<th>Significant Variables</th>
<th>Transferred Coefficient</th>
<th>( P )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per 30 day average cost sharing</td>
<td>0.027</td>
<td>0.001</td>
<td>[0.011, 0.043]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.014</td>
<td>0.002</td>
<td>[-0.023, -0.005]</td>
</tr>
<tr>
<td>% of pop. reporting White only</td>
<td>-1.428</td>
<td>0.004</td>
<td>[-2.399, -0.457]</td>
</tr>
<tr>
<td>1-3 unique medications in prior 6 months</td>
<td>-0.361</td>
<td>0.030</td>
<td>[-0.686, -0.036]</td>
</tr>
<tr>
<td>Mail-order service at some time</td>
<td>-0.958</td>
<td>&lt;0.001</td>
<td>[-1.271, -0.646]</td>
</tr>
<tr>
<td>Yearly out of pocket maximum</td>
<td>-0.410</td>
<td>0.002</td>
<td>[-0.669, -0.151]</td>
</tr>
<tr>
<td>( Pseudo R^2 )</td>
<td></td>
<td>0.031</td>
<td></td>
</tr>
</tbody>
</table>
### Results – Logistic Regression

<table>
<thead>
<tr>
<th>Significant Variables</th>
<th>OR</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per 30 day average cost sharing</td>
<td>1.025</td>
<td>0.005</td>
<td>[1.007, 1.042]</td>
</tr>
<tr>
<td>Age</td>
<td>0.981</td>
<td>&lt;0.001</td>
<td>[0.972, 0.990]</td>
</tr>
<tr>
<td>% of pop. reporting White only</td>
<td>0.140</td>
<td>&lt;0.001</td>
<td>[0.047, 0.413]</td>
</tr>
<tr>
<td>Rural</td>
<td>1.428</td>
<td>0.021</td>
<td>[1.056, 1.931]</td>
</tr>
<tr>
<td>1-3 unique medications in prior 6 months</td>
<td>0.643</td>
<td>0.011</td>
<td>[0.457, 0.904]</td>
</tr>
<tr>
<td>Mail-order service at some time</td>
<td>0.557</td>
<td>0.001</td>
<td>[0.400, 0.775]</td>
</tr>
<tr>
<td>Diagnosis of dyslipidemia</td>
<td>0.782</td>
<td>0.029</td>
<td>[0.627, 0.976]</td>
</tr>
</tbody>
</table>

*Pseudo R²* 0.069
Results - Survival Analysis

- Kaplan-Meier survival estimates by cost-sharing tertiles
### Cox proportional hazards model

<table>
<thead>
<tr>
<th>Significant Variables</th>
<th>HR</th>
<th>P</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per 30 day average cost sharing</td>
<td>1.017</td>
<td>0.001</td>
<td>[1.007, 1.027]</td>
</tr>
<tr>
<td>Age</td>
<td>0.991</td>
<td>0.001</td>
<td>[0.985, 0.996]</td>
</tr>
<tr>
<td>% of pop. reporting White only</td>
<td>0.416</td>
<td>0.003</td>
<td>[0.232, 0.746]</td>
</tr>
<tr>
<td>1-3 unique medications in prior 6 months</td>
<td>0.724</td>
<td>0.001</td>
<td>[0.593, 0.883]</td>
</tr>
<tr>
<td>Mail-order service at some time</td>
<td>0.715</td>
<td>0.001</td>
<td>[0.586, 0.871]</td>
</tr>
</tbody>
</table>
Discussion

- Regardless of measures of refill persistence and statistical models, prescription cost-sharing consistently was found to significantly and negatively impact refill persistence.

- Following transformation of the cost-sharing coefficient in each model, a $10 increase in per 30 day average cost-sharing was associated with a 27.0% increase in total gap, a 27.1% increase in the odds of being non-persistent, and an 18.5% increase in the risk of having a gap of more than 15 days.
Due to sampling errors, the significance patterns of the control variables were not exactly the same, but comparable.

Total gap may be a more objective and informative measure of medication refill persistence.

The influence of prescription cost-sharing on medication refill persistence may be underestimated, especially for low-income patients.
Limitations

- Administrative claims data
- Selection bias
- Observational study
- Generalizability
- Potential underestimation of persistence
- Potential misinterpretation of non-persistence
- Measurement errors
Conclusions and Policy Implications

- Prescription cost-sharing has a significant and negative influence on medication refill persistence.

- Payers may improve member clinical outcomes through lowering prescription cost-sharing for chronic diseases.

- Although zero dollar member cost-sharing for selected chronic conditions may be financially difficult for some plans to implement, a starting point may be a zero dollar or near zero dollar cost-sharing for generics.
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Questions and Comments?