Cost-Sharing and Initiation of Disease-Modifying Therapy for Multiple Sclerosis
John Romley1, Dana Goldman2, Michael Eber2, Homa Dastani3, Edward Kim3, Sretha Rappaport4

1University of Southern California, Los Angeles, CA, USA; 2Precision Health Economics, Santa Monica, CA, USA; 3Novartis Pharmaceuticals Corporation, East Hanover, NJ, USA; 4Healthcore Inc.

At the time of the research Sretha Rappaport was a research fellow at Novartis Pharmaceuticals Corporation

INTRODUCTION
Increased cost sharing for prescription drugs is often proposed as a cost-cutting mechanism. However, cost-sharing can negatively impact therapy utilization and result in worse long-term health outcomes.[1-3] Disease-modifying therapies (DMTs) are standard treatment for multiple sclerosis (MS); however, evidence on the link between cost-sharing and MS DMT use is limited.[4] This study analyzed the association between cost-sharing and initiation of DMTs among privately insured patients with MS.

METHODS
• Retrospective longitudinal cohort study using database of commercial claims
• 3,460 beneficiaries over the years 2003 to 2009 over 18 years old with 22 diagnoses of MS
• DMTs analyzed were interferon beta-1a (subcutaneous and intramuscular), interferon beta-1b, glatiramer acetate, natalizumab, and mitoxantrone
• Cost-sharing rate measured by ratio of total out-of-pocket payments to total payments for DMTs among all MS patients in a given plan[5]
• Multivariate regression analyses estimated linear relationships between DMT initiation and health plan cost-sharing
• Patient-level controls included age, gender, health status (Charlson comorbidity index), and whether the patient was the primary beneficiary
• Indicator variables for each year controlled for trends in initiation

RESULTS
• Mean out of pocket expenditures on DMTs were $691 per year
• For half of MS patients, cost sharing was 1.6% or less of DMT costs, as shown in Table 2
• Average cost-sharing rate was 4.3%
• Ten percent of patients faced a rate of at least 12.0%, five percent faced a rate of 17.8% or more, and one percent faced an extreme rate of 39.5% or higher
• 17% of incident MS cases (566 patients) initiated DMTs over the 8 quarters after the initial diagnosis
• In regression results, proportion of MS patients who initiated DMTs decreased with cost-sharing rate as time since diagnosis increased (P = 0.019)
• Figure 1 shows cumulative initiation rates at various cost-sharing levels by time since diagnosis, as predicted by the regression analysis
• In the quarter of initial MS diagnosis, differences in initiation rates are small. These differences increase over time following diagnosis.
• Cumulative initiation rate would be 22.6% without cost-sharing, but 19.7% at the 95th percentile (P = 0.019 for the difference)

Table 1: Descriptive Statistics for Study Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (Std. Dev.)</th>
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</thead>
<tbody>
<tr>
<td>CMT cost-sharing rate (%)</td>
<td>4.3% (7.5%)</td>
</tr>
<tr>
<td>Quarters since diagnosis</td>
<td>4.5 (3.3)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>42.2 (22.0)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>33.4% (47.2%)</td>
</tr>
<tr>
<td>Primary beneficiary (%)</td>
<td>43.4% (49.6%)</td>
</tr>
<tr>
<td>Charlson comorbidity index</td>
<td>0.84 (1.48)</td>
</tr>
</tbody>
</table>

Table 2: DMT Cost-Sharing Rate and Annual Out-of-Pocket Expenses

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Cost-Sharing Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.3%</td>
</tr>
<tr>
<td>Median</td>
<td>1.6%</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>1.2%</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>3.4%</td>
</tr>
<tr>
<td>90th Percentile</td>
<td>12.0%</td>
</tr>
<tr>
<td>95th Percentile</td>
<td>17.8%</td>
</tr>
<tr>
<td>99th Percentile</td>
<td>39.5%</td>
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</table>

LIMITATIONS
The plan indicator variables in the analysis controlled for confounders that did not change over time. Given the high cost of DMTs, some enrollees with a strong preference for these drugs might have switched to plans with low-cost sharing. If so, our analysis may underestimate the degree to which high-cost-sharing actually discourages utilization.

Copayment assistance programs are available for many drugs. These programs are designed to reduce co-payment burden and its effects on patient consumption. Copayment assistance programs existed for DMTs, but the analysis could not measure their effects on patient costs and initiation. [6] This limitation may have caused the analysis to underestimate the true effect of cost-sharing on DMT utilization.

CONCLUSIONS
• Medication cost-sharing has been proposed as a means of controlling health spending.
• Higher cost-sharing in private insurance plans is associated with less frequent initiation of DMTs among recently diagnosed MS patients.
• This finding, together with evidence that DMTs are effective in slowing the progression of MS, suggests that increased cost-sharing as a means of controlling spending could lead to unintended negative consequences for MS patients.

REFERENCES

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