Does medication cost-sharing predict emergency room use for asthma?

An exploratory analysis of MEPS data

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Purpose

To determine the relationship between:
- Relative cost-sharing for daily preventive asthma medication and
- Risk of asthma-related emergency department (ED) visit

Hypothesis:
- Cost-sharing for preventive asthma medication is positively associated with odds of ED use for asthma

Methods

- Secondary analysis of Medical Expenditure Panel Survey data
  - Household and pharmacy questionnaires pooled from 2010 and 2011
  - Subpopulation of adults reporting current use of preventive asthma medications analyzed

- Complex samples procedures used to estimate confidence intervals and standard errors
  - MEPS uses stratified, multi-stage cluster sampling
  - Taylor-Series variance estimation accounts for this design

- Outcome = asthma-related ED visit in survey year (yes/no)
- Predictor = cost-sharing quintile for asthma prescriptions
  - Quintiles used due to non-normality of cost data
  - Adjusted for race/ethnicity (Black/Hispanic vs. other)
    - Sex, income, and comorbidities were not associated with ED use in bivariate analysis

Results

- Contrary to hypothesis, higher cost-sharing did not predict odds of ED use for asthma
- Compared to 1st (lowest) cost-sharing quintile, 2nd, 3rd and 4th quintiles had significantly decreased odds of ED visit
- Association disappeared when adjusted for race/ethnicity

<table>
<thead>
<tr>
<th>Factor</th>
<th>B</th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-3.949</td>
<td></td>
<td>163</td>
<td>&lt;.001</td>
<td>0.036</td>
<td>0.064</td>
</tr>
<tr>
<td>Black and/or Hispanic</td>
<td>2.366</td>
<td>4.055</td>
<td>&lt;.001</td>
<td>10.657</td>
<td>3.368</td>
<td>33.738</td>
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<tr>
<td>Cost-sharing quintiles:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd vs. 1st</td>
<td>-1.775</td>
<td>-1.662</td>
<td>.098</td>
<td>0.170</td>
<td>0.021</td>
<td>1.395</td>
</tr>
<tr>
<td>3rd vs. 1st</td>
<td>-0.925</td>
<td>-1.240</td>
<td>.217</td>
<td>0.397</td>
<td>0.091</td>
<td>1.729</td>
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<tr>
<td>4th vs. 1st</td>
<td>-1.341</td>
<td>-1.467</td>
<td>.144</td>
<td>0.262</td>
<td>0.043</td>
<td>1.591</td>
</tr>
<tr>
<td>5th vs. 1st</td>
<td>-0.118</td>
<td>-0.158</td>
<td>.874</td>
<td>0.889</td>
<td>0.205</td>
<td>3.858</td>
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</tbody>
</table>

Note. Overall adjusted Wald F(4,694,765.078) = 6.116, p<.001. CI = confidence interval.

Impact of missing data:
- 33% of unweighted cases had no pharmacy cost data
- Cases with missing drug cost data had twice the odds of ED visit (p=.059)
- Non-Black/Hispanic cases with missing cost data had 4.2 times higher odds of ED visit (p=.045)

Summary and Conclusions

- There was no difference in odds of ED visit across medication cost-sharing quintiles (once race/ethnicity taken into account)
- One-third of cases lacked asthma drug cost data from pharmacies
  - Cases with missing cost data were twice as likely to use ED
  - Non-Black/Hispanic cases with missing data were more than 4 times likelier to use ED
  - Therefore, results may not include persons at higher risk of ED use who could not afford their prescriptions at all

Future studies should:
- Explore other national data sources for out-of-pocket cost
- Examine effect of cost-sharing on actual purchase of needed medications

Acknowledgements

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Note. References are listed in the accompanying handout