A PROGRAM EVALUATION OF A POLYPHARMACY SUB-POPULATION: MEDICATIONS, EMERGENCY ROOM VISITS, AND HOSPITALIZATIONS

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# A Program Evaluation of Polypharmacy and Medical Trends for a Polypharmacy Population

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## Background & Objective

- Persons taking several medications simultaneously may be at increased risk for adverse safety events. Research has shown that those taking numerous medications have a higher likelihood of emergency room (ER) visits and hospitalizations.²,³,⁴
- We characterized a polypharmacy sub-population of Premera BlueCross members and performed a program evaluation to assess the effects of a safety-focused, educational, mail-based intervention for persons identified with multiple chronic medication claims.

### Polypharmacy Program: The Issue

- Polypharmacy members are at higher risk for:
  - duplicate medications
  - drug-drug interactions
  - drug disease interactions
  - drug administration errors

  **Increased risk for drug-related problems**

- Goal: To promote medication reviews in order to minimize drug-related problems.

### Methods

- Members’ pharmacy and medical claims were characterized and a pre-intervention and post-intervention analysis compared monthly medication frequencies and safety-related medical events (emergency room (ER) visits and hospitalizations) for the two, one-year periods.
- General linear mixed models (GLMM) were used to test for time-period differences in prescriptions. The top ICD-9 codes for ER visits and hospitalizations, as well as the most frequently used medications were reported.

### Inclusion / Eligibility Criteria

- Eligible members selected from pharmacy claims database.
- Retail and mail-order Rx claims used to select members.
- Members or dependents >=19 years of age.
- On >=5 maintenance medications from Premera custom list of chronic treatments during a 3-month index period (Jan – Mar 2005).
- Had continuous Premera pharmacy and medical coverage during the period August 2004 – February 2007.

## Results

### Data Type, Source, and Timeframe of Evaluation

- Evaluation used pharmacy and medical claims data from Premera data sources.
- Demographic, membership, and eligibility data were also used.
- Intervention period claims were not part of the analysis.

### Trends in Monthly Pharmacy Claims

Average monthly pharmacy claims increased in the post-period compared to the pre-period. Confounding this, there was an increase in the period 6-12 months prior to program mailing, with a flattening of the monthly Rx claims during the months prior to the intervention and during the post-intervention period.

### Trends in Pharmacy Claims, pre vs. post

<table>
<thead>
<tr>
<th>Prescriptions (pre- and post-period)</th>
<th>Average Number of Annual and Monthly Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Claim Counts</td>
<td>Pre-period</td>
</tr>
<tr>
<td>Mean Full claims in annual period</td>
<td>75.6</td>
</tr>
<tr>
<td>Mean Full claims in monthly period</td>
<td>6.3</td>
</tr>
</tbody>
</table>

### Trends (Cont.)

#### Results (Cont.)

<table>
<thead>
<tr>
<th>Top ER ICD-9 Dx Codes</th>
<th>General Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>786.50</td>
<td>Unspecified chest pain</td>
<td>786.59</td>
</tr>
<tr>
<td>786.90</td>
<td>Other chest pain</td>
<td>784.0</td>
</tr>
<tr>
<td>414.01</td>
<td>Headache</td>
<td>715.3</td>
</tr>
<tr>
<td>486.0</td>
<td>Osteoarthritis localized (n.s.)</td>
<td>486.0</td>
</tr>
</tbody>
</table>

### Mean Hospitalizations (events per 1000 members)

- Overall hospitalizations and hospital days were reduced during the 1-year post-period.
- 10.2 days vs. 8.3 (pre-period vs. post-period)
- A statistically significant mean difference of 0.14 fewer hospitalization days per member (p=0.003) was associated with fewer hospitalizations during the year following the safety-focused mailing intervention.
- This translated to a reduction of hospitalization events per 1000 members in the study.
- 788 hospital days per 1000 members in the pre-period (23% to 22%; 13% to 12%, respectively; both p<0.0001).

### Select Evaluation Limitations

- Pre-period and post-period self-control design.
- Limited knowledge of direct participation.
- Mail order inclusion required a Rx count algorithm.
- Analysis did not evaluate changes in dose or adherence.
- There was no data on health outcome effects.

### Key Messages

- Annual pharmacy claims increased during the 2-year mailing evaluation period.
- Monthly Rx trend flattened prior to and following the mailing intervention.
- ER and hospitalization visits decreased during the year following the polypharmacy safety-focused mailing.
- Studies with stronger control groups are needed for polypharmacy interventions as well as further assessment of pharmacist and physician consultation strategies.

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