Clinical Decision Support for High Risk Medications at the Point of Prescribing

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Introduction
High risk medications (HRMs), such as those with high anticholinergic and antihistaminergic activity are associated with increased morbidity and mortality in the elderly.1 The American Geriatrics Society (AGS) recommends avoiding HRMs in older adults to improve safety and quality of care in this population.2 Further, national quality organizations have adopted these recommendations and performance on this metric is impacting reimbursement of health systems, payers, and pharmacies. Several interventions have targeted HRM prescribing in the elderly with inconsistent results, and only a few have incorporated clinical decision support (CDS) at the point of prescribing.3,4

Methods
The most common HRMs prescribed using Vanderbilt’s e-prescribing system were evaluated in order to target the CDS rules for the most frequently used medications. Targeted CDS was limited to those HRMs that had at least one evidence-based potentially safer alternative (PSA) medication.5 A PSA medication alert is triggered within the e-prescribing workflow when a HRM prescription is initiated for a patient 65 years or older. The alert displays a list of PSA medications, as well as an option for the user to continue with the current HRM. If a PSA medication is selected, the user is provided available doses and dosage forms and can continue with the order. Descriptive statistics were collected for the target population, and post-implementation rates were compared to baseline rates using a quasi-Poisson regression model in R to detect a change in prescribing habits.

Results
Following the implementation of a HRM CDS alert, a 10.6% decrease (95% CI 6.5% to 14.5%, p < 0.0001) in the risk of prescribing HRMs in the target population was observed.

Table 1. Average weekly percent and quantity HRM in target population pre- and post-intervention.

<table>
<thead>
<tr>
<th>12 Week End Date</th>
<th>6/27/2015 (pre)</th>
<th>9/19/2015 (pre)</th>
<th>12/12/2015 (pre)</th>
<th>3/5/2016 (post)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg % HRM / Week</td>
<td>3.01%</td>
<td>3.01%</td>
<td>2.96%</td>
<td>2.70%</td>
</tr>
<tr>
<td>Avg # HRM / Week</td>
<td>265.3</td>
<td>255.6</td>
<td>265.1</td>
<td>235.5</td>
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</table>

Conclusion
CDS at the point of prescribing is effective at reducing the incidence of HRM prescribing in the elderly. It is unknown if the lower incidence of HRM prescribing results in decrease adverse drug events and improved patient outcomes.

References
Abstract (67 words)
High risk medications (HRMs) are associated with increased morbidity and mortality in the elderly. Reducing prescribing of these medications can enhance patient safety and improve quality of care. Clinical decision support (CDS) that recommends evidence-based potentially safer alternatives (PSAs) at the point of prescribing is effective at reducing the incidence of HRM prescribing in the elderly.

Learning Objective
Evaluate the effectiveness of clinical decision support at the point of prescribing for reducing the utilization of high risk medications in the elderly.