ADVERSE DRUG EVENTS ARE A SIGNIFICANT HEALTH BURDEN

- Adverse drug events (ADEs) affect unacceptable numbers of hospital patients in NZ.
- Medication Reconciliation (MR) is effective at reducing ADEs but is resource intensive.
- The Assessment of Risk Tool (ART), an electronic prioritisation tool for targeted clinical pharmacist interventions, developed at Middlemore Hospital in 2011 (Figure 1).
- ART prioritises patients in order of risk for ADEs so those at greatest risk are seen in priority.

AIM

To determine the effectiveness of the Assessment of Risk Tool at identifying patients at high risk of adverse drug events who should be prioritised for medication reconciliation.

IMPROVEMENT METHODOLOGY

- Prospective observational study from Feb 2012 to Jan 2013.
- All adult admissions to a medical and a cardiology team; n = 247 admissions.
- Interventions by two pharmacists (blinded to tool) and included MR, medicines review and daily chart checks.
- Generalised linear model was used to analyse each patient’s risk score, the number of unintentional medication discrepancies and other prescribing errors.
- Logistic regression was used to identify which flags were better predictors for unintentional medication discrepancies.

DIFFERENCES IN MEDICATION DISCREPANCIES BETWEEN GROUPS

- There were approximately 1/3rd of admissions in the three risk categories (low, medium and high).
- 97 admissions were categorised as high risk.

Table 1. Cumulative distribution of unintentional medication discrepancies.

<table>
<thead>
<tr>
<th>Risk</th>
<th>0</th>
<th>≥1</th>
<th>≥2</th>
<th>≥3</th>
<th>≥4</th>
<th>≥5</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (≥22)</td>
<td>34%</td>
<td>66%</td>
<td>34%</td>
<td>31%</td>
<td>23%</td>
<td>13%</td>
</tr>
<tr>
<td>Medium (11-21)</td>
<td>49%</td>
<td>51%</td>
<td>32%</td>
<td>9%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Low (1-10)</td>
<td>69%</td>
<td>31%</td>
<td>10%</td>
<td>7%</td>
<td>3%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Figure 1. Assessment of Risk Tool (ART) home screen in Concerto© displaying the individual flags triggered for a patient.

Figure 2. Ratio of the mean number of unintentional medication discrepancies (confidence interval 95%).

- There were significant differences in the number of medication discrepancies across the groups (p < 0.0001, Kruskall-Wallis test).
- Patients in the high risk group had a significantly higher number of medication discrepancies compared to those in the low risk group (approximately 3 times greater risk of error) (Figure 2).

Table 2. Flags associated with ≥1 unintentional medication discrepancy.

<table>
<thead>
<tr>
<th>Flags</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 8 Regular Admission Medications</td>
<td>3.7 (2.2, 6.4) p&lt;0.0001</td>
</tr>
<tr>
<td>Chronic Care Management- Diabetes</td>
<td>2.6 (0.9, 7.7) p 0.07</td>
</tr>
<tr>
<td>Diabetic Medications</td>
<td>2.4 (1.3, 4.6) p 0.007</td>
</tr>
<tr>
<td>Poor Medication Compliance</td>
<td>3.1 (1.0, 9.7) p 0.06</td>
</tr>
<tr>
<td>Re-Admit &lt; 7 days</td>
<td>3.5 (1.9, 6.4) p&lt;0.0001</td>
</tr>
<tr>
<td>Re-Admit&lt; 30 days</td>
<td>6.8 (3.0, 15.2) p&lt;0.0001</td>
</tr>
</tbody>
</table>

Certain flags are better predictors of risk than others (Table 2). Six of the 24 flags associated with at least 1 medication discrepancy.

USE ART TO REDUCE HARM FROM MEDICINES

ART is an effective method for prioritising patients for targeted clinical pharmacist interventions such as MR.

High risk patients can also be prioritised for intervention by other hospital services.

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References: