Improving the accuracy of medication history through better utilisation of patient’s own medicines

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1. Introduction

- Patient’s own medicines (POMs) are medicines used in the community, obtained from community/hospital pharmacy or other avenues.

- Managing medicines is complex, and described as figure 1, the medicines management cycle (MMC).\textsuperscript{1,2}

- Utilisation of POMs in the hospital setting may affect multiple aspects of the MMC.
1. Introduction

- Literature suggests use of POMs provides benefits for both the patient and the hospital,\textsuperscript{1,4-6} including:
  - Reduction in medication history and prescribing errors,
  - Improved continuity of care,
  - Reduction in wastage of medications,
  - Potential cost savings to the system.

- Error reductions in admission medication histories are well described.
  - Purported to be due to improved access to information.

- A medication error is a discrepancy with potential to cause harm.
  - Medications are deemed “High Risk” (HR), based on potential to cause greater harm if administered incorrectly.\textsuperscript{9}

- No consistent approach in WA Health or Australian dept. of health.
2. Methodology

- The primary aim of this study was to quantify any difference in the incidence and type of error between patients who did and did not bring POMs into hospital.

- Secondarily to investigate whether the safety benefits of using POMs outlined in the literature is consistent with those observed in a Western Australian tertiary hospital.
2. Methodology

- Ethics approval received from SCGG HREC (2015-006). Reciprocal UWA HREC approval obtained.

- A random sample of 400 admissions were selected from the 625 total admissions to two general medical/surgical wards at SCGH over the 3-month period between Jan-Mar 2015.
  - Total of 325 patients included in sample.
  - Patients excluded if: below age of 18; not taking any medications; on a dosage administration aid, if either the Medication Management Plan or nursing admission form were absent/incomplete.

- Pharmacist completed medication histories were considered the gold-standard and medical admission histories were compared to pharmacist admission histories.
2. Methodology

- A data collection tool was used to collect data from medical records including admission history drugs recorded by both pharmacy and medical staff.

- Data was then recorded into a Microsoft Access® database and analysed with SPSS®.

- Statistical analysis included independent t-tests, Chi-squared tests, univariate and multivariate Poisson regression.
3. Results

- Of the 174 patients included in the analysis 39% (n=68) brought in POMs and 61% (n=106) did not.
3. Results

Table 3. Difference in error rates of HR drugs between POMs and no POMs identified from the medical notes.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean ± Std. Dev</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No POMs</td>
<td>105</td>
<td>1.82±2.15</td>
<td>0.043</td>
</tr>
<tr>
<td>POMs</td>
<td>68</td>
<td>1.41±1.75</td>
<td></td>
</tr>
</tbody>
</table>

*Multivariate Poisson regression comparison with respect to HR drugs with errors on the medical history as compared to the MMP. Variables investigated were; age, sex, admission type, length of stay, ward, number of medications prior to admission and if the patient was from a nursing home facility. Backwards selection was conducted and variables that were significant at a 5% significance level were retained in the final model. POM group was retained regardless of its level of significance as it was the main variable of interest.

- There were significantly fewer errors in histories for high-risk medicines in patients with POMs (P =0.04). Age and gender did not impact results.
- In total, 53% (n=844) of medicines on medication histories were considered high-risk.
  - Using an expanded “APINCH” acronym for high-risk drug identification.
### 3. Results

- All error types were reduced in the POMs group

#### Table 4. Statistics of errors identified in the medical notes for no POMs and POMs groups.

<table>
<thead>
<tr>
<th>Variable (from medical notes)</th>
<th>No POMs</th>
<th>POMs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean ± Std. Dev</td>
</tr>
<tr>
<td>HR Omissions</td>
<td>106</td>
<td>0.51±0.98</td>
</tr>
<tr>
<td>HR Previously Ceased Medications</td>
<td>106</td>
<td>0.04±0.19</td>
</tr>
<tr>
<td>HR Wrong Drug</td>
<td>106</td>
<td>0.12±0.47</td>
</tr>
<tr>
<td>HR Wrong Form</td>
<td>106</td>
<td>1.07±1.66</td>
</tr>
<tr>
<td>HR Wrong Frequency</td>
<td>106</td>
<td>1.18±1.69</td>
</tr>
<tr>
<td>HR Wrong Strength</td>
<td>106</td>
<td>1.15±1.67</td>
</tr>
</tbody>
</table>

*Average number, and standard deviation, of errors of each type investigated per patient within each group.*
4. Conclusion

- When patients’ brought POMs into hospital, the high-risk medicines on their admission medication histories were particularly (and significantly) less likely to contain errors.
  - Potential explanation?

- Consistent with literature, and highlights potential of a systems change that better utilises POMs.
5. Limitations

- Limited data sample (and high exclusion numbers) and a limited site representation
  - Although data reflects that seen internationally

- Inability to determine what the constitution of POMs were, and what the constitution of non-POMs were.

- Acknowledgement that POMs were at times sent home with families/carers before prescribing took place.
6. Future Implications

- Awareness of benefits should be promoted, particularly in patients taking high-risk medications where medication errors have increased harm potential.

- Further quantification of the benefits of POMs to WA Health and the Australian health system.
  - Likely significant cost savings and medication safety benefits

- Identifying barriers and facilitators for patient’s bringing in medicines into hospital.

- Incorporating best practice and practice based research into WA Health medication systems redesign in order to experience the benefits of POMs.