A collaborative evaluation of the number and clinical significance of pharmacy interventions to the care of inpatients in Community Hospitals

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Aim

- This collaborative evaluation aimed to quantify the types of pharmacy interventions and their potential impact on the care of inpatients in community hospitals.
Definition

• A pharmacy intervention was defined for the purpose of this evaluation as:
  ‘An intervention which results in the correction of a prescribing/transcribing error or the provision of pharmaceutical advice which optimises the patient’s care’
Method

- 15 Organisations with Community Hospitals
- Recorded pharmacy interventions to inpatient care
- 14 day period (one organisation only 7 days of data) in November 2013
- Self-assessed the clinical impact of interventions according to a framework
- Electronically submitted data using a defined data set
Method

• Allergy status
• Frequency of clinical pharmacy visits to the community hospitals.
• Care area
Results Summary

• 4077 patient medication charts were clinically evaluated by pharmacy teams
• Equating to 52,033 medication orders
• 1 in 3 charts (37.7% (1537)) charts required pharmacy interventions
• 2782 pharmacy interventions made
Results Summary

- Frequency of visits varied depending on organisation (range 1 – 5 per week median of 2 visits per week)
- Only seven of the 15 trusts had the allergy status recorded on the chart
- Average of 12.76 items per patient
Number of Regular Prescribed Medicines
Total Number of Prescribed Medicines

![Bar Chart]

- Medicines use and safety chart showing the total number of prescribed medicines from 1 to 29.
Charts screened by Care Area

- Rehabilitation (all): 2807
- Terminal Care: 136
- Step-up (admission avoidance): 239
- Step-down (facilitated discharge): 674
- Other: 221
Interventions in relation to Stage of Process

A - On admission (at Medicines Reconciliation)
- 30% 839/2782

B - Inpatient
- 62% 1717/2782

C - Discharge
- 8% 226/2782
Clinical Impact of Intervention (all)

- Level 1 – None/Insignificant: 681 (24%)
- Level 2 – Low/Minor: 1225 (44%)
- Level 3 – Moderate: 769 (28%)
- Level 4 – Severe/Major: 107 (4%)
# Which Drugs? (All Interventions)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibacterials</td>
<td>212 (7.62%)</td>
</tr>
<tr>
<td>Anticoagulants (oral and parenteral)</td>
<td>210 (7.55%)</td>
</tr>
<tr>
<td>Bisphosphonates</td>
<td>75 (2.70%)</td>
</tr>
<tr>
<td>Calcium salts</td>
<td>87 (3.13%)</td>
</tr>
<tr>
<td>Insulin</td>
<td>22 (0.79%)</td>
</tr>
<tr>
<td>Laxatives</td>
<td>162 (5.82%)</td>
</tr>
<tr>
<td>Opioid analgesics</td>
<td>119 (4.28%)</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>107 (3.85%)</td>
</tr>
</tbody>
</table>

n=2782
Which Drugs?  
(Level 4 Interventions)

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibacterials</td>
<td>16</td>
<td>14.95%</td>
</tr>
<tr>
<td>Anticoagulants (oral and parenteral)</td>
<td>20</td>
<td>18.69%</td>
</tr>
<tr>
<td>Bisphosphonates</td>
<td>5</td>
<td>4.67%</td>
</tr>
<tr>
<td>Insulin</td>
<td>6</td>
<td>5.61%</td>
</tr>
<tr>
<td>Opioid analgesics</td>
<td>10</td>
<td>9.35%</td>
</tr>
</tbody>
</table>

*n=107*
Prescribing Errors v Other Interventions

- Majority of interventions categorised as a prescribing error (67%, 1872/2782)
- The remainder (33%, 910/2782) not directly attributable to a prescriber error
  - Of these, administration issues, which included omitted and delayed medicine administration, was the most common intervention (11%, 298/2782)
Clinical Impact of Intervention (Prescribing Errors)

- Level 1 - None/Insignificant: 452 (24%)
- Level 2 - Low/Minor: 794 (42%)
- Level 3 - Moderate: 544 (29%)
- Level 4 - Severe/Major: 82 (4%)
Prescribing Errors
Comparison with other studies

• When only prescribing errors are reviewed the error rate was 3.6 errors per 100 medication orders (including PRN medicines).

• This error rate is within the interquartile range reported in a systematic review of prescribing errors in hospital inpatients. (Prevalence, Incidence and Nature of Prescribing Errors in Hospital Inpatients A Systematic Review Drug Safety 2009; 32 (5): 379-389 = median rate 7% interquartile range 2-14%)

• EQUIP = 8.91 errors per 100 medication orders
Prescribing Errors
Comparison with EQUIP

• EQUIP reported the level of severity validated by an independent panel. In ours pharmacists self-scored
• EQUIP reported prescribing errors from only acute hospitals and we report from only community hospitals.
• In our study the proportion of interventions classified as severe/major is higher than those categorised as potentially lethal in the EQUIP study.
## Prescribing Errors
### Comparison with EQUIP

<table>
<thead>
<tr>
<th>EQUIP descriptor</th>
<th>%</th>
<th>Our study descriptor</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>minor</td>
<td>39.97%</td>
<td>Level 1 - None/Insignificant</td>
<td>24.15%</td>
</tr>
<tr>
<td>significant</td>
<td>52.81%</td>
<td>Level 2 – Low/Minor</td>
<td>42.41%</td>
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<tr>
<td>serious</td>
<td>5.48%</td>
<td>Level 3 – Moderate</td>
<td>29.06%</td>
</tr>
<tr>
<td>potentially lethal</td>
<td>1.74%</td>
<td>Level 4 – Severe/Major</td>
<td>4.38%</td>
</tr>
<tr>
<td></td>
<td>100.00%</td>
<td></td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Conclusion

- First multicentred evaluation to look at pharmacy interventions to inpatients in community hospitals.
- Pharmacy interventions may improve patient care for over a third of patients, and of these a third, if left undetected, could have led to moderate or severe harm.
- Most frequently intervention was a result of a prescribing error.
- Results suggest in-patients in community hospitals are subject to prescribing errors which have the potential to cause severe harm if left undetected at a higher level to those seen in acute hospitals.
Conclusion

• The interventions pharmacy makes to the care of inpatients in community hospitals are considerable.
• Pharmacy services to these units should reflect the current patient dependency levels and not the historic level of provision.
• Where access to a pharmacist is limited then consideration should be given to targeting those patients on high risk medicines.