Medication errors at discharge – are Electronic Discharge summaries the answer?

Rowan Yemm
PhD student and research pharmacist
University of East Anglia and Colchester Hospital
r.yemm@uea.ac.uk
Background

- Hospital discharge summaries are frequently incomplete or inaccurate
  - reported medication error rates of 10.8-36.4% [1-3]
- Electronic Discharge summaries (EDS) introduced to reduce medication errors associated with the transfer of care
  - EDS error rate of 13.3-20.4% [4, 5]
- Limited UK information describing the nature and severity of errors resulting from EDS [3]
• Electronic discharge system since 2008 at Colchester hospital
• Summaries composed electronically on the wards and sent via email direct to GP surgery
• Medicines selected from a drop-down list
• Pharmacy checking
  • On wards am, or in ‘EDS sweep’ pm
    • Before discharge
    • After discharge with addendums sent if necessary
    • Not checked
Aims

• Baseline view of electronic discharge system at Colchester
  • Timeliness
  • Pharmacy checking status
  • Adherence to NPC standards\textsuperscript{[6]}
  • Medication discrepancies on EDS
    • Nature
    • Severity
    • Predictors
Approval granted by the hospital’s ethics department.

Patients discharged from 6 wards (2 medical, 2 surgical, 2 elderly care) during study period identified.

Patients’ discharge summaries reviewed during pharmacist final check, or post-discharge if no pharmacy check occurred.

Medicines on patients’ medication charts and notes compared to those listed on discharge summary. Discrepancies recorded.

Discrepancies were defined as unexplainable differences between medicines listed in notes/on charts and those on discharge summary.

Discrepancies were identified and recorded. Random sample of 30 discrepancies reviewed by independent panel of 4 senior healthcare professionals.

Logistic regression analysis used to identify significant predictors of a medication discrepancy.

Expert panel assessed discrepancies for clinical significance using a validated tool[7].
Findings

• 151 medication discrepancies were identified across 148 EDS
  • 88 (59.4%) discharges had at least one error

• 110 (74.3%) discrepancies identified and corrected by pharmacy during final check

• Remaining 41 (27.7%) not checked by pharmacy reached primary care
  • What happened?
Findings - nature

• Discrepancies involving dosing (29.8%) and omissions (27.8%) most common
  • Omissions consistently high across all ward types, dosing errors less common on surgical wards

• Poor documentation of medication changes
  • 12.2% of summaries wrongly stated ‘no changes’
Findings - severity

- Mean (SD) severity score given to discrepancies was 3.50 (3.18) on a VAS 0→10
- Kappa analysis, 0.24 (<0.4 considered poor)
- Examples

<table>
<thead>
<tr>
<th></th>
<th>Judge 1</th>
<th>Judge 2</th>
<th>Judge 3</th>
<th>Judge 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>1.33</td>
<td>1.40</td>
<td>4.70</td>
<td>6.60</td>
</tr>
<tr>
<td>Mean</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Mode</td>
<td>1.88</td>
<td>2.04</td>
<td>2.48</td>
<td>2.77</td>
</tr>
<tr>
<td>Range</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>
### Findings - predictors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>P value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of medicines</td>
<td>≥6 medicines</td>
<td>2.495</td>
<td>1.203 to 5.704</td>
<td>0.001</td>
<td>Patients taking 6 medicines or more are 2.5 times more likely to have an error at discharge than those who take less than 6</td>
</tr>
<tr>
<td></td>
<td>&lt;6 medicines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay</td>
<td>≥3 days</td>
<td>3.671</td>
<td>1.725 to 7.810</td>
<td>0.001</td>
<td>Patients who stay in hospital for 3 days or longer are over 3.5 times more likely to have an error at discharge than those staying for less than 3 days</td>
</tr>
<tr>
<td></td>
<td>&lt;3 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay</td>
<td>≥7 days</td>
<td>4.450</td>
<td>2.111 to 9.378</td>
<td>&lt;0.001</td>
<td>Patients who stay in hospital for 7 days or longer are 4.5 times more likely to have an error at discharge than those staying for less than 7 days</td>
</tr>
<tr>
<td></td>
<td>&lt;7 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What does this tell us about discharge errors?

• Patients staying for longer and with more medicines are at a higher risk of an error at discharge
  • Prioritisation of patients?

• Pharmacists consider errors at discharge more clinically significant than Drs
  • Culture of hospital Drs? Would GPs feel the same?
What does this tell us about electronic discharge?

• EDS valuable but are not without problems
  • Transcription – ‘human factor’
  • Drop-down list
  • Bypass of pharmacy check

• Errors still occur with electronic discharge system in place
  • Error rate higher than previously reported
  • Ever reliant on pharmacy final check of EDS
Next stages

- Further examination of data
  - Delve further into errors
- Focus on medication changes
  - Alteration of inpatient drug chart, effect on EDS (RPS project)
- Qualitative work with junior hospital doctors writing EDS
- Discrete Choice Experiment with GPs
  - Their experiences and relative value of different aspects of EDS
Questions?

Your feedback or comments would be most welcome
r.yemm@uea.ac.uk


5. Callen, J., J. McIntosh, and J. Li, *Accuracy of medication documentation in hospital discharge summaries: A retrospective analysis of medication transcription errors in manual and electronic discharge*
