

# 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](mailto:r.yemm@uea.ac.uk)

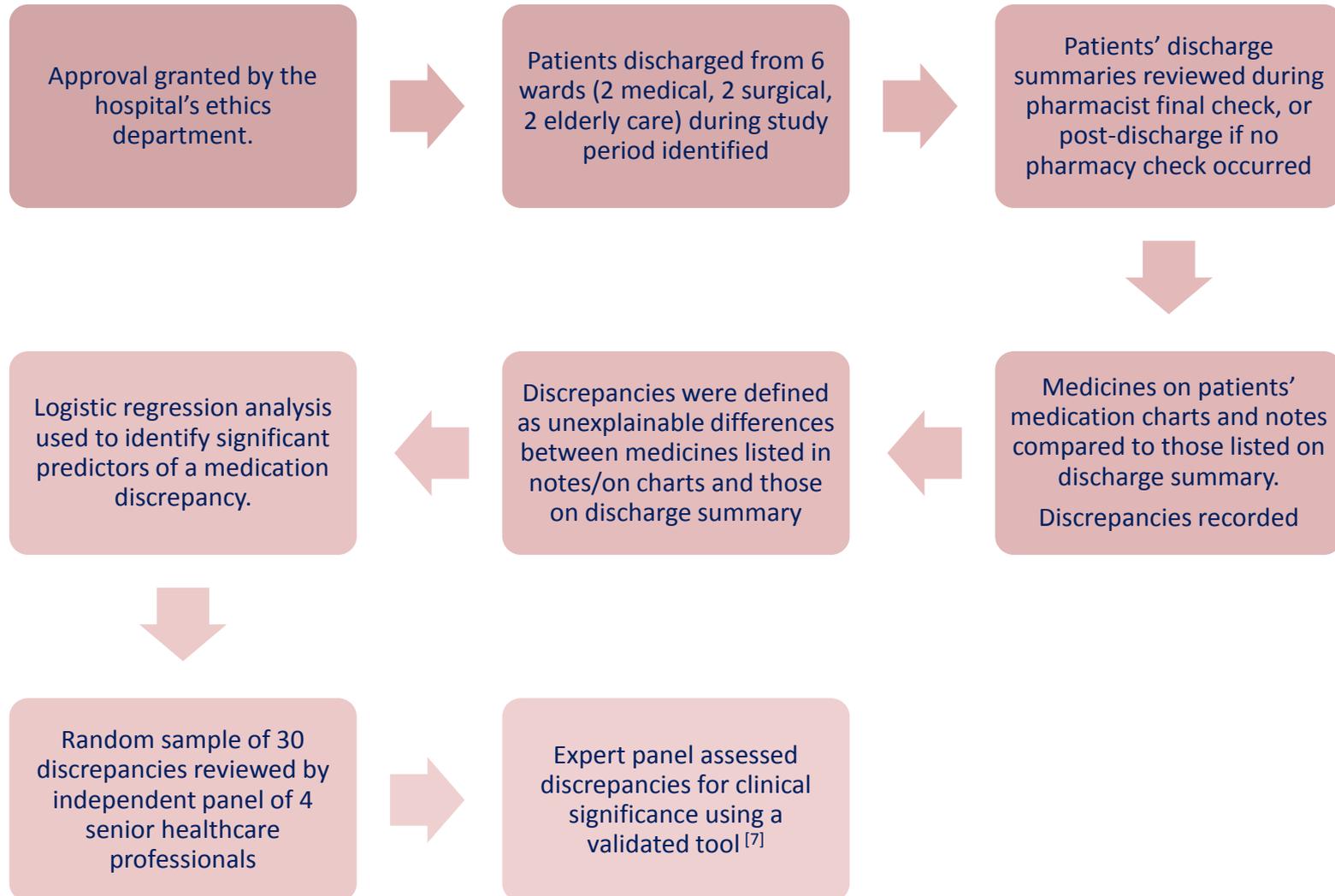
- Hospital discharge summaries are frequently incomplete or inaccurate
  - reported medication error rates of 10.8-36.4% [1-3]
- Electronic Discharge summaries (EDS) introduced to reduce medication errors associated with the transfer of care
  - EDS error rate of 13.3-20.4% [4, 5]
- Limited UK information 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

- Baseline view of electronic discharge system at Colchester
  - Timeliness
  - Pharmacy checking status
  - Adherence to NPC standards<sup>[6]</sup>
  - Medication discrepancies on EDS
    - **Nature**
    - **Severity**
    - **Predictors**



# Method



- 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?

- 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**

	Error severity score			
Average	Judge 1	Judge 2	Judge 3	Judge 4
Mean	1.33	1.40	4.70	6.60
Mode	0	0	7	9
SD	1.88	2.04	2.48	2.77
Range	8	7	8	9

# Findings - predictors

Variable	Level	Odds ratio	95% CI	P value	Meaning
Number of medicines	≥6 medicines <6 medicines	2.495	1.203 to 5.704	0.001	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
Length of stay	≥3 days <3 days	3.671	1.725 to 7.810	0.001	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
Length of stay	≥7 days <7 days	4.450	2.111 to 9.378	<0.001	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

# 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 those previously reported
  - Ever reliant on pharmacy final check of EDS

- 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](mailto:r.yemm@uea.ac.uk)

1. Grimes, *Survey of medication documentation at hospital discharge: implications for patient safety and continuity of care*. Irish Journal of Medical Science 2008. **177**: p. 93-97.
2. Wilson, S., et al., *General practitioner–hospital communications: A review of discharge summaries*. Journal of Quality in Clinical Practice, 2001. **21**(4): p. 104-108.
3. McMillan, T.E., W. Allan, and P.N. Black, *Accuracy of information on medicines in hospital discharge summaries*. Internal Medicine Journal, 2006. **36**(4): p. 221-225.
4. Abdel-Qader, D. H., L. Harper, et al. (2010). "Pharmacists' Interventions in Prescribing Errors at Hospital Discharge: An Observational Study in the Context of an Electronic Prescribing System in a UK Teaching Hospital." Drug Saf **33**( 11): 1027-1044.
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*
6. National Prescribing Centre, *Medicines Reconciliation: A guide to implementation*, 2008
7. Dean, B. and N. Barber, *A validated and reliable method of scoring the severity of medication errors*. American Journal of Health-System Pharmacy, 1999. **56**: p. 57-62.