



Towards improved medication safety: complexities associated with unexplained medication discrepancies across transition points from the emergency department

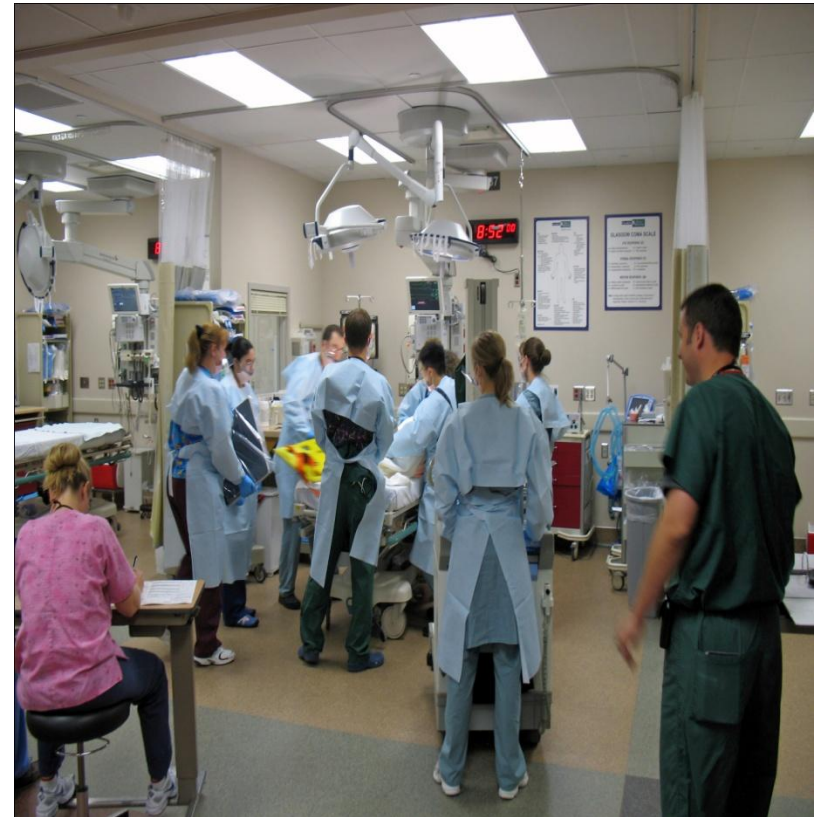
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- Medication reconciliation: way of determining accurately the discrepancies that occur at defined points of transition in the hospital system.
- Poor communication as patients move across transition points of care is responsible for a large proportion of medication errors and adverse drug events.



- Little consideration has been given to the emergency department (ED) context of care.
 - Unplanned medical event.
 - Patients are most vulnerable.
 - ED characterized by need to make rapid decisions under high levels of stress.



- Improvement work was undertaken at a principal referral hospital as patients moved from the ED to home or other hospital settings.
- Medication discrepancies were compared at 2 time-points.
 - At time-point 1, a description of all medications at the point-of-entry to the ED.
 - At time-point 2, a description of the medications ordered for patients at discharge from the ED.



- A medication discrepancy was any unexplained difference between the medications listed at the two time-points.
- Retrospective chart review design - from May 1, 2006 to April 30, 2007.
- A pharmacist was employed in the ED half-way into a retrospective 12-month audit period.



- Stratified random sampling technique was used.
- Sample size calculation: estimated prevalence of outcome ~ 30%. For confidence interval (CI) of +/-6.5% precision and 0.13 for the desired interval width, anticipated sample = 191 patients.
- Sample was obtained by collecting approximately 16-18 patient medical records per month.
- Variable for stratification: discharge destination of patients.



- A total of 1087 medications were prescribed at discharge from the ED with 210 patients.
- For 409 medications (37.6%), no discrepancy was detected.
- For 535 medications (49.2%), an explainable discrepancy was detected.
- For 143 medications (13.2%) medications, an unexplained discrepancy occurred where there was a lack of clinical explanation for changes made.
- 73 patients (34.8%) had at least one unexplained medication discrepancy.



- Univariate logistic regression analysis showed no significant change in the incidence of unexplained medication discrepancies relating to absence of the ED pharmacist (OR 0.71, 95%CI 0.40-1.25, $p=0.23$).



Variable	Statistics
Increased patient age	OR 1.05, 95%CI 1.03-1.06, p<.0005
Need for interpreter	OR 3.47, 95%CI 1.21-9.96, p=.021
Benefit card holder	OR 5.84, 95%CI 3.12-10.94, p<.0005
Visual field deficit	OR 2.19, 95%CI 1.07-4.46, p=.032
5 medications or >	OR 14.41, 95%CI 7.11-29.22, p<.0005
Known allergy	OR 2.31, 95%CI 1.20-4.45, p=.013
Inpatient admission	OR 4.13, 95%CI 2.19-7.76, p<.0005
Type of discharge destination (surgical unit)	OR 0.10, 95%CI 0.03-0.31, p<.0005
Seen by ED doctor within 1 hour of change of shift	OR 2.54, 95%CI 1.40-4.58, p=.0002



Variable	Statistics
Benefit card holder	OR 3.73, 95%CI 1.72-8.07, p=.001
5 medications or >	OR 12.22, 95%CI 5.52-27.08, p<.0005
Seen by ED doctor within 1 hour of change of shift	OR 3.70, 95%CI 1.67-8.18, p=.001
For each additional minute of ED doctor wait time	OR 1.01, 95%CI 1.00-1.01, p=.042



- Importance of examining patient, medication and environment related factors in a systematic way to determine effects on medication discrepancies.
- In ED - constantly changing dynamics of patients and demands are placed on health professionals managing their care.



- Presence of an ED pharmacist, on its own, was insufficient to produce any shifts in unexplained medication discrepancies.
- Pharmacist was employed half-way into the data collection period in November 2006.
- Primary role of this pharmacist - identify patients with complex medication regimens for the conduct of home medicine reviews rather than reconciling and monitoring medication discrepancies as patients moved from the ED to other environments.



- Several studies have evaluated effectiveness of a dedicated pharmacist to address medication discrepancies.
- Need to acknowledge that presence of pharmacist may not be solely sufficient in reducing problems.
- Problems relating to transitions in the ED may be likely to have complex causes that can be resistant to the single intervention of having a pharmacist performing medication reconciliation.



- The ED has a number of vulnerabilities:
 - Lack of effective communication
 - High workload.
 - Ineffective physical design.
 - Insufficient access to changes occurring in patient status and treatment orders.
 - Ineffective patient flow.
 - Lack of follow-up of pending information.
- Targeted strategies and systems-based interventions are needed, in conjunction with a ED pharmacist.



- Limitations of this study:
 - Retrospective nature; thus, reasons for changing medication regimens may not have been properly documented.
 - Single-center design may limit the applicability to institutions with a different focus.
 - Medication reconciliation was not a formalized process in the hospital at the time when data were collected.
 - No attempt was made to examine how unexplained medication discrepancies that occurred in the ED were resolved or identified by clinicians as patients progressed through the hospital system.



- Further work should examine:
 - Presence of ED pharmacist in different situations.
 - Focus on patients with particular needs – benefit card holders and those on 5 medications or more.
 - Manipulations in wait time for ED doctor and ability to see ED doctor within 1 hour of change of shift.
 - Prospective studies and direct observation of clinical practice where patients are mapped as they move across various environments.

**Thank you for your
participation**



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