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Patient-, medication- and environment-related factors affecting medication discrepancies in older patients

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ABSTRACT

Background: As patients move across different clinical settings, medication changes are likely to occur.
Aim: To identify patient-, medication- and environment-related factors associated with unintentional medication discrepancies in older patients, who were admitted to hospital via an emergency department and who had a subacute care admission at some point following hospital admission.
Methods: A retrospective clinical audit was undertaken using a stratified random sampling approach over a 14-month period. Medical records of patients aged 65 years or over were collected from five hospitals.
Findings: Data were collected from 426 older patients. Of these patients, 169 (39.7%) had at least one unexplained medication discrepancy. Patients without social supports had 2.956 greater odds of experiencing an unexplained medication discrepancy (95% CI 1.870–4.671), $p < 0.0001$. As the number of prescribed medications increased upon admission to the emergency department, patients had 1.125 greater odds of experiencing an unexplained medication discrepancy (95% CI 1.035–1.223), $p = 0.006$. Patients discharged to destinations other than their home had 2.714 increased odds (95% CI 1.317–5.594), $p = 0.007$ while those experiencing more than four transition points of care had 2.476 increased odds (95% CI 1.208–5.074), $p = 0.013$, of experiencing an unexplained medication discrepancy. A significant association existed between the prevalence of unexplained medication discrepancies and hospital readmission within six months, $\chi^2 = 36.496$, $df = 1$, $p < 0.001$.
Conclusion: Great care is needed in managing complex medication regimens of older people with multiple chronic conditions, especially those who move across several transition points of care.

Summary of relevance

Problem or issue

As patients move across different clinical settings, medication changes are likely to occur.

What is already known

Older patients are particularly at risk of medication changes because of their complex medication regimens and multiple comorbidities.

What this paper adds

This study has identified a number of patient-, medication- and environment-related factors associated with unexplained medication discrepancies in older patients as they move between the emergency department and subacute care setting during their hospital journey.

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1. Introduction

As patients move across different clinical settings, medication changes are likely to occur. These medication changes taking place at diverse transition points of the patients' journey, between and within health care institutions, reflect the altering dynamics of patients' health. Medication discrepancies, which involve unintentional or unexplained differences between documented regimens across various settings of care, can occur at any transition point (Tjia et al., 2009). These medication discrepancies are defined as differences between what is documented in the medication order at various points of care during a patient's hospitalisation (Vira, Colquhoun, & Etchells, 2006). Examples of medication discrepancies include medication omission or addition, substitution of a medication within the same pharmacologic class, and changes in dose, frequency, time, or route of administration. These medication discrepancies are unintended or unexplained because they involve differences that cannot be verified by the patient's change in medical condition. Older patients are particularly at risk because of their complex medication regimens and multiple comorbidities.

1.1. Literature review

Considerable work has been conducted on medication discrepancies in diverse acute care settings, including medical and surgical care, intensive care, and emergency care. Prevalence rates vary widely, ranging between 14% and 86% of patients experiencing at least one unexplained medication discrepancy (Azzi et al., 2014; Coleman, Smith, Raha, & Min, 2005; Manias, Gerdtz, Weiland, & Collins, 2009 ; Wong et al., 2008). Less emphasis has been placed on medication discrepancies involving transitions from acute care to subacute care (Sinvani et al., 2013; Tjia et al., 2009). In a chart review of electronic medical records and paper-based medication reconciliation lists, Sinvani et al. (2013) examined medication discrepancies occurring from hospital admission to hospital discharge, from hospital discharge to a skilled nursing facility, and from a skilled nursing facility to discharge home or to long term care, such as a nursing home. Out of 44 patients, they identified 1002 discrepancies and 86% of patients had at least 1 unexplained medication discrepancy. In a prospective, cross-sectional study, Tjia et al. (2009) found upon review of 2319 medications on patients' admission to subacute care, 495 (21%) had medication discrepancies, and at least 71% of admissions had at least one medication discrepancy.

Medication discrepancies that involve older patients' movements to subacute care settings, such as geriatric evaluation and management units and rehabilitation units, are particularly important. Older patients situated in subacute care settings are likely to have multiple comorbidities, and to experience physical and cognitive impairments (Elliott & O'Callaghan, 2011; Fiorini et al., 2013). In view of the pressure to shift older patients from acute care to subacute care settings, it is crucial to understand the characteristics of medication discrepancies associated with these movements. Medication discrepancies in older people can lead to increased emergency department (ED) visits, rehospitalisation, post-discharge mortality, ambulatory clinic visits, and emotional and financial burden (Chhabra et al., 2012).

The main aim of this study was to identify patient-, medication- and environment-related factors associated with unexplained medication discrepancies in older patients aged 65 years and over, who were admitted to hospital via an ED and who had a subacute care admission at some point following hospital admission. A secondary aim was to identify patient-, medication- and environment-related factors associated with the prevalence of hospital readmission after a six-month period following discharge from the subacute care setting.

2. Methods

2.1. Study design

This study comprised a retrospective, descriptive clinical audit design. The ethics committees of participating hospitals located in Melbourne, Australia, approved the study.

2.2. Study sites and sample

The study sites involved five participating hospitals within two major health services. All were public, teaching health care institutions comprising acute care and subacute care settings, and EDs. Three hospitals were located in inner metropolitan areas, while the other two hospitals were in outer metropolitan areas. All hospitals had well-established systems that enabled patients to move between acute and subacute care settings.

The clinical audit encompassed a random selection of medical records of patients admitted to an ED over a 14-month period from the 1st of May 2013 to the 30th of June 2014. Inclusion criteria for medical records included: patients aged 65 years or over; patients being admitted to hospital via the ED and then who required transfer at some point during their hospitalisation to a subacute care setting. Patients were required to have a hospital stay in acute care, subacute care or both types of settings of at least four days and to be prescribed at least five different medications on admission to hospital. Exclusion criteria for medical records included: any patients who were admitted to a specialised acute unit, such as intensive care or coronary care at some stage during their hospitalisation. Patients in intensive care and coronary care were excluded because they often require complex, life-saving treatments, and they are exposed to treatment regimens that need careful dose titration. Examples of these treatment regimens include intravenous potassium infusions, inotropic infusions, sedative infusions and total parenteral infusions, which tend not to be used in environments outside of intensive care and coronary care.

From our previous work, we found that about 30% of patients had at least one unexplained medication discrepancy (Manias, Gerdtz, Weiland, & Collins, 2009). Using this estimated prevalence, a sample size of 417 was required to produce a confidence interval of ±4.4% precision or 0.088 for the desired interval width of the 95% confidence level. Data were therefore collected from 426 medical records.

2.3. Data collection

A list of the medical records of eligible patients was generated for the audit period. From this list, about 36 medical records were randomly selected for each month of the audit period. These medical records were retrieved for data collection.

Data were collected on patient-, medication- and environment-related factors that could have influenced the occurrence of medication discrepancies as patients moved from the ED and then to a subacute care setting at some point following their hospitalisation. Patient-related factors included the patient's age, sex, chief type of complaint for admission to the ED, the need for an interpreter, preferred language other than English at home, benefit card status and social support. The chief type of complaint related to whether the patient was admitted for an illness such