ORIGINAL RESEARCH

Accuracy of medication information sources compared to the best possible medication history for patients presenting to the emergency department

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Abstract

Objective: To assess the accuracy of medication information sources available for adult patients presenting to the ED, compared to a best possible medication history (BPMH).

Methods: This prospective observational study was undertaken in the ED of a major tertiary-referral teaching hospital. A convenience sample of consecutive adult patients taking one or more regular medications was included. A BPMH was ascertained using patient/carer interviews, where available, and confirmed with one or more other sources. For residential care facility (RCF) patients, the RCF medication chart and at least one other source were used. Information sources compared with the BPMH were community pharmacy dispensing history, patient’s own medications, patient’s medication list, general practitioner letter, medications stored in and labelled on dose administration aids (DAAs) and the RCF chart. Number of discrepancies per patient for each source was determined by comparing medications stored in and labelled on dose administration aids (DAAs) and the RCF chart. Number of discrepancies per patient for each source was determined by comparing medications and dose regimens to those documented in the BPMH.

Results: A total of 455 patients (median age 71 years) took a median of six ‘regular’ and two ‘as required’ medications. The median number (range) of discrepancies per patient for regular medication names and dosages were RCF chart 0 (0–3), DAA contents 2.0 (0–9), patient’s medication list 2.5 (0–16), DAA medications label 3.0 (0–7), community pharmacy history 3.0 (0–19), general practitioner letter 3.0 (0–18) and patient’s own medications 4.0 (0–16). Overall, 40.4% of discrepancies were deemed ‘moderate’ or ‘high’ clinical significance. Omission errors accounted for 55.6% of discrepancies.

Conclusions: A combination of sources is essential to determine the BPMH. RCF charts provided the most accurate information. Other sources had two to four regular medication-related discrepancies per patient.

Key words: emergency department, healthcare, health information management, pharmaceutical preparations, quality assurance.

Introduction

Adverse medication events are a significant cause of morbidity and mortality worldwide.1–3 A significant proportion of adverse medication events are caused by errors in medication management as patients move from one medical care setting to another.2,4,5 Although an error can occur at any step of the medication use process, over one-quarter of prescribing errors that occur when patients are admitted to hospital originate from an inaccurate medication history.1,6 These errors may result in failure to provide patients with their essential regular medications, failure to identify medication-related causes for the presentation or adverse interactions between newly prescribed and regular medications.

Medication history taking is essential at the community-hospital interface for safe and effective medical practice.4 There is no way to know with certainty the exact medication regimen a patient was taking prior to presentation to the ED. This is why the internationally recognised concept of the best possible medication history (BPMH) is recommended as best practice.7,8 The BPMH is a comprehensive medication history documented by a healthcare professional using a systematic process. It is more comprehensive and accurate than the routine
primary medication history and includes all prescribed and non-prescribed medications actually taken by the patient. The patient and/or carer are interviewed wherever possible and this history is verified using one or more additional sources of information.3,7–10 If a patient or carer interview is not possible, at least two other sources should be used to identify a BPMH. The generation of a BPMH is an iterative process that requires clinical acumen and detailed medication knowledge to determine when to continue to seek further sources of information for verification.

Although this systematic process for identifying a BPMH is considered best practice, barriers to achieving this in the ED include rapid patient turnover, lack of access to primary care records and patients’ communication difficulties.11,12 Consequently, prescribers in ED often base decisions on a cursory history from a single source of information. The purpose of the present study was to highlight the inherent pitfalls of using any single source of medication information, in isolation, to identify a medication history. In a recent national multi-centre study of ED patients, 73% of patients were taking one or more regular medications and 41% were taking five or more prior to presentation.13 This highlights the relevance of the present study to a substantial number of ED patients.

We hypothesised that no single source of medication information available to ED clinicians can be considered universally reliable. The present study aimed to assess the accuracy of medication names and dosages provided by each information source available for adult patients presenting to ED compared to the reference standard BPMH documented by an experienced hospital pharmacist. The nature and potential significance of any discrepancies were assessed. The sources examined were the actual patient’s own medications (POMs), patient’s medication list (PML), general practitioner (GP) letter, medications stored in and labelled on dose administration aids (DAAs; packaging systems such as blister packs and sachets that organise solid doses according to when they should be taken),14 the community pharmacy dispensing history and residential care facility (RCF) charts. These sources are readily accessible by hospital clinicians and are commonly used to verify an admission medication history.15

Methods

This prospective, observational study was conducted in the ED of a metropolitan tertiary-referral teaching hospital with an annual ED census of over 80 000 patients. Data were collected from 5 February to 26 May 2016, primarily between 08:00 and 20:00 hours, Monday to Friday. Some data were collected on weekends. This project was approved by the hospital’s Human Research Ethics Committee.

Consecutive adult patients presenting to ED taking one or more regular medications prior to presentation were included. Patients were excluded if they had significant medical illness as determined by ED staff (e.g. pain, shock, sepsis), where no carer or other medication information were available, or if a BPMH was already compiled by the ED pharmacist.

The BPMH was defined as the ‘reference standard’ medication history against which other information sources were compared. A BPMH was obtained by a qualified pharmacist (also a medical student, investigator, HHC), who had completed her BPMH validation according to national standards.16 A systematic series of questions were asked of the patient or carer about ‘regular’ and ‘as required’ medications taken immediately prior to presentation, using a pre-determined interview checklist.15 The patient or carer was prompted by any available lists, medications, GP letters or DAAs. If an informed interview was not possible, at least two alternative information sources were used. For RCF patients, the BPMH was determined from the RCF chart and at least one other source (often the community pharmacy history).

The pharmacist continued to seek information from further sources of information until she was confident in the quality of the documented BPMH to inform optimal, safe patient care. For example, a patient with no communication difficulties taking only one medication where the patient interview and the PML provided a consistent picture, then further information sources were generally not sought. If the patient was taking a more extensive regimen and there were inconsistencies between the patient interview and other available sources, the pharmacist would continue seeking out information sources until she was confident that the documented BPMH was as accurate a characterisation of the medications taken prior to presentation as possible. This procedure for identifying a BPMH is consistent with international best practice as outlined in the World Health Organization’s Medication Reconciliation Standard Operating Procedure.7

The BPMH was compiled using clinical acumen, and the combination of resources available in ED. If there was any doubt about a patient’s medications, their regular community pharmacy was also contacted to obtain a dispensing history for at least the preceding 6 months. For patients attending multiple pharmacies, attempts were made to contact each pharmacy. The POM, PML, GP letter, DAA, RCF chart and community pharmacy records were subsequently examined for accuracy, where available. Other resources used to determine the BPMH, but not evaluated for accuracy, included hospital dispensing records and previous discharge summaries. Although discharge summaries can be a valuable source of information, they were not evaluated for accuracy in the current project because the hospital had introduced new software and intervention projects were ongoing to improve the accuracy of these documents.

Patient characteristics that may impact medication complexity and the ability to identify a BPMH were documented using a structured audit tool, including demographic details, triage category and patient’s ability to verbally communicate. Patient communication difficulties were determined subjectively, in collaboration with ED staff.
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