



## MEDICATION HISTORIES OF PHARMACISTS OBTAINED IN AN EMERGENCY DEPARTMENT CAN BE USED TO IDENTIFY PATIENT GROUPS AT RISK OF MEDICATION MISADVENTURES

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### ABSTRACT

At the time of admission to an Emergency Department (ED), the Advisory Committee recommends taking a detailed medication history. Medication misadventures have been identified as a potential risk among the elderly, including those in residential aged care properties and those who speak languages other than English. This study aimed to examine whether pharmacists' elicited medication histories differed from those taken by emergency department physicians in these demographic groups. As part of the study, we also investigated the incidence of ED presentations related to medication. During the six-week study, 100 patients over 70 who took five or more regular medications, had three or more clinical comorbidities and/or had been discharged from a hospital in the past three months were included. The participants were categorized into three categories: those with a language barrier, those in residential aged care facilities, and those with a general language barrier. Patients with a 'language barrier' were less likely to correctly record medications (15.8%), as compared with those with a 'general' diagnosis (18% and 19.6%), respectively. There were 14 patients in the 'general' category suspected to have medication related ED presentations, including seven patients with 'language barrier' (29.2%), one from an aged care facility (8.3%) and 13 from the 'language barrier' category (20.3%). It is clear from this study that ED pharmacists have a positive impact on medication management throughout the continuum of care. Moreover, this study confirms that patients with language barriers are vulnerable to medication errors and require interpreter services throughout their hospitalization, particularly when they present to the emergency room.

**Key Words:** Pharmacist, Hospital, Diagnosis, Medication Errors.

### INTRODUCTION

In the health system, medication errors often lead to hospital admissions [1]. Another estimate says that hospital admissions related to medication could have been avoided in up to 60% of cases [1]. In developed countries, medication misadventures account for a high proportion of hospital admissions among elderly people [2-9]. Hospitalizations related to medication are caused by non-compliance in the elderly in an estimated 21 to 59 percent of cases [2-4, 6, 8].

It is critical to obtain a complete and accurate medication history as soon as possible at the point of

presentation in order to determine whether medication-related problems contributed to a patient's presentation or if medication-related problems could arise during their stay. Patients who present to the Emergency Department (ED) are first assessed based on their medication history. Establishing an appropriate course of treatment requires an accurate treatment plan [11]. By identifying medication-related problems early, a patient can also be discharged and provided with counselling more easily [10, 12, 13]. Noncompliance by patients can be a determining factor in their presentation, particularly if it appears to be the cause.



Because pharmacists are experts on medications, they can tell you about generic names, brands, administration by various routes, various dosage forms, and side effects of medications [12, 14]. Employees who lack medical knowledge frequently compile medication histories [14]. Pharmacists are uniquely qualified to play this crucial role in patient care, based on studies comparing their medication histories with those of other ED staff [12, 15].

Without systemic surveillance or dedicated personnel like pharmacists, physicians and nurses are likely to overlook medications-related admissions [9, 15]. Medication-related admissions are not routinely screened by physicians because they do not analyze their frequency and significance. Mistaking a negative drug reaction for a new medical condition can result in unnecessary treatment when medication-related admissions are not identified [7]. Pharmacy technicians assist in the identification of medications in hospital emergency rooms, preventing adverse drug reactions that could have been prevented [13, 15].

There are two times as many medication errors among non-English speakers and two times as many hospitalizations due to medication errors relative to English speakers. This has been attributed directly to language barriers, such as the inability to read labels. Patients rely on family members to translate and explain instructions, leading to adverse health outcomes, including higher hospital admission rates. highlight the importance of further research in the following areas: the impacts of language barriers on health and health care, how effective interpreter services are, and how language barriers affect health economics and how strategies can be developed to minimize them. An economically viable service may be provided by pharmacists who elicit medication histories. In addition to lowering mortality rates, pharmacists take comprehensive medication histories. Pharmacists' elicitation of medication histories may be compromised without appropriate interpreter services.

Residential aged care facility residents use more medications than people who live independently. The combination of polypharmacy and aging makes these residents highly susceptible to adverse drug events. It has been reported that 15 to 22% of emergency hospital admissions for the elderly (over 65 years of age) are related to medication misadventures. The importance of this cannot be overstated, since a recent study reported that 50% of drug-related hospitalizations can be prevented. Currently, two models for residential medication management reviews can be used to minimise medication misadventures in aged care facilities. Residents of residential aged care facilities typically have medication reviews performed by an accredited review pharmacist, often in conjunction with a supply pharmacy contract. It is

relatively new initiative item 903, the collaborative residential medication management review, on the Medicare Benefits Schedule. As a result of the creation of this item, pharmacists and GPs can coordinate their review of medication needs for elderly residents living in aged care facilities. These services are available to patients who are at risk of medication misadventures due to a significant health event.

Through a study conducted by our team, we found that ED pharmacists could improve the collection of medication histories for 100 patients presenting in the emergency department [13]. Prior studies have found that patients with non-English speaking backgrounds and residents of aged care facilities are particularly susceptible to medication errors. This article examines these demographic groups within the cohort of patient's pharmacist-elicited medication histories. In the paper, medications are also discussed in relation to ED presentations.

In principle four of the Pharmaceutical Advisory Committee's guiding principles for ensuring continuity in medication management, the current practices of medication history taking in emergency departments are compared with best practice medication history taking [11]. During the presentation or admission process, as well as as early as possible in the episode of care, an accurate medication history should be obtained and documented. Secondly, ED staff were compared with Pharmacy Researchers when reviewing medication histories for 'general' patients, patients with a 'language barrier', and residents of homes for the elderly. Identifying medication-related issues related to ED presentation in these demographic groups was our objective.

## METHODS

The study required the development of a detailed medication history form. Among the information recorded on the form were allergies, previous adverse drug reactions, social history, medicated doses, vaccination status, and medical history prior to becoming a patient. Special attention was paid to patients at high risk of medication misadventures.

The following criteria were used to determine inclusion:

### **Over 70 years of age;**

Medication takers who take more than five prescriptions every day;

Diagnosed with at least three clinical co-morbid conditions

In the last three months, you must have presented to a hospital.



### **Exclusion criteria:**

A regular GP or local pharmacy cannot be nominated; Consent cannot be obtained;

### **During each patient's participation, the following steps were taken:**

#### **1. Screening of subjects**

The Hospital Administration Software System used in the Emergency Department was used to screen patients based on their age and triage category. One is the most urgent triage category, while five is the least crucial. Priority was given to elderly patients and triage categories with the least urgency.

#### **2. Subject enrollment**

A Pharmacy Researcher approached eligible patients and discussed both verbally and in writing the project with them. We informed the patients that their treatment in the ED would not be affected if they refused to participate. An informed consent form was required of patients enrolled in the study. Patients who were incapable of giving consent were asked to sign a "carer consent form" if their carer could not do so. In addition to the regular pharmacy and general practitioner, the patient was asked to nominate two additional providers.

#### **3. Interview**

When applicable, interviews were conducted with a caregiver and/or other individuals nominated by the patient when other ED staff were absent. Because the Pharmacy Researcher suspended the interview during medical assessments and treatments, the interview did not delay patient access to medical treatment. After the assessment and treatment were completed, the interview was resumed.

#### **4. Medication histories are clarified**

As soon as the patient agreed to participate in the study, the Pharmacy Researcher telephoned the patient's GP and community pharmacy, letting them know that the patient had consented to participate. As part of the study, the researcher asked the GP and the community pharmacy for copies of the patient's medication history. Recordings and reports of response times have been made. 13

#### **5. Discrepancies should be clarified**

Using information from the patient interview and faxed medication histories from the community pharmacy and general practitioner, the Pharmacy Researcher prepared a final comprehensive medication history. In order to identify medication-related problems or ED presentations associated with medications, the comprehensive medication history was reviewed. It was determined that there were discrepancies between the final

medication history collected by the ED physician and the medication history collected by the patient. Pharmacy Researcher discussed and reconciled discrepancies which had a significant impact on the patient's treatment and/or health outcome with the treating ED physician. Pharmacists and ED physicians collaborated to develop strategies to minimize recurrence and impact of medication-related ED presentations.

#### **6. Patient notes should include the patient's final medication history**

The patient's medication folder included a comprehensive medication history.

#### **7. Sub analysis of patient groups**

A subanalysis was conducted by assigning patients to different groups. The Pharmacy Researcher deemed that patients in the 'language barrier' group would need a translator for the purpose of compiling a comprehensive medication history if they spoke English as a second language. All patients who were not living in an aged care facility were classified as 'general', while those in an aged care facility permanently lived in an aged care facility.

Ethics committees at both institutions approved this project.

### **RESULTS**

It is estimated that 5500 patients presented to the hospital during the six-week study period. 100 patients were included in the final study among 1,000 over 69-year-old patients, of which 105 were interviewed. There were 39 men and 57 women in this population, with an average age of 80.1 years (SD=5.7) (range, 70 - 96). 24 participants were classified as 'language barrier', 12 as residents of residential aged care facilities, and 64 as 'general' participants. Based on previous research, patient interviews lasted an average of 13.0 minutes (SD=6.0) [13].

There were interpreters present during the interview for 20 of 24 participants with a 'language barrier'. Two cases were handled by friends while 18 cases were handled by spouses or children. On behalf of the patients in the other 4 cases, we compiled a comprehensive medication history from their nominated GP and community pharmacists. When the interpreter lived miles away from the patient or wasn't familiar with their medications, answering for the patient was problematic. By directing the questions to the patient instead of the interpreter, the problem was solved. Interpreters are available through the hospital's employment or contracting, but they are not always immediately available when patients present to the emergency department with interpreter needs.



The study included 100 patients who took a total of 1,050 medications. An average of 11.5 medications were prescribed per patient when the Pharmacy Researcher analyzed the final medication histories (SD=4). Cardiovascular medications (28.1%, 324 people), gastrointestinal medications (11.6%, 134 people), endocrine medications (11.5%, 132 people), anticoagulant-antithrombotic medications (8.9%, 103 patients), respiratory medicines (7.4%, 85 patients), analgesic medications (7.4%, 85 patients), psychotropic medications (5.5%, 63 patients) and complementary and non-prescription medications (5.3%, 61 patients).

ED physicians were found to have accurately recorded only 198 (16.4%) medications when comparing their medication histories with the Pharmacy Researcher. For the 100 study participants, omitted medications by ED doctors accounted for 48.9% (n=563) of the discrepancy. [13]

As shown in Table 1, the three demographic groups of interest are subanalyzed.

Based on the classification system developed, classified suspected medication-related ED presentations as medication-related problems. ED presentations suspected of being related to medication were ranked later in order to determine how likely they were to result in a

medication-related admission. Naranjo et al [31] developed a scoring system for assessing the likelihood of medication-related admissions, which was adapted into our own ranking system. The adapted scale takes into account the fact that 55.6% of suspected medication-related ED presentations are associated with compliance (n=15).

If the score obtained is 5 to 8, probable if it is 1 to 4, and unlikely if it is 0 that the drug is certainly responsible for the adverse drug reaction (ADR).

ED presentations with suspected medication interactions were ranked based on the adapted scale (Table 2). The definite cases accounted for two and the probable cases accounted for 19 (90.5%). ED presentations associated with suspected medication also occurred in two cases, but these did not score four or more on the probability scale. 7 (33.3%) of the 21 cases were a 'language barrier' (table 2), 1 (4.8%) was from a residential aged care facility (table 2), and 13 (61.9%) were 'general' (table 2). A hospitalization was subsequently performed on all patients.

A total of seven patients (29.2%) were categorized as 'language barrier' patients; one (8.3%) was from a residential aged care facility, and thirteen (20.3%) patients were classified as 'general' patients considering medication.

**Table: 1 A sub analysis according to demographics**

Population group	No. medications	Ave no. medications/group	No. correctly recorded
Language barrier (n=24)	283	11.8	39 (13.8%)
RACF (n=12)	179	14.9	35 (19.6%)
General (n=64)	690	10.8	124 (18%)
Total (n=100)	1,152	11.5	198 (17.2%)

**Table: 2 ED presentations suspected to be connected to medication**

Group of demographics	Category of MRP	A drug or a class of drugs	Score of adverse reactions.	Probability of Medication
Common	A dose that is inappropriate	antihyperglycaemics	9	
Common	A dose that is inappropriate	codeine allergy	7	
Common	Compliant	GI	6	
Language Barrier	Compliant	nitrates	6	
Language Barrier	A dose that is inappropriate	laxatives	6	
RACF	A dose that is inappropriate	beta blocker	6	
Common	additional therapy needed	antihypertensives	5	
Common	Compliant	gout medication	5	
Common	Compliant	nitrates	5	
Common	Compliant	nitrates	5	
Language Barrier	A dose that is	calcium channel	5	



	inappropriate	blocker		
Common	A drug that has expired	nitrates	5	
Common	A drug that has expired	nitrates	5	
Language Barrier	Needs more	therapy	antihypertensives	4
Language Barrier	Needs more	therapy	laxatives	4
Common	Compliant	nitrates	4	
Common	Compliant	diuretics	4	
Common	Compliant	diuretics	4	
Language Barrier	Compliant	diuretics	4	
Common	Compliant	nitrates	3	
Language Barrier	A dose that is inappropriate	antihyperglycaemics	3	

**DISCUSSION**

The results of this study show that language barriers make patients more vulnerable to medication misadventures. They also had the lowest frequency of correctly recorded medications and the highest proportion of medication-related hospital admissions.

About 16% of the population speaks a language other than English at home. It was found 40.2% of those 65 and over have no or very poor English proficiency, the lowest so far<sup>32</sup>; this is the sample studied.

A difficulty associated with this study was the use of family members or individuals who were not qualified as interpreters. In addition to decreasing patient satisfaction, decreasing trust in health professionals, and creating inaccurate communication, researchers have shown that family members or friends who act as interpreters can negatively impact clinical outcomes. Health professionals and patients communicate more effectively when trained interpreters are used. In hospitals, trained interpreters are recommended based on the findings of this study. Additionally, it is known that patients who do not speak English as a first language have difficulties understanding the care they receive. One can speculate that this would include advice on how to use medicine properly. Therefore, pharmacists need to provide interpreter services during critical moments, such as when patients are being discharged and pharmacists are referring them to licensed pharmacists.

Medicines were omitted and recorded incorrectly at a higher rate in general care facilities than in residential aged care facilities, yet medicated patients were admitted at a similar rate (20%). All participants in this study were eligible for regular home medicine reviews (excluding those in residential aged care facilities), which suggests that regular home medicine reviews could have positive effects. This study's inclusion criteria aligned with the referral criteria for a home medicine review. Patients are not receiving optimal referrals despite meeting the criteria

to receive home medicines reviews, despite a wide range of options available.

As a result of its limited scope, this study has several limitations. For a start, only six weeks were allocated for the study. Moreover, all patients presenting from residential nursing homes were presumptively reviewed for medication, but that wasn't confirmed. An analysis of which residents of residential aged care facilities and which 'general' patients have previously had a residential medication management review would have provided useful information. Also, only emergency departments were included in the study. As a result, the wards were unable to follow up with patients and assess whether they had improved as a result of the medications they were given on admission. Using the pharmacy researcher's comprehensive medication history, which includes a list of medications and explanations of any changes that may have occurred during hospitalization, would have been an extremely informative endpoint, compared with the discharge medication summary.

**CONCLUSIONS**

Using interpreters at all stages of hospitalization, but especially in the emergency department, can help patients with language barriers prevent medication misadventures. Family members may adversely affect pharmacists' ability to take medication histories. It is sometimes necessary to interpret a medication history with the assistance of a child (sometimes very young), a friend, or a non-clinical employee who does not have the appropriate training or fluency. It is possible to further improve patient outcomes by prioritizing interpreter services in EDs and during timely hospital encounters for patients with limited English proficiency.

The benefits of regular medication reviews in aged care facilities and at home have been confirmed by regular medication reviews in both environments.



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