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Research article

PHARMACY IN THE EMERGENCY DEPARTMENT: OBTAINING COMPREHENSIVE MEDICATION HISTORIES

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ABSTRACT

In a six-week study, 50 patients over the age of 65 who took five or more regular medications, had at least three co-morbid conditions, and/or were discharged from the hospital within three months of study participation participated. A pharmacist and general practitioner were contacted following patient interviews to confirm the medication history and complete the questionnaire. There were discrepancies related to 966 medications (83.9%) of the 576 medications used by 50 patients. 281 medications were completely omitted. Discrepancies usually involve dosage and frequency information that was incomplete or omitted. Approximately 29% of the medications treated cardiovascular disorders, whereas most were used to treat dermatological and ear, nose and throat disorders. A comprehensive and accurate medication history, which is compiled by emergency room pharmacists, can facilitate medication management throughout the continuum of care. The medication history of the patient should be clarified and confirmed, contact the patient's pharmacist and general practitioner.

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INTRODUCTION

In order for a hospital admission to be successful, an accurate medication history must be provided. It has been shown that pharmacists record medication histories more comprehensively than other healthcare professionals in many emergency departments around the world [1, 2]. Junior doctors typically perform this task in most emergency departments [3-7]. Preventing medication errors and identifying medication-related hospital admissions can be accomplished by reviewing medication histories [8]. Between 1988 and 1996, numerous Hospital admissions related to medication among elderly people accounted for up to 22% of ED admissions. In response to these alarming trends, the Australian Pharmaceutical Advisory Council (APAC) has developed guidelines for ensuring that quality medicine is used in hospitals, in nursing homes and in the community during the transition period. As a result of descriptive surveys of general practitioners (GPs), Mant *et al* 2001 concluded that the APAC guidelines are currently not being implemented consistently and with low compliance [10]. In the APAC guidelines 1998[11], principle four of the guiding principles provides that an accurate and complete medication history should be obtained as soon as possible during an episode of care. Continuity and accuracy of treatment require an initial medication history. In order to avoid putting patients at risk, the initial medication history should be complete or accurate. Medication errors, such as omission of regular medications, can result in the patient's condition deteriorating and resulting in a longer hospital stay [12]. Pharmacists are particularly interested in recording medication histories, due to their greater awareness of the importance of this task and potential capacity to spend more time on this task. No other health care professional is as knowledgeable about drugs as they are about their names, effects, dosage forms, strengths, and routes of administration. By identifying medications by their size and colour, pharmacists may be able to identify them more quickly if the medication was not brought with the patient [13]. These professionals can also

identify medication-related problems at the point of admission and contribute to improved patient care [8].

The accuracy of non-prescription and complementary or alternative medications is also essential, since these products could have serious side effects or interact with other medications, especially in the elderly [7, 14]. Not telling your doctor about non-prescription, complementary, or alternative medicines increases the risk of side effects and drug interactions. Information about these medications may not seem relevant to patients, or they might be wary of the doctor's opinion. Creams, eye drops, inhalers, patches, and eye drops may also not be considered medications by patients. These medications may need to be disclosed by patients in many cases [5]. There is a strong economic case for pharmacists conducting medication history services. Using this service resulted in savings of seven million dollars per hospital per year, according to an American study involving 1016 hospitals [15]. It has also been demonstrated to reduce mortality rates. The clinical significance of discrepancies and errors found in 580 medication histories was assessed over a period of four weeks. Clinical pharmacists play an important role in the emergency department, according to other Australian studies. Having a complete medication history documented at the point of admission is most beneficial for patients who experience medication misadventures, which are primarily the elderly. In addition to physiological differences associated with aging and often multiple co-morbidities, the elderly is more likely to experience adverse drug events when taking multiple medications. Multi-drug taking patients and those with multiple co-existing conditions are more likely to experience adverse drug reactions and medication-related problems. Furthermore, patients with recent hospitalizations are at a greater risk.

METHODS

1280 emergency patients were triaged during the study period, 319 of whom were over 65 yrs old. 103 patients were selected as a convenience sample as they were predicted to experience medication mishaps at a high rate. Some of the reasons for exclusion were: a patient's refusal to participate; language difficulties prevented them from communicating; a patient who was incapable of giving consent; extra precautions needed. Below is a description of how medication histories were compiled. ED patient tracking screens were used to select patients. As a result of this tracking program, you can find out who our triaged patients are, what their complaint is and what previous presentations they have made. Selecting patients based on the least urgent triage category and most recent presentation time was done. Patient or carer consent forms were requested from the patient or carer for participation in the study. Medication history forms included information about medications that may affect effectiveness, vaccinations for adults, social drug histories, and medication aids. A section was also dedicated to current health conditions, as well as allergies to medications and adverse drug reactions. We notified the patient's nominated pharmacy and GP practitioner of the patient's admission after the patient interview. The patient's case notes include a comprehensive medication history. Once the patient's medication profile was complete, a medication-related problem was identified. developed a classification system for classifying MRPs, this was utilized. The pharmacy researcher's medication history was compared with the doctor's medication history recorded on the ED admission form for each patient. A suspected medication-related admission was reported to the ED doctor when appropriate, along with any discrepancies, MRPs or discrepancies in the MRP. Described how Pharmacist Interventions are classified if they occur. Discrepancies in medication prescribing were defined as those that were not recorded by the ED doctor, but were documented by the pharmacy researcher. As a result of the pharmacy researcher's extensive method of gathering information, the medication history was assumed to be accurate and comprehensive. There were nine types of discrepancies found between medication histories acquired by ED doctors and pharmacy researchers. In order to be complete, all medications omitted from the ED admission form that the doctor did not document in the ED admission form and only referred to medication lists, sheets or medication charts accompanying the patient when they presented were classified as omitted drugs.

RESULTS

The patient group examined consisted of 29 females and 21 males averaged 75 years of age (SD=5.7). Among patients who took medications, the mean number was 10.5 (SD = 4). On average, 125.7 minutes (SD=6.3) were spent on medication history interviews for 50 patients whose complete medication histories had been compiled. 94 of the 576 medications recorded by the pharmacy researcher are similar to those in the ED. 483 discrepancies were found in total. Approximately 90% of the discrepancies were attributed to the omission of medication and omission of dosage and frequency (see Table 1). Patients had an average of 9.7 discrepancies (SD=4.7).

The database contained seven entries that were erroneous (i.e. 1% of entries). The term 'clerical discrepancy' refers to a situation in which the right amount of drug was given to the patient, but the correct tablet strength was entered. In an ED, for instance, a doctor might prescribe 1000 mg of metformin twice daily rather than two 500 mg tablets twice daily. ED doctors ignored 281 medications according to the Australian Medicines Handbook, classified into therapeutic groups. A group of medications that were poorly recorded had dermatological

disorders, whereas a group of medications that were accurately recorded had cardiovascular disorders.

According to the pharmacy researcher, 79 adverse drug reactions were recorded for 50 patients. 12 (28%) of these ADRs were recorded by the ED doctor with details about the drug and its nature. In 19 patients (48%) the ED doctor did not record ADRs. ADRs were recorded by the ED doctor in 9 (24%) of the cases, but no description was given of their nature. 15 patients out of 50 had no known adverse drug reactions, and 5 of these patients had no known ADRs

There were 45 occasions when the pharmacy researcher described the nature of the adverse reaction. It is common for patients to describe their ADR as vaguely as they can, even when it has occurred many years previously. Patients' personal medicine lists or faxed GP medication histories were usually used to obtain allergen information. Patients often were unable to remember what

had happened, or had never heard of the medication before when asked about the nature of the allergic reaction. In most cases, antibiotics were the cause of allergy reports. We found that 17% of the study participants had allergic reactions to penicillin antibiotics.

A medication history was requested from 96 community pharmacists. Medication histories were not returned by eight pharmacists. In total, 88 pharmacy medication histories were received within a mean of 30.2 minutes (range 1 - 334 minutes). A medication history for 41 patients was requested from their GPs. The medication history of 18 GPs was not faxed back (Table 2). A mean of 322.2 minutes (4 days) were required for 60 GP histories to be received.

The pharmacists recorded 29 interventions. Education and training of patients, equipment assistance, and administration aids were the most frequent interventions.

Table 1: Types of Discrepancies.

Discrepancy type	Discrepancies	%
Omitted medication	281	57.4
Incomplete dose or frequency	24	5.5
Omitted dose and frequency	152	32.6
Wrong medication	5	2.3
Wrong dose and/or frequency	13	3.6
Inclusion of ceased medication	5	2.0
Clerical	3	0.6
Medication written twice	2	0.4

Table –2: Drug Groups Of Missed Medications (%)

Medication group	%
Dermatologicals	93
Ear, nose and throat	85
Allergy	82
Complementary medicines	77
Analgesic	74
Eye	78
Respiratory	71
Immunomodulator/antineoplastic	65
Musculoskeletal	60
Obstetrics and gynaecological	62
Anti-infectives	54
Gastrointestinal	53
Antidotes (egacetylcysteine for paracetamol toxicity)	52
Neurological	43
Psychotropic	48
Genito-urinary	35
Coagulation/blood formation	34
Endocrine	40
Cardiovascular	27
Electrolytes	37

Table 3: Frequency of Medication Related Problems.

Problem category	Frequency
Management issues
Need for an additional test	2
Need for an additional therapy	0
Problems related to medicine selection
Need for an additional medicine	5
Wrong or inappropriate medicine	4
Adverse drug reactions, including drug-drug interactions and allergies	9
Unnecessary medicine	2
Problems related to medicine regimen
Dose too low	4
Dose too high	3
Rationalisation of drug therapy	6
Problems related to patient knowledge and skills
Poor understanding of disease and/or treatment	4
Compliance problems	17
Inappropriate technique lifestyle issues	0
Anxiety about treatment	3
Other
Medicines out of date (if medicines provided at the time of admission)	3
Total	60

Table 4: Frequency of Pharmacist' Interventions.

Action	Frequency
Change medication selection because inappropriate/wrong drug being taken	5
Additional medication needed	3
Consider other management options	0
Adjust dosage regimen	4
Provide patient education and training	13
Change medication based on result of examination/test	2
Assist with equipment/administration aids	7
Collect/arrange disposal of medication	0
	33

DISCUSSION

When a patient is admitted to an emergency department in a hospital, pharmacists compile medication histories for the patient. The pharmacist researcher conducted this research as an honours student under the supervision of a pharmacist with substantial clinical experience. Research team members' experiences were expected to reflect hospital pharmacists' level of professional functioning, so results can be generalized. In addition to pharmacists collecting these histories, general practitioners and community pharmacists can provide alternative information sources as well. Neither of the ED doctors' initial medication histories were complete. The doctors in the ED frequently mentioned 'lists' or 'charts'. These are not ideal references since a medication list or photocopy of the medication chart (which can be hard to read) could be lost or damaged, resulting in a complete medication history not being available. A number of concerns may arise from this informal approach to the document. There have been reports of admission doctors compiling another medication history on the ward based on anecdotal evidence. In addition, doctors can make an informed decision about the patient's treatment regime while they are in the emergency department for up to a day. There is a possibility for drug interactions or adverse drug reactions to go undetected when drugs are omitted, as was the case for 48% of the total drugs. There is also the potential for significant harm to result from these omissions. The discharge summary will not include medications administered outside of hospitals, for example. The likelihood of hospital admissions or adverse events has been associated with such omissions. It has been discussed previously that omitted medication accounted for the majority of discrepancies (58.3%). The medication histories of 23% of patients contained at least one incorrect dose and/or frequency, and 10% contained only one incorrect drug. These discrepancies have also been observed in recent studies. Pharmacy researchers may not have caught and corrected these errors during the patient's admission if a medication history had not been taken. One Australian study reviewed the communications between GPs and

hospitals and found medication errors in 17.3% of these summaries. Patients who do not have medication errors corrected during admission can experience medication mishaps post-discharge.

By faxing the consent form, the delay was overcome. Hospital protocols should cover emergency situations or situations when consent cannot be obtained, and consent forms could be used to overcome these barriers in practice [12]. As a result of this study, it was confirmed that patient ADR histories are not adequately documented. Many ADRs failed to include relevant information such as: date of reaction, drug, type of reaction, and who documented the reaction. Consequently, it is often overstated that allergies are common.

Among the patients reporting problems with patient knowledge and skills, 24% experienced patient education and training interventions, which directly or indirectly resulted in compliance problems. From 26 to 59% of elderly patients are non-compliant, according to estimates. Educating and following up on patients are essential to improving compliance. APAC guiding principles 2005 suggests developing Medication Action plans for patients and sending them promptly to their GP [12]. As part of the study, pharmacists' recommendations during admission will be compared with the initial doctor-acquired medication histories in order to determine whether pharmacists are effectively recommending treatment during admissions based on discrepancies in medication histories.

CONCLUSION

In addition to training in pharmacology, pharmacists are familiar with medication appearances and dosage forms, making them ideal for obtaining an accurate medication history. At the time of hospital admission, pharmacy professionals should conduct clinical pharmacy reviews and compile medication histories. The result would be a reduction in medication errors, an earlier identification of MRPs, and a decrease in adverse drug events. Pharmacists having access to the patient's medication history and reviewing it can contribute to minimizing medication errors and improving patient outcomes in the long run.

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