

Outpatient Prescription Intervention Activities by Pharmacists in a Teaching Hospital

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ABSTRACT

Prescriptions with prescribing errors received by an outpatient pharmacy of a teaching hospital were sampled. The types of pharmacist interventions on problematic prescriptions and its outcome were identified and documented. From a total of 6340 prescriptions processed by the outpatient pharmacy in a one-week period, 43 prescriptions (0.68%) required interventions by the pharmacy staff. These included 54% of the prescriptions that were incomplete or inadequately written (errors of omission) and 46% that contained the wrong drug, dose regimen, strength and dosage form (errors of commission). A total of 62 types of action were taken by the pharmacy staff to resolve the 43 problematic prescriptions. These include contacting the prescribers concerned (24.2%), clarifying with the patient or his/her representative (19.4%), contacting the prescriber's nurse (17.7%) and checking the patient's appointment or identity card (4.8%). Of the 43 problematic prescriptions, 48.8% were clarified without any change and dispensed while 32.6% were changed and dispensed. The study reinforces the importance of prescription screening and interventions by pharmacists in minimising preventable adverse events attributed to medication errors. It also emphasizes the necessity of interdisciplinary communication and cooperation in identifying and resolving prescribing errors and irregularities in order to achieve optimal therapeutic outcomes for the patient.

Keywords: prescription, pharmacist, intervention, errors of omission, errors of commission

INTRODUCTION

The dispensing "chain" may be conceptualised as a sequence of interrelated, interdependent, and at least historically, interdisciplinary activities that result in the delivery of the prescription drug and appropriate drug-use information to the patient (1).

A study showed that 99% of the 137 general practitioners surveyed agreed that pharmacists have a role to play in the screening of prescriptions for possible problems (2). Most pharmacists would probably agree that the screening of prescriptions is one of the

professional responsibilities assumed by every pharmacist but the degree to which prescription screening is performed varies greatly among different drug-delivery systems and even among different pharmacists' practices. Thus, prescription screening represents a legitimate value-added pharmaceutical service in practice, if not in principle (3).

Many studies had identified and documented problems associated with prescribing errors. The extent of such errors varied from 2.6% to 15.4% or estimated as 2.87 to 4.9 per 1000 medication orders (1, 4-11). An audit on community pharmacies found that 2.6% of the prescriptions required active pharmacist intervention to resolve a prescribing error (1). Another study conducted in outpatient pharmacies found that approximately 4 per 100 dispensed prescriptions had problems and required pharmacists intervention (5). In 44% of the intervention, the outcome was a change in drug, strength or directions of drug use (5).

Most prescription interventions by pharmacists have a limited potential for medical harm although it may be inappropriate in some instances as mentioned by Hawkey and colleagues (7). However, it should be noted that a small number of detected prescribing errors have a major potential for medical harm if not corrected and hence, the importance of pharmacist interventions is not overemphasized. The ultimate goal for combining the unique knowledge and competencies of both medical and pharmaceutical professionals is to achieve optimal therapeutic outcomes and quality of life for the patient. Therefore, both professions have a definite role to play and should work hand-in-hand towards achieving this common goal.

Although most pharmacists in Malaysia are involved in prescription screening and interventions to varying degree, documentation of such activities appeared scarce in the literature. Therefore, the present study was conducted to identify and document the types of pharmacist intervention and its outcome on problematic prescriptions.

METHOD

This study was conducted over a one-week period in May 1998 in the Outpatient Pharmacy Department (OPPD) of a large teaching hospital in Malaysia. This OPPD received an average of

1057 prescriptions per day during the study period and was run by one registered pharmacist, 3 trainee pharmacists and 8 pharmacy assistants.

The study sampled problematic prescriptions received by the OPPD within the one-week period (excluding the Sunday). Senior pharmacy assistants act as the front line for the screening of prescriptions received by this OPPD. Any problematic prescriptions would be referred to the trainee pharmacist or the pharmacist. The researcher would then record the type of intervention made by the pharmacy staff and its outcome prospectively. A standard format recommended by Rupp (3) was used to record all the data. Reasons for pharmacist intervention were classified according to the types of prescribing errors used by Rupp (3), that is errors of omission and errors of commission.

RESULTS

Of the 6340 prescriptions received by the OPPD during the one-week sampling period (excluding the Sunday), 43 required intervention by the pharmacy staff. This gives an overall intervention rate of 0.68% and an average of 7.2 prescriptions intervened per day.

A total of 50 different errors were identified in the 43 prescriptions with an average of 1.2 errors per prescription. Most of the prescriptions had one error (37 prescriptions) while another 5 had 2 errors and 1 prescription had 3 errors. These errors are classified as in Table 1 with examples for each type of errors. Violation of legal or procedural requirements such as absence of the prescriber's name or signature, registration number for psychotropic agents and patient particulars are also included. The prescription intervened in the category of drug therapy monitoring was due to a possibility of hypokalaemia from the use of Lasix^R without the concurrent use of Slow K^R.

A total of 62 types of action were taken by the pharmacy staff to resolve the 43 problematic prescriptions, giving an average of 1.4 actions per problematic prescription. These include contacting the prescribers concerned (24.2%), clarifying with the patient or his/her representative (19.4%), contacting the prescriber's nurse (17.7%) and checking the patient's appointment or identity card (4.8%).

Of the 43 problematic prescriptions, 48.8% were

Table 1: Classification of reasons for pharmacist intervention.

Reasons for pharmacist intervention	Frequency (%, n=50)	Examples
Errors of omission		
Quantity to supply not specified	9 (18)	T. Pantoprazole 40mg bd T. Daonil 5mg bd T. Imipramine 25mg on Morphine Mixture 10mg tds
Dose / regimen not specified	5 (10)	Glibenclamide od x 12/52 'O' Cephalexin 250mg x 1/12
Form / strength not specified	4 (8)	Dipyridamole 1 tab od x 16/52 Humulin 10 IU tds x 1/52 Zocor 1 daily x 3 mths
No signature or name of prescriber	2 (4)	
No registration number	1 (2)	
No patient's name	1 (2)	
Illegible	5 (10)	Patient's name Captopril 0.25 daily x 2/52 Sy. Prednisolone 25mg tds HCT (hydrocortisone or hydrochlorothiazide)
Subtotal	27 (54)	
Errors of commission		
Wrong dose / regimen	12 (24)	Famotidine 200mg Diamicron 1 gm tds Metformin 80mg bd Thyroxine 200mcg bd Lisinopril 10mg tds Nuelin 5mg on Bactrim 250mg bd x 1/52. Prednisolone 60mg/m ² 130mg x 28 days
Required strength not available	5 (10)	Prothiaden 100mg nocte x 16/52 (only 75mg available)
Wrong drug / indication	1 (2)	Magnesium sulphate (should be magnesium trisilicate)
Wrong dosage form	2 (4)	Humulin R 8IU tds x 8/52 (should be penfill)
Dose did not correlate with quantity	1 (2)	Methotrexate 25mg (1 tab) should be 10 tablets
Required brand not available	1 (2)	Sy. Vermox 5ml stat
Possible side effects / toxicity	1 (2)	Lasix given without Slow K ^R
Subtotal	23 (46)	
Total	50 (100)	

clarified without any change and dispensed while 32.6% were changed and dispensed. Three prescriptions were dispensed as written and this included the prescription where addition of Slow K^R was suggested for the patient on Lasix^R. The other two prescriptions involved methotrexate 5 mg daily and a prescription with three different types of syrups for a baby. Two patients were sent back to the clinics concerned with their problematic prescriptions but did not return while the prescribers for another two prescriptions could not be contacted. One prescription was not dispensed as the strength requested by the prescriber was not available in the hospital and the patient was asked to buy it from another pharmacy.

DISCUSSION

The rate of omission errors (54%) and commission errors (46%) obtained in this study are comparable to that reported by Rupp and colleagues (1), with 51% and 29%, respectively. It should be emphasized that one of the main errors in the present study involved wrong dose or regimen prescribed (24%). The study by Rupp and colleagues (1) showed similar results. This error of commission could lead to fatal consequences if left unidentified and uncorrected. For example, famotidine was prescribed as 200 mg instead of 20 mg. This represents a 10 times overdose if the error has not been detected. Decimal points in drug dosage should also be clearly written especially for drug with a wide dose range such as prednisolone that may be prescribed as 2.5mg or 25mg, depending on the condition of the patient. Additionally, drugs with similar names often cause confusion as in the case of magnesium sulphate being prescribed instead of magnesium trisilicate. Aronson (12) had suggested some measures to minimize such confusion.

From the results of the study, the proportion of prescription interventions appeared small (0.68%) compared to other studies where intervention rate of 2.6 and 2.9% had been recorded (1, 7). Some problematic prescriptions especially those with errors of omission may have been dispensed with some assumptions and hence no pharmacist intervention was documented. The possibility of some prescriptions with errors being dispensed to the patients without being detected could not be ruled out. The utilisation of information technology via computerization of prescription

screening and electronic prescribing may minimise such occurrence. However, the standardization of processes and the expanded use of the expertise of pharmacists through better integration of the health care team are just as important.

The pharmacist or trainee pharmacist had to contact the prescriber or the prescriber's nurse 26 times to resolve 23 problematic prescriptions (53% of the 43 problematic prescriptions). This emphasizes the importance of interdisciplinary communication and cooperation in identifying and resolving prescribing errors and irregularities. The community pharmacists in the study by Rupp and colleagues (1) had to contact the prescriber or prescriber's assistants to resolve 80% of the problematic prescriptions. This higher rate could be explained by the difference in the sampling frame between the two studies. The present study involved prescription screening by the pharmacy staff who were more familiar with the prescribing habits of the prescribers in the same hospital. Therefore, the pharmacy staff could resolve a higher proportion of the problems encountered without contacting the prescribers than the community pharmacists in the study by Rupp and colleagues (1) who received prescriptions from many different clinics and hospitals.

The results also showed that the prescribers subsequently changed 32.6% of the problematic prescriptions identified by the pharmacy staff. Another 48.8% of the prescriptions were clarified without any change and dispensed. This is comparable to the study by Rupp and colleagues (1) that showed similar outcome description of 32% and 53.8%, respectively. These results further support the importance of pharmacist intervention in minimising preventable adverse events attributed to medication errors.

Although the present study was conducted in only one hospital, research of such nature could provide an invaluable database for future reference and for identifying specific individual and institutional deficiencies in prescribing. Consequently, appropriate design and implementation of strategic educational programmes or institutional procedures could be developed to eliminate the occurrence of such preventable medication errors and to limit the risk to patients.

CONCLUSION

The study reinforces the importance of prescription screening and interventions by pharmacists in minimising preventable adverse events attributed to medication errors. It also emphasizes the necessity of interdisciplinary communication and cooperation in identifying and resolving prescribing errors and irregularities

in order to achieve optimal therapeutic outcomes for the patient.

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