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## A prospective study on medication errors in a general hospital

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### ABSTRACT

A medical error occurs when a health-care provider chooses an inappropriate method of care. Medical errors are often described as human errors in healthcare. A Prospective study was carried out in an In-patient Department at a general hospital, Yelahanka, Bangalore for seven months. The prescriptions were chosen randomly which includes patient's case history, diagnosis, physician medication order sheets, lab investigations and reports of diagnostic tests. A total of 180 prescriptions which contained 392 prescribed items were collected randomly. Among 69 errors, highest no. of errors (40.57%) were related to directions. All the errors related to others constituted (20.28%) and all the errors for strength and dose constituted (18.8%). Errors related to prescribing two drugs of the same type constituted 2.89%, 11.59% errors were under category No error which comes under sub-category A, 86.95% errors were under the category Error, No harm which comes under sub-category B(46.37%) , sub-category C (37.68%) and sub-category D (02.89%) and 1.44% belongs to category Error, Harm which comes under sub-category E. Study concludes that overall incidence of medication errors was found to be 38.12%, which is quite high. Clinical Pharmacist can play major role in the early detection and prevention of medication errors and thus can improve the quality of care to the patients.

**Keywords:** Medication errors, ADR, Prescription pattern

### INTRODUCTION

Medication error is defined as "Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient and consumer".[1] Medication errors may occur at any stage of prescribing, documenting, dispensing, preparation, or administration. Medication errors may contribute to morbidity, mortality and increased health care costs.[2] Error can happen in all stages of care process from diagnosis to drug administration. Error occur as result of two kinds of failure; either the correct action does not proceed as intended (an error of execution) or the original intended action is not correct (an error of planning).[3] According to National Patient Safety Agency (NPSA) statistics shows that 59.3% of medication errors occur during the administration stage.[4] The published data demonstrates that approximately 5-10% of all hospital admissions are drug related. A recent report of British Medical Association; says that at least a quarter of a million patients each year from UK are admitted to hospital with an adverse drug reaction (ADR) at a cost of around £466 million a year.[5] Medication administration has become more complex as a result of the increasing number of medications available and new routes of administration. [6] The pharmacist's responsibility is to encourage the patient to use the medicine in the best possible manner. This is achieved by communication with the patient to make sure that he or she has the ability, will and knowledge to use the dispensed medicine correctly.[7] The use of computerized and daily updated medication charts has the potential to improve the quality

of medication distribution process in hospitals.[8-13] Several studies have shown that incorrect prescribing, inadequate information given by the prescriber or pharmacist and incorrect use of medicine by the patient can cause suffering to patients. [14-16] Computer-assisted prescription were more than three times less likely to contain errors and five times less likely to require pharmacist clarification than were handwritten prescriptions. [17] Leape *et al* evaluated the impact of pharmacist participation in medical rounds in intensive care unit on occurrence of medication errors and adverse drug event (ADE) and their impact on patient outcome. They found a 66% reduction in adverse events related to preventable error when the pharmacist participated in daily rounds.[18] The detected or identified medication errors need to be documented and studied because doing so will facilitate error avoidance, advance understanding of the short lapses and interferences that lead to error and help to maintain public confidence in the healthcare system.[19] An observational multinational study conducted in 27 countries of five continents by Valentin A *et al* suggest that, increased work load, stress, and fatigue are the contributing factors for medication administration errors. In addition to the above, poor hand writing in prescriptions, drugs with similar packing are the system errors leading to medication administration errors.[20] Now it is an appropriate time to quantify the problem of medication errors and take necessary steps to improve the quality of health care delivery. The nature and types of these errors should be identified, to reduce the incidence of medication errors and improve the health care. The main aim of our study was to identify and evaluate the types of errors and to assess their severity.

## MATERIALS AND METHODS

**Study setting:** The study was carried out in an In-patient Department of medicine at a general hospital, Yelahanka, Bangalore.

**Study Design:** Prospective study.

**Study period:** From January 2014 to July 2014 (7 months).

### Study criteria

#### Inclusion criteria:

- ✓ Patients who are willing to participate in the study.
- ✓ All types of errors were included along with administrative and legal errors.

#### Exclusion criteria:

- ✓ Patients who refused to take medications.
- ✓ Patients who are not willing to participate in the study.
- ✓ Few categories of drugs (antacids, analgesics and laxatives) were excluded from our data collection and analysis.

The present study was approved by the Institutional Human ethics committee and informed consent was taken prior to enrollment of patients in the study.

**Study procedure:** Medication errors were analyzed through a prospective observational study conducted for a period of seven months. During the study the prescriptions were chosen randomly which includes patient's case history, diagnosis, physician medication order sheets, lab investigations and reports of diagnostic tests. The collected data was reviewed for medication errors and the identified errors were documented. All the medication errors documented were analyzed for parameters such as types and severity of errors.

## RESULTS AND DISCUSSION

A total of 180 prescriptions which contained 392 prescribed items were collected randomly. They were analyzed for all types of medication errors. Among them 69 errors were identified. Among 69 errors, highest no. of errors (40.57%) were related to directions. All the errors related to others constituted (20.28%) and all the errors for strength and dose constituted (18.8%). Errors related to prescribing two drugs of the same type were 2 and constituted (2.89%). The following table shows the types and number of errors. (Table 1)

**Table 1: Types and number of errors**

S. No	Type of Errors	No. of errors	Percent of total errors (%)
1.	Directions not specified	28	40.57%
2.	More than one month's supply given on separate repeat prescription	14	20.28%
3.	Strength of preparation not stated	06	08.69%
4.	The prescribed quantity was not clearly written, missing or too large	05	07.24%
5.	Name of the medicine was not clear due to bad handwriting	04	05.79%
6.	Prescriber's signature missing	03	04.34%
7.	Patient suffering from short supply of medicine due to special pack rules	03	04.34%
8.	Prescribing two drugs of the same type	02	02.89%
9.	Direction incomplete not legible or written "as directed"	02	02.89%
10.	Wrong strength was prescribed and was changed after contacting the prescriber	02	02.89%

Prevention proposed medication error index & National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) was used to assess the severity of medication error. Among 69 medication errors, 8 (11.59%) errors were under category No error which comes under sub-category A, 60(86.95%) errors were under the category Error, No harm which comes under sub-category B 32 (46.37%) , sub-category C 26 (37.68%) and sub-category D 2 (02.89%) and 1 (1.44%) belongs to category Error, Harm which comes under sub-category E. The other levels of severity such as error, Death were not identified during the study period. The following table shows the levels of severity of reported medication errors.(Table-2)

**Table 2: Levels of severity of reported medication errors**

Level of severity	Category	Number of medication errors
<b>No Error</b>	Category A	08(11.59%)
	Category B	32(46.37%)
<b>Error , No harm</b>	Category C	
	Category D	26(37.68%)
	Category E	
	Category F	02 (2.89%)
	Category G	
<b>Error, harm</b>	Category H	01(1.44%)
	Category I	0
		0
		0
<b>Error, Death</b>		0

## CONCLUSION

Study concludes that overall incidence of medication errors was found to be 38.12%., which is quite high. Clinical Pharmacist can play major role in the early detection and prevention of medication errors and thus can improve the quality of care to the patients. The study emphasizes the need of a clinical pharmacist to develop the prescription policies, guidelines and in the hospitals.

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## REFERENCES

- [1] Sayali Pote, Pramila Tiwari, Sanjay D'cruz, *A prospective study Pharmacy Practice* **2007**, 5(1), 17-20.
- [2] Rhonda L, Neville A.S, David H. *Applied Ergonomics* **2006**., 37,669–79.
- [3] Reason JT. Cambridge University Press, **1990**.
- [4] Jones SW. *Nursing Standard* **2009**, 23(50), 40-46.
- [5] Hitchen L. *BMJ* **2006**, 332, 1109.
- [6] Susan P. *Clinical Simulation in Nursing* **2009**, 5,181-86.
- [7] Royal Pharmaceutical Society of Great Britain, **2001**.
- [8] Van Gijssel-wiersma DG, Van den Benit PM, Walenbergh-Van Veen MC, *Drug Saf.*, **2005**, 28(12),1119- 1129.
- [9] Jaya wardena S, Eisdorfer J, Indulkar S, Pal SA, Sooriabalan D, Cucco, R.AM. *J. Ther.*, **2007**,14(4),336-340.
- [10] Holdsworth MT, Fichtl RE, Raisch DW, *Pediatrics*., **2007**,120, 1058-1066.

- [11] Walsh KE, Landrigan CP, Adams WG, *Pediatrics.*, **2008**, 121(3), 421-427.
- [12] Weant KA, Cook AM, Armitstead JA, *Am. J. Health Syst. Pharm.*, **2007**, 64(5), 526-530.
- [13] Upperman JS, Staley P, Friend K. et al, *J. Pediatr. Surg.*, **2005**, 40(1), 57-59.
- [14] Nathan A, Goodyer L, Lovejoy A, Rashid A, *Family Practice.*, **1999**, 16, 278-82.
- [15] Westerlund T, Almarsdottir AB, Malander A. *Int J Pharm prac.*, **1999**, 7, 40-50.
- [16] Bellingan M, Wiseman IC, *Int J Pharm pract.*, **1996**, 4, 25-9.
- [17] Bizovi M, Michelle C, Annette L, Robert A, Andrew D, Jerris R, *Acad. Emerg. Med.*, **2002**, 9(11), 1168-75.
- [18] Leape LL, Cullen DJ, Claap MD, *JAMA.*, **1999**, 282, 267-70.
- [19] Zellmer W.A, *Am J. Hosp. Pharm.*, **1990**, 47, 1755-6.
- [20] Elizabeth Manias RN, *Australian College of Critical Care Nurses* **2009**, 4(22), 141-3.