

To Identify the Main Causes of Prescription Error in the Inpatient Areas of Rabindranath Tagore International Institute of Cardiac Sciences: An Observational Study

By

Dikshita Bhuyan

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2014-2016



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer Airport
Jaipur-302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

Internship Training

At

Rabindranath Tagore International Institute of Cardiac Sciences, Kolkata

By

Dr. Dikshita Bhuyan

Under the guidance of

Dr. Arindam Das

MBA Hospital and Health Management

Year 2014-16



The IIHMR University, Jaipur

TO WHOMSOEVER MAY CONCERN

This is to certify that Dr. Dikshita Bhuyan student of MBA Hospital Management from The IIHMR University, Jaipur has undergone internship training at Rabindranath Tagore International Institute of Cardiac Sciences from 18th February to 22nd May 2016.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.



Dean, Academics and Student Affairs

The IIHMR University, Jaipur



Dr. Arindam Das

Associate Professor

The IIHMR University, Jaipur

The certificate is awarded to

Dr. Dikshita Bhuyan

Having successfully completed her
internship in the department of

Quality Assurance & Accreditation

and has successfully completed her Project on

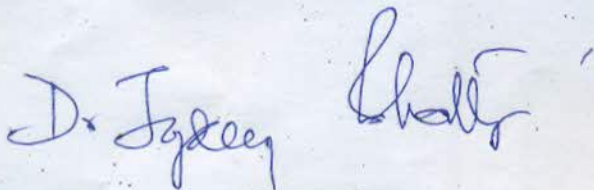
**“An Observational Study to identify the main causes of Prescription Error
in the Inpatient Area of Rabindranath Tagore International Institute of
Cardiac Sciences”**

Date: 22nd May 2016

Rabindranath Tagore International Institute of Cardiac Sciences, Kolkata

She comes across as a committed, sincere & diligent person who has a strong drive and
zeal for learning.

We wish her all the best for future endeavors.



Dr. Joydeep Bhattacharya

Senior Medical Superintendent

RTIICS, Kolkata
DR. JOYDEEP BHATTACHARYA
Senior Medical Superintendent
NH-RTIICS, Kolkata-99



THE IHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled “ **Identify the main causes leading to prescription error in the inpatient Areas of Rabindranath Tagore International Institute of cardiac Sciences: An Observational Study** and submitted by **Dr Dikshita Bhuyan** Enrollment No. **IIHMR-U/MBA-HM/2014-2016/19-1546** under the supervision of **Dr.Arindam Das** for award of MBA in Hospital and Health of the University carried out during the period from **2014 to 2016** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Dikshita
Signature

ABSTRACT

Identify the main causes leading to Prescription Error in the Inpatient Areas of Rabindranath Tagore International Institute of Cardiac Sciences: An Observational Study

Author: Dr Dikshita Bhuyan

Advisor: Dr. Arindam Das

Introduction

Medication error has been 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 health-care professional, patient or consumer. The error may be of commission or omission, with potentially negative consequences for the patient, which would have been judged wrongly by skilled and knowledgeable peers at the time it occurred, independent of whether there were any negative consequences. Medication errors can be broadly considered to be of three types: prescribing errors, dispensing errors, and administration errors.

Background

Prescription errors are the serious problems in health care and can be the source of significant morbidity and mortality in the health care setting. In India, irrational use of drugs is common and this has led to antibiotic resistance, adverse drug reactions and other drug related problems. In order to reduce the errors, it is necessary to know the common causes and the stage at which the error occurs.

Objective

- To measure the rate of prescription error for the study period
- To identify the causes leading to prescription error
- To develop the solutions to reduce and or to prevent prescription errors in the hospital under study.

Methodology

Study Type

The study is a descriptive observational study.

Tools and Techniques of Data Collection and Method of Analysis

Primary data is collected for the present study using a structured checklist is used. The scoring pattern used is:-

1 = Compliance, 0= Non Compliance

Results

Total Prescription Error Rate is 39%. Prescription Rate is highest with 42% in the general ward and lowest in private ward with 39% error rate.

The 20% of the causes leading to 80% of the errors were use of branded name not the generic drugs beyond the formulary followed by inadequate documentation of duration of medication leading to longer administration of medication.

Conclusion

Doctors miss out important information like allergic reaction to drugs, ongoing medications, drug dose/ strength ,drug route, frequency about drugs & duration of medication while writing prescriptions.

ACKNOWLEDGEMENT

The successful completion of the dissertation and final outcome of this project required a lot of guidance and assistance from different people and I consider myself fortunate to have so many people around to guide me.

Firstly I would like to extend my sincere regards to my mentor Dr. Arindam Das .

The IIHMR University Jaipur for providing such a great learning opportunity.

I am highly thankful to Dr Joydeep Bhattacharya, Senior Medical Superintendent at Rabindranath Tagore International Institute of Cardiac Sciences, Kolkata for his constant support, motivation and guidance throughout the project.

I take the opportunity to express my profound sense of gratitude and respect to all those who helped me throughout the duration of project.

Dr. Dikshita Bhuyan

MBA-HM

The IIHMR University JAIPUR

TABLE OF CONTENTS

S.NO	Topic	Page No.
1.	Dissertation Report	
	1.1 Introduction	9
	1.2 Literature Review	10
	1.3 Rationale	13
	1.4 Objectives of the Study	14
	1.5 Research Methodology	14
	1.6 Data Collection Tool	15
	1.7 Data Analysis	15
	1.8 Results and findings	16
	1.9 Discussions	21
	1.10 Recommendations	22
	Annexure	23
	Bibliography	24

LIST OF FIGURES

Fig No		Page no
1	Ward wise Rate of Prescription Error	15
2	Percentage of compliance with the involved parameters	15
3	Pareto analysis to identify the causes leading to prescription error	16

INTRODUCTION

Medication error has been 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 health-care professional, patient or consumer. The error may be of commission or omission, with potentially negative consequences for the patient, which would have been judged wrongly by skilled and knowledgeable peers at the time it occurred, independent of whether there were any negative consequences. There are 2,000 deaths every year from unnecessary surgery; 7,000 deaths from medication errors in hospitals; 20,000 from other errors in hospitals; 80,000 from infections in hospitals; and 106,000 deaths every year from non-error, adverse effects of medications. It is reported that nearly 98,000 people die annually, because of mistakes committed by medical professionals in hospitals in a ratio of 1:5 doses. Deaths in India, due to adverse drug reactions (ADRs) are estimated to be around 400,000 annually in 720,000 ADRs.

A prescribing error has been defined as: “A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant reduction in the probability of treatment being timely and effective or increase in the risk of harm when compared with generally accepted practice

The prescription of drugs is the most common form of errors that occur in the prescribing process and have the potential to cause significant morbidity and mortality. Over 900 million items are dispensed in the community in England each year². However, mistakes happen in the prescription of these medicines. In primary care, reported prescribing error rates vary from less than 1% to over 40%, the later being a study conducted in Sweden, where failure to report the indication for a drug was considered an error. This variation in error rates is likely to be significantly affected by the definition of error used and the rigour with which detection of error is undertaken.

Prescription errors are a potentially preventable source of harm to patients and are therefore an important target for improvement. The causes for prescription errors can vary from

miscommunication between physician, patient, pharmacist and other paramedical staff confusion of look-alike sound alike (LASA), lack of information of current trends, protocols, dosing, references, medicine formularies or unawareness of the staff regarding new medicines, narcotics or high-alert medications. Other than this, other causes include human factors such as workload, fatigue, inexperience, lack of training, poor handwriting, and verbal orders; workplace factors such as poor lighting, noise, interruptions, excessive workload as well as pharmaceutical factors such as excessive prescribing, confusing drug nomenclature, packaging, or labelling, increased number or quantity of medicines per patient, frequency and complexity of calculations needed to prescribe, dispense, or administer a medicine and lack of effective policies and procedures.

To Err Is Human: Building a Safer Health System called for a more systematic approach to medical errors and outlined the importance of identifying and learning from errors through mandatory and voluntary reporting system.

REVIEW OF LITERATURE

Medication errors can be broadly considered to be of three types as described by Barber and colleagues (2003): prescribing errors, dispensing errors, and administration errors. Errors occur most commonly at the stage of drug ordering, dosing errors, and errors involving the intravenous route are the most frequent. What led to these studies are the observations that nearly half of all medication errors occur during the prescribing process with a subsequent cascade effect, which causes errors downstream in dispensing or administration (Thomsen and Schroeder 2004). The most common types of errors include giving the wrong drug or wrong dose, using the wrong route or failure to check the patient's identity (Allan et al 1995; Ferner et al 1999).

Underreporting of medication error is a major challenge for all healthcare facilities and medication errors especially prescription error are often under-reported if the provider perceives no harm to the patient or the errors are not considered worthy of reporting (Allan and Barker 1990; Wilson et al 1998). Underreporting of medication errors by nurses is due to fear of reaction from the doctors, nurse managers and coworkers, fear of punishment, complex and low self-

esteem, organizational factors, and potential termination from job (Beardsley 1999; William 1999; Uribe et al 2002).

The authors in the study Prevalence And Causes of prescribing errors in general practice (Garfield et al) found that 39% of 256 residents had one or more prescribing errors, with 8.3% of prescriptions (or intended prescriptions) affected. The most common types of prescribing error were “incomplete information” (37.9%), e.g. no strength or route was specified; “unnecessary drug” (23.5%), “dose/strength error” (14.4%) and “omission” (11.8%).

Phillips J. et al did a retrospective analysis of medication errors between 1993 – 1998 and found that the most common types of errors were from prescription errors leading to administering improper dose (40.9%); overdose (36.4%), wrong drug(19%) and wrong route of administration (9.5%). The investigators also found that the most common causes of errors were performance and knowledge deficits (44%) and communication errors (15.8%)

RATIONALE

Medication error especially prescription error is one of the most common problems in health care and can be the source of significant morbidity and mortality in the health care setting. In India, irrational use of drugs is common and this has led to antibiotic resistance, adverse drug reactions, and other drug related problems.

Several easily identifiable factors associated with large populations of prescription errors includes inadequate knowledge regarding drug therapy, such as age, impaired renal function and drug allergy, need for calculation of drug dose, specialized drug formulation characteristics and medication prescribing nomenclature, other most common factors contributed to medication error include lack of drug information, incorrect diagnosis, drug-drug related reactions, dose miscalculations, incorrect drug administration and lack of patient education, miscommunication of drug order resulting from poor handwriting, missing information when the drug is packed into smaller units, external factors such as interruption, work load, job related stress, improper training or education and sound-alike look alike packaging of medications.

In order to reduce the incidences of prescription error, it is necessary to know the causes leading to it. The medication ordering sequence involves prescribing a medication, transcribing the order, sending the order to pharmacy, dispensing the medication from pharmacy to the floor, administering the medication to the patient, documenting the administered medication and assessing its effect on the patient.

Medication error is one of the critical aspects involved in patient safety and hence is identified as one of the quality indicators for nursing and pharmacy. This study will provide the baseline data regarding the rate of prescription error prevalent in the hospital.

Prescription error mostly are under reported every time they occur, so this study will aware the staff about the prevalence of the errors, identify the main causes and the importance to report them.

AIM

The purpose of the study is to evaluate the prevalence of prescription errors and identify the main cause leading to prescription errors in RTIICS, Kolkata.

OBJECTIVES

- To measure the rate of prescription error for the study period
- To identify the causes leading to prescription error
- To develop the solutions to reduce and or to prevent prescription errors in the hospital under study.

METHODOLOGY

- Study Design: It is a descriptive observational Study carried out in RTIICS, Kolkata.
- Study Subject: Doctors' progress notes and medicine card
- Sample size: 300 Medicine cards of inpatients of RTIICS, Kolkata
- Sampling procedure- Purposive sampling method.
- Study period-data collection period – 20th February to 20th May, 2016.
- Data source- Case sheet of the inpatient who are admitted in hospital.
- Inclusion criteria: Indoor patients of the hospital
- Exclusion criteria: OPD and Emergency patients

DATA COLLECTION TOOL

Type of data: Primary and Secondary data was collected for the study. A predesigned checklist is used for the study. The checklist is prepared with the help of the guidelines of Medical Council of India.

Instrument used for primary data collection is a Structured Checklist of different types of following prescription error namely,

1. Inadequate documentation of medicine card
2. Allergy Error
3. Frequency Error
4. Dose/strength Error
5. Co-morbidities Error
6. Generic Name Error
7. legibility Error
8. Duration of medication Error
9. Inadequate review of medication

The scoring pattern for the analysis used is 1 for Compliance, 0 for Non Compliance. It means if the prescription found complying with Medical Council of India's guideline, then score 1 was given. On the other hand if it is not complying then 0 was given.

Methods of data collection:

To collect the primary data thorough review of medicine card, prescriptions and doctors' progress notes was carried out. In addition to this observations of drugs at patient's bed side were done.

Data analysis was conducted using Microsoft Excel.

DATA ANALYSIS

As mentioned during the sampling a total of 300 prescriptions were

Analyzed Overall a total of 1061 errors were found during the study.

To calculate the percentage of Prescription Error Rate (%), the following

Formulae has been used, = Total Number of error observed * 100/ Total Opportunities for the occurrence of errors

$$1061 * 100 / 2700$$

$$= 39\%$$

➤ General Ward:

For General Ward during the sampling a total of 140 prescriptions were

Analyzed Overall a total of 496 errors were found during the study.

To calculate the percentage of Prescription Error Rate (%), the following

Formulae has been used,= Total Number of error observed * 100/ Total Opportunities for the occurrence of errors

$$= 496/1260 * 100 = 42\%$$

➤ Deluxe Ward:

For Deluxe Ward during the sampling a total of 99 prescriptions were

Analyzed Overall a total of 352 errors were found during the study.

To calculate the percentage of Prescription Error Rate (%), the following

Formulae has been used,= Total Number of error observed * 100/ Total Opportunities for the occurrence of errors

$$=352/891 * 100 = 40\%$$

➤ Private Ward:

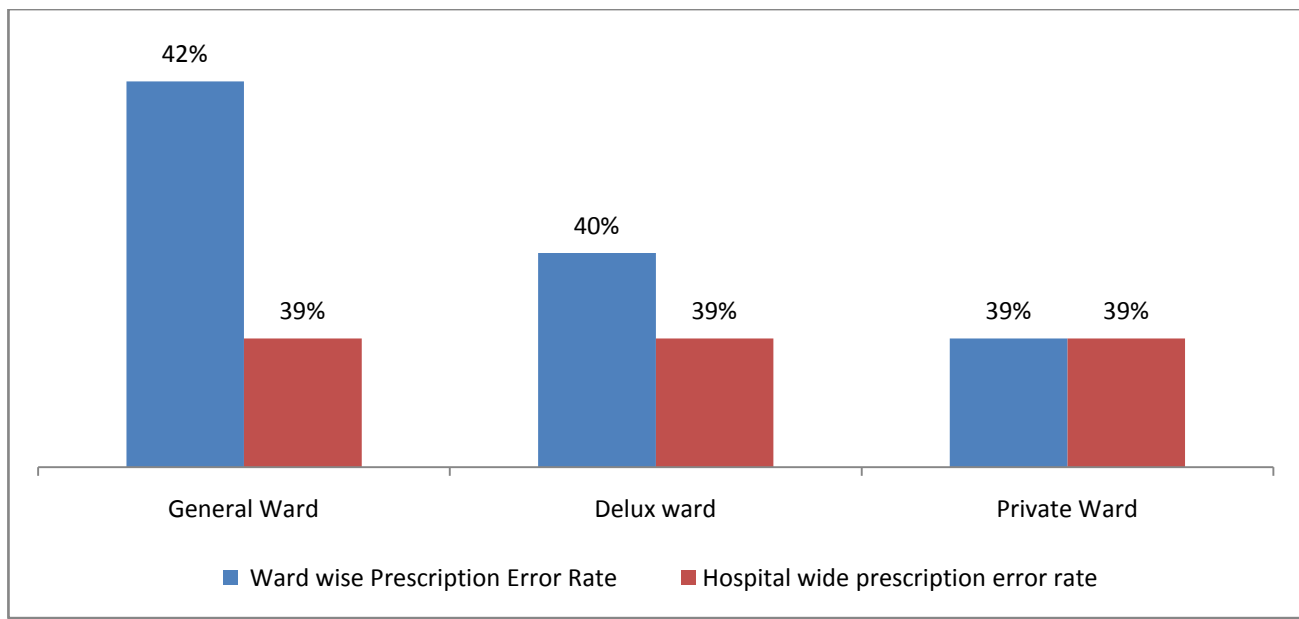
For Private Ward during the sampling a total of 61 prescriptions were

Analyzed Overall a total of 213 errors were found during the study.

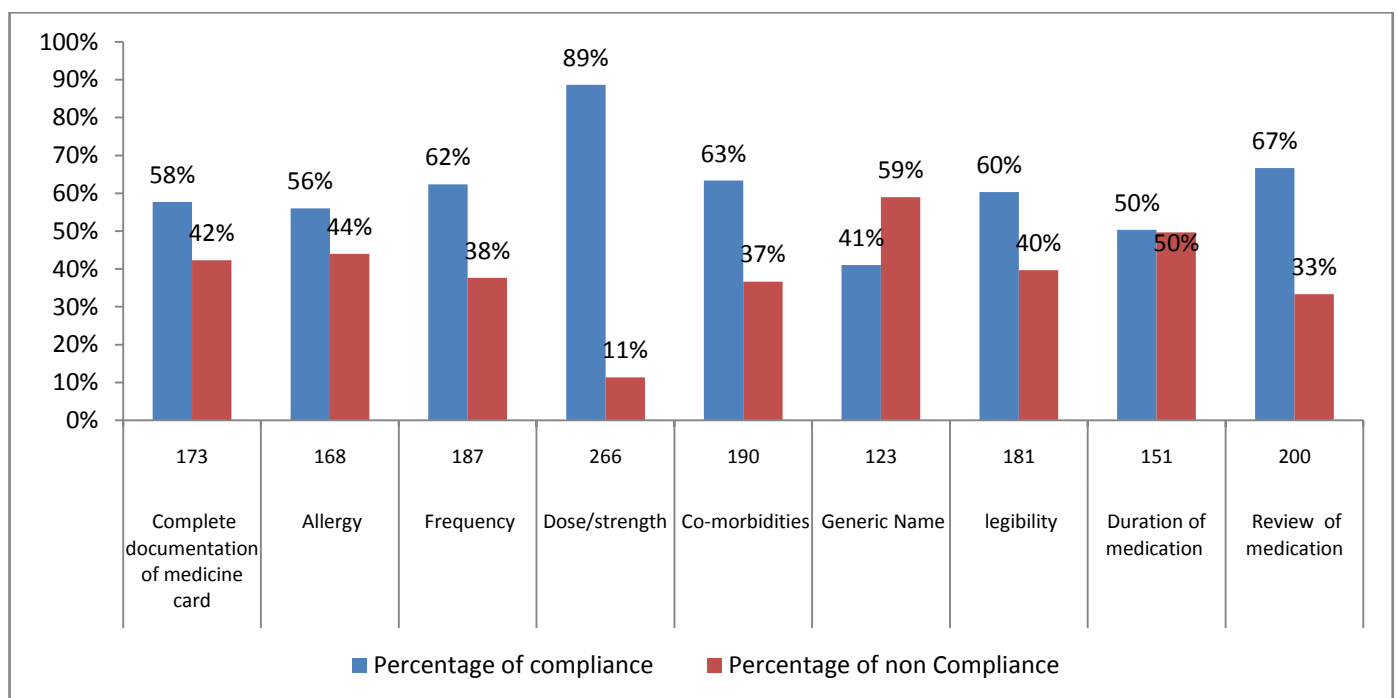
To calculate the percentage of Prescription Error Rate (%), the following

Formulae has been used,= Total Number of error observed * 100/ Total Opportunities for the occurrence of errors

$$=213/549 * 100 = 39\%$$

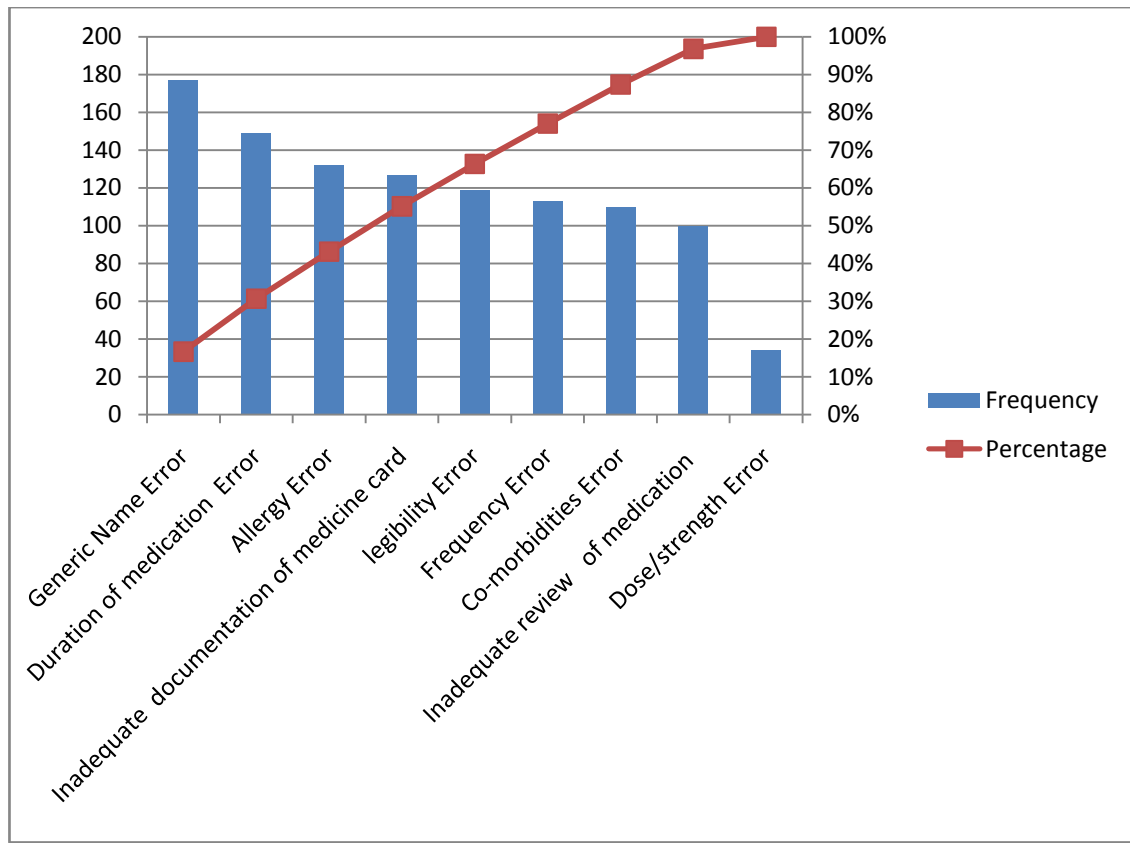


Graph 1: Ward wise Prescription error rate in comparison with hospital wide prescription error rate



Graph2: Percentage of compliance with the involved parameters

It is depicted from graph 2 that non compliance rate is highest in drugs prescribed in generic name followed by duration of medication in the medicine card leading to prolonged administration of medications.



Graph 3: Pareto analysis to identify the causes leading to prescription error

Graph 3 suggests the use of generic name, Inadequate duration of medication and inadequate documentation of allergy were the main causes leading to prescription error in the inpatient area in RTIICS, Kolkata. This figure shows the most three important reasons/causes which lead to prescription error. It shows an inverse relationship between occurrence of error and optimality.

DISCUSSIONS

The standard acceptable Prescription Error rate is 21percent which was 25percent previously.. (Source: Indian Journal of Pharmacology, A prospective study on medication errors by Thakur H and others, 2013)

The reasons for prescription error as emerged out from this study are inadequate use of generic drug, inadequate documentation of duration of medication, allergy not taken into consideration, inadequate documentation of medication card ,legibility error, drug frequency error, non considering individual patient factor like co-morbidities, inadequate review of medication and drug dose strength error. However, as mentioned earlier the three most prominent reasons are

RECOMMENDATIONS

Medication process needs to be error-free which is the responsibility of a team of doctors, nurses, pharmacists and patients.

- Doctors should be sensitized continuously to avoid Prescription Error.
- Nurses to be empowered to raise more of prescription error
- Regular audits of medication errors done by pharmacist
- Use of drugs in generic name and within the hospital formulary
- E- Prescription may help to reduce the risk of prescribing error from illegible handwriting.
- Use of CPOE system to eliminate the need for transcription of orders

ANNEXURE

PRESCRIPTION/ TRANSCRIPTION ERROR	Sl NO				
	UH ID				
	Complete documentation of medicine card				
	Allergy				
	Frequency				
	Dose/strength				
	Co-morbidities				
	Generic Name				
	legibility				
	Duration of medication				
	Review of medication				

BIBLIOGRAPHY

- Phillips J, S Beam, A Brinker, C Holquist, P Honig, LY Lee, and C Pamer Retrospective analysis of mortalities associated with medication errors, 2011, Page 201, Vol:2, Journal 11.
- Reddy L. K. V, A. G. Modi, B. Chaudhary , V. Modi, M. Patel Medication errors – A case study , 2010, Page 112, Vol:7, Journal 2.
- Khavaneekarna, Sanjay sharma, shivkumarinamdar, anilbhandari study and evaluation of medication errors in a tertiary care teaching hospital, International Journal of Pharmacy and Pharmaceutical Sciences : vol 4, suppl 5, 2012
- Marimuthu Karthikeyan / Devi Lalitha A prospective observational study of medication errors in general medicine department in a tertiary care hospital Volume 28, Issue 1(Feb 2013).
- Thakur H, Thawani V, Raina RS, Kothiyal G, Chakarabarty M. Noncompliance pattern due to medication errors at a Teaching Hospital in Srikot, India. Indian J Pharmacol. 2013 May-Jun;45(3)