A Prospective Observational Study on Incidence of Medication Errors in the Inpatient Areas of Narayana Multispecialty Hospital, Ahmedabad

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Introduction

- **Medication Error**: A medication error is 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, or consumer. - NCCMERP

- Medication errors are a common cause for iatrogenic adverse events. They can lead to severe morbidity, prolonged hospitals stay, unnecessary diagnostic tests, unnecessary treatments and death. A medication error is an episode associated with the use of medication that should be preventable through effective control systems

- **Medication error:**
  - Omission in documentation or execution
  - Delay in execution
  - Wrong calculation of dosage
  - Any other form of error which is not compliant with the hospital policy

Objectives

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

Rationale

- Medication errors are the serious problems in health care and can be the source of significant morbidly and mortality in the health care setting
- 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 medication errors for the assessment of NABH Accreditation.
- Medication errors are not reported every time they occur, so this study will aware the staff about the prevalence of the errors and the importance to report them.

Methodology

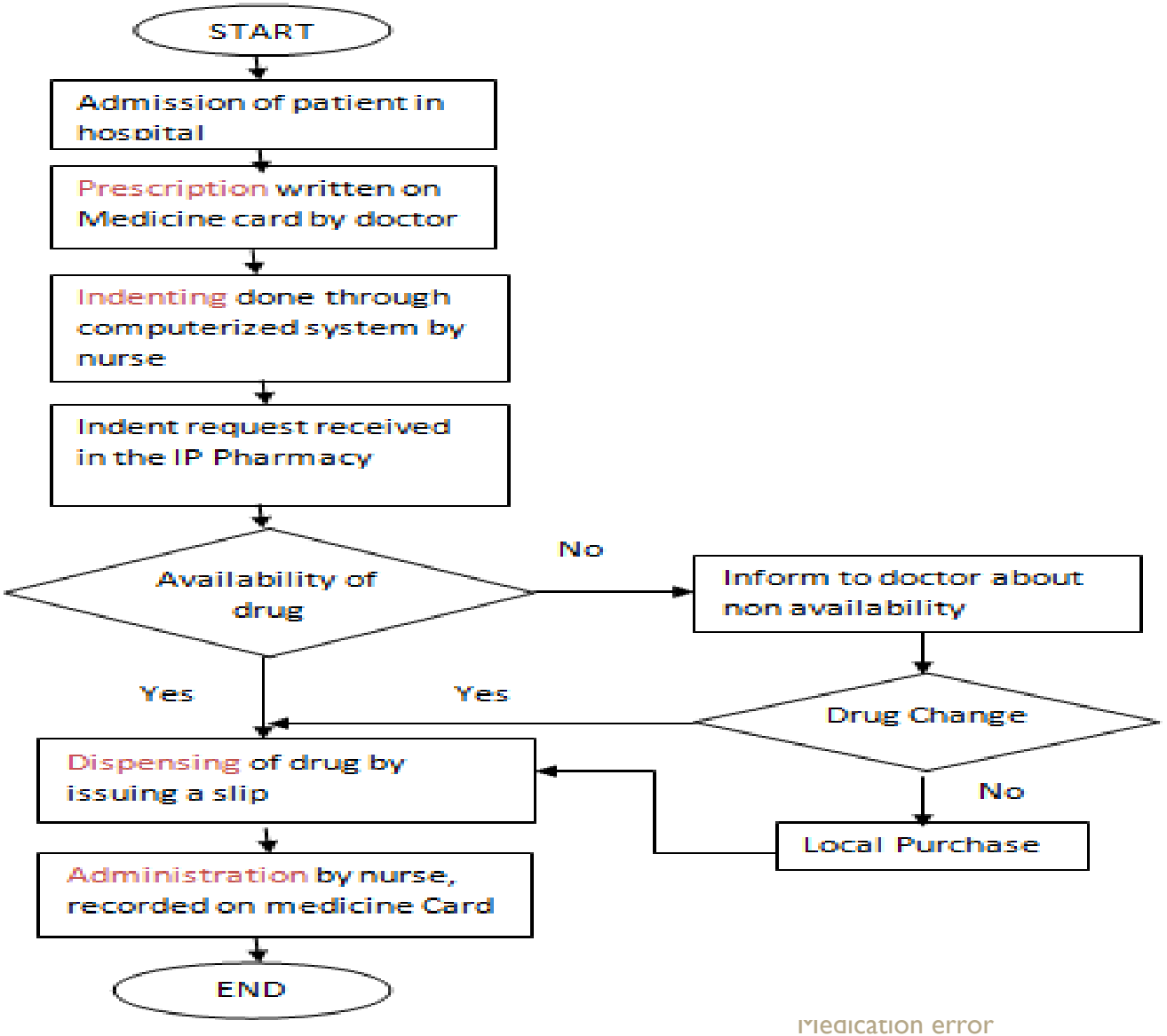
- Study Design: Prospective Observational study
- Study period: 20thFebruary to 30th April, 2016.
- Study Population: Indoor patients of the hospital
- Sample size:92
- Sampling: Purposive sampling
- Inclusion criteria: Indoor patients of General Ward and Semiprivate Ward
- Exclusion criteria: OPD and Emergency patients

Data Collection and Management

- Type of data: Primary and Secondary data
- Instrument used for data collection: Structured Checklist
- Methods of data collection:
  - Review of medicine card and issue slip
  - Observation of nursing staff at nursing station
  - Review of drugs at patient's bedside
  - Interview of patients and attendants
- Software used for analysis: Microsoft Excel

Findings

Medication Process flow



Available systems to address the medication errors

Process	System	Problem identified
Prescribing	Standard order sets	Lack of awareness and training among doctors
	Ongoing Medication	
Indenting	Computerized system	Lack of mechanism to countercheck the drug
Dispensing	Unit dose distribution	Inaccurate dose calculations
Administration	Medication Administration record	Lack of mechanism to countercheck the drug

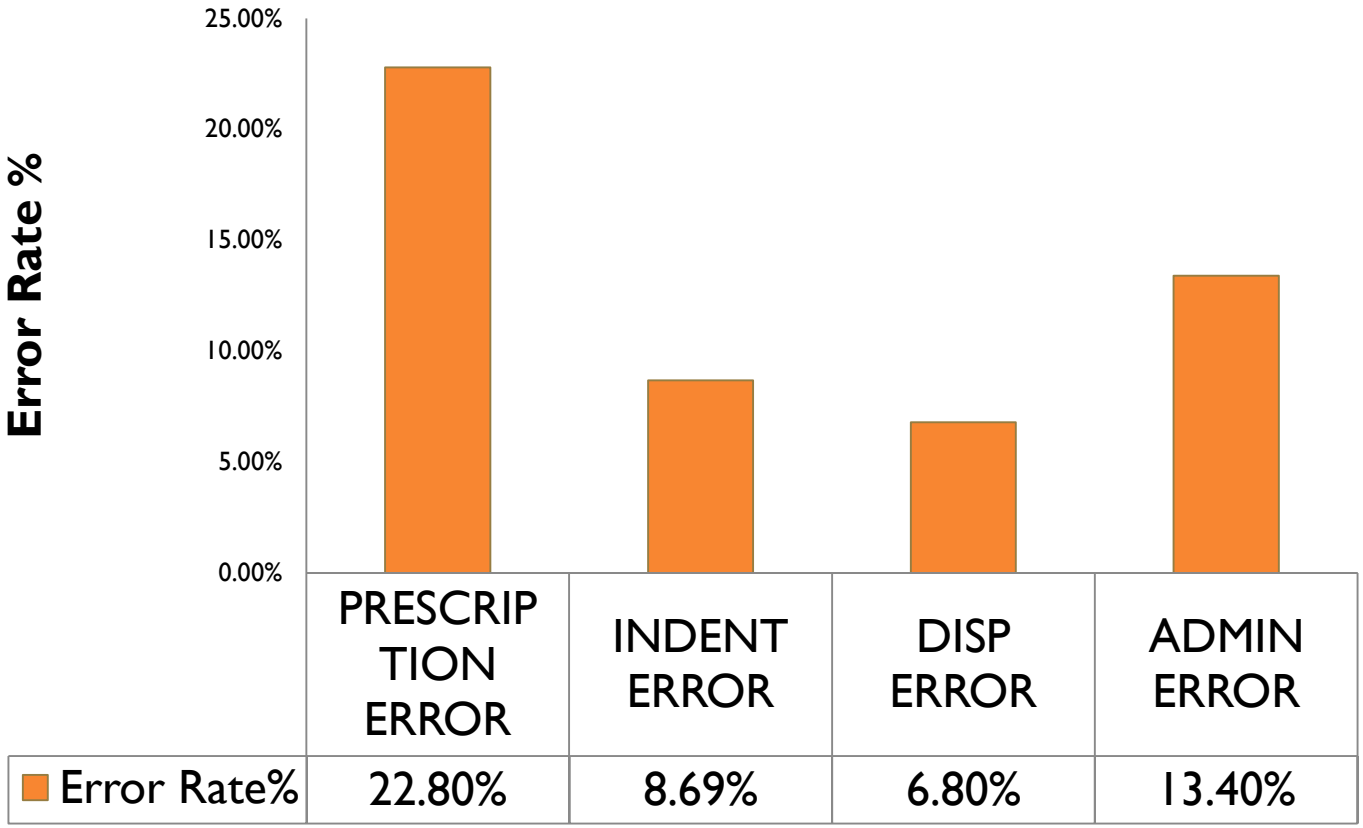
Medication Error Rate

- Total 92 prescriptions were analyzed.
- Per prescription, 23 criteria were observed for medication error.
- Total 339 errors were found out.
- *Medication Error Rate (%)*
- $= \dfrac{\textit{Total Number of error observed} * 100}{\textit{Total Opportunities for the occurrence of errors}}$
- $= \dfrac{339*100/}{2208}$
- $= 15.35\%$

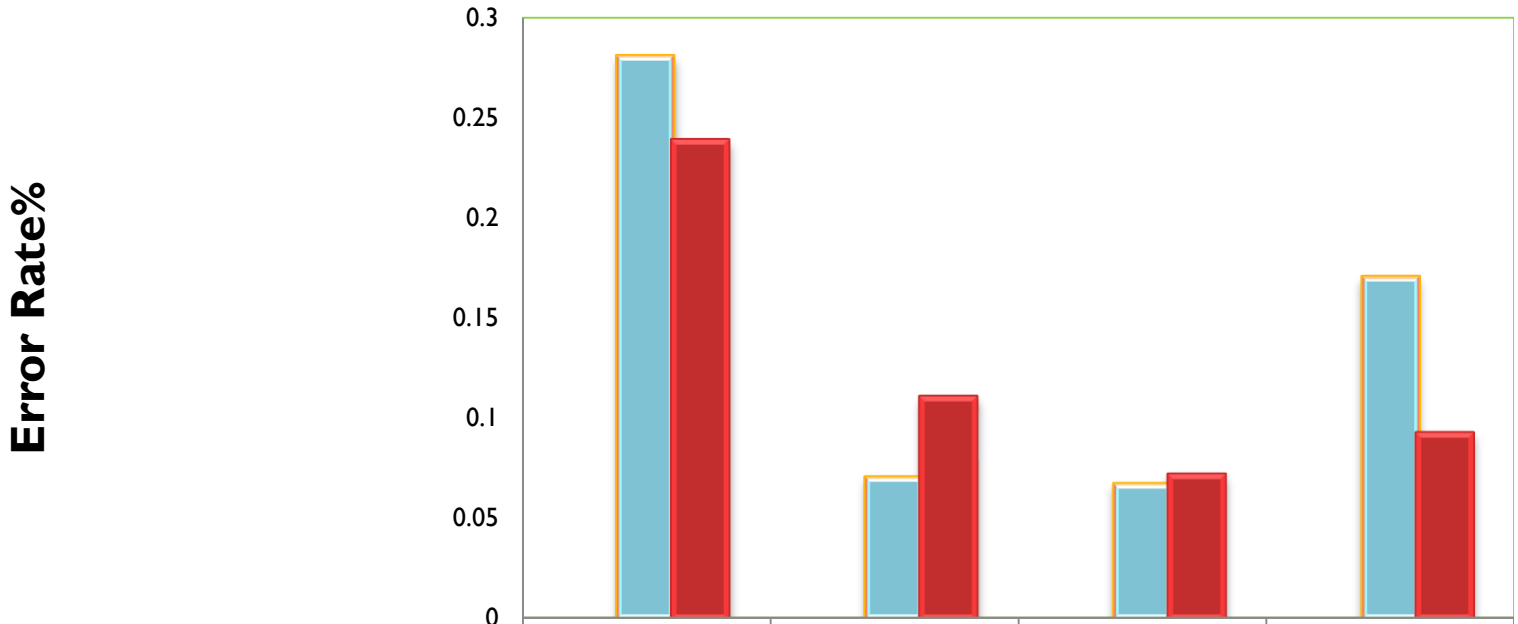
Medication error rate according to process involved

Prescription Error Rate	22.80%
Indenting Error Rate	8.69%
Dispensing Error Rate	6.80%
Administration Error Rate	13.4%

Total Medication Errors



Comparing Error Rates among two Inpatient areas as per the process involved



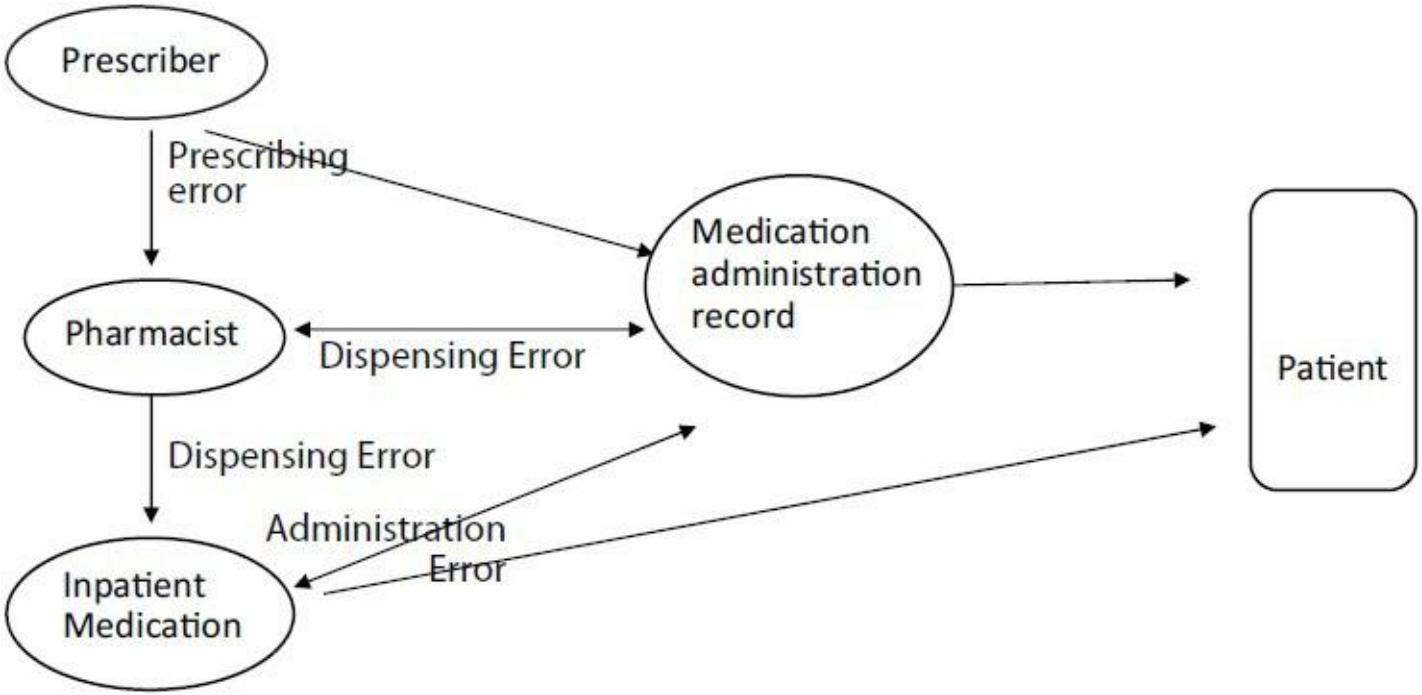
Causes for medication errors

- Lack of attention to details
  - The doctors miss out important information like dose, route and frequency about drugs while writing prescriptions.
  - Nurses do mistakes while indenting the drugs and while checking the drug at the time of administration.
- Inaccurate dose calculations which lead to extra indent or dose miss
- Unavailability of drugs in Pharmacy

Discussion

- The standard acceptable Medication Error rate is 3% which was 5% previously. In this study it is higher than the standard. (Source: Indian Journal of Pharmacology, A prospective study on medication errors by Thakur H and others, 2013)
- The Prescription error rate is maximum followed by administration error.
- There are systems available to detect, correct and prevent the medication errors.
- The main reason for occurring the errors is improper and inadequate implementation of these systems.

Root Cause Analysis- **Schematic diagram**



Causes for medication errors

- Prescription errors were highest in number; doctors miss out important information like allergic reaction to drugs, dose, route and frequency about drugs while writing prescriptions.
- SOS Drug Indication is not written in many cards.
- Dosage not written properly and if written in many cases it is not understandable.
- Nurses do mistakes while indenting the drugs and while checking the drug at the time of administration.

- Dispensing delay from pharmacy in many drugs that leads to dose delay.
- Administration time is not written immediately after administering drug; Nurses fill up the medication card after completion of their rounds which can lead to errors.
- Sign and counter sign are done by same staff in many cases. So there is no check on it.
- Indent slips are not maintained in patient file properly.

Suggestions

- Prescription Errors are highest in number as noticed, so doctors as well as nurses should be trained to avoid future mistakes.
- Sufficient stock level for commonly used drugs should be maintained in Pharmacy to avoid dose delay.
- Nursing staff should maintain the medication card timely and should be updated timely this will reduce chances of errors.
- One Pharmacist is required in General Ward which will do work of indenting and Pharmacy return as nursing staff due to work overload causes delay in indenting of drugs through system .

Suggestions

- Developing mechanism for counterchecking the drug while indenting and administration
- Regular audits of medication errors done by pharmacist
- Patient Education

Conclusion

Improving patient safety in a hospital is a priority and for that the detection, correction and prevention of medication errors need to be addressed regularly.

It shows that each and every step of medication procedure has a challenge and requires careful monitoring which is possible only after awareness programs, training and education on medication errors to all health professionals.

Structured Checklist

Patient ID:	Inpatient Area:	
Process	**Criteria**	**Observation**
Prescription	Allergy	
	Ongoing medication	
	Wrong drug	
	Illegible writing	
	Dose	
	Route	
	Frequency (Dosage)	
	Dr. Sign/Name/Date/Time	
Indenting	Indent delay	
	Wrong Drug	
	Wrong Dose	
	Extra Indent	
Dispensing	Delay in Dispensing	
	Wrong Drug	
	Wrong Dose	
Administration	Without order	
	Sign	
	Countersign	
	Dose Miss	
	Dose delay	
	Wrong Drug	
	Wrong Dose	
	Pill/Vial count	

THANK YOU