AN OBSERVATIONAL STUDY ON MEDICATION ERROR IN FORTIS HIRANANDANI HOSPITAL, NAVI MUMBAI

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Background

- Medication Administration Error (MAE) is any preventable act that contributes to the failure of proper medication use in the treatment process resulting in harm for the patient to the extent of disability and death.
- It affects human relationships, threatens trust in the healthcare system as a whole, and can also destroy life.
- Globally, medication errors are leading causes of different injuries and avoidable harms in the health care system attributing to about 10% of the overall preventable harm for hospitalized patients.
- In 2017, World Health Organization reported that the annual global cost associated with medication errors has been estimated to reach US ($) 42 billion accounting for 0.7% of the total health expenditure.
- MAE is a global challenge and 18.7%-56% of hospitalized patients face medication administration errors and patients who faced this problem accounted for 60% to 80% in Australia and 64% in Nigeria
- Medication error, mainly the administration phase, is accounted to be the most common cause of disability and death throughout the world. t can also prolong patients' hospital stay resulting in increased healthcare costs for patients, families, and health professionals.

Introduction

National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) Defines medication error as “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.

It has also been defined as a reduction in the probability of treatment being timely and effective, or increase in risk of harm relating to medicines and prescribing compared with generally accepted practice.

Such events may be related to professional practise, healthcare products, procedures.

Medication Process

The medicine process consists of five steps: ordering, transcribing, preparing, administering, and monitoring. The clinical medicine usage process in the research department follows this five-step method, and errors can occur at any point.

Errors Occur due to following reasons:-

- Lack of knowledge
- Unclear or erroneous labelling of drug
- Misidentification of patient
- Mental lapses or
- Verification errors

Errors can be committed by both experienced and inexperienced staff, So continuous training is very important in order to reduce medication error.

Types of Medication Error:-

- **Prescription Error:-** Inappropriate medication, inappropriate dose, illegible order, duplicate order, order not dated/timed, wrong patient/chart selected, contradictions, verbal order misunderstood, verbal order not written in drug chart, wrong frequency, route, illegible writing, therapy duration, alert information bypassed or use of nonstandard nomenclature or abbreviations, incorrect allergy documentation or no documentation are all examples of prescription errors.
- **Transcription error:** - Orders that are manually copied onto manual records are subject to transcription errors. Transcription errors include incorrect medicine, time dose frequency, duration, rate patient/chart, misinterpretation of verbal directions, and verbal orders not placed into patient case sheet.
- **Dispensing error-** Incorrect labelling, improper quantity, drug, dose, diluents, formulation, expired medication, and pharmaceutical delivery delay are examples of preparation and distribution errors.
- **Indenting error:** - Error that happens during the indenting procedure.It comprises the incorrect medicine, strength, formulation, dose, method, and frequency.
- **Administration error:** - Administration errors include the following: wrong patient, dose time, medicine, route, rate, extravasation and unauthorised dose delivered, missing dose, and so on.

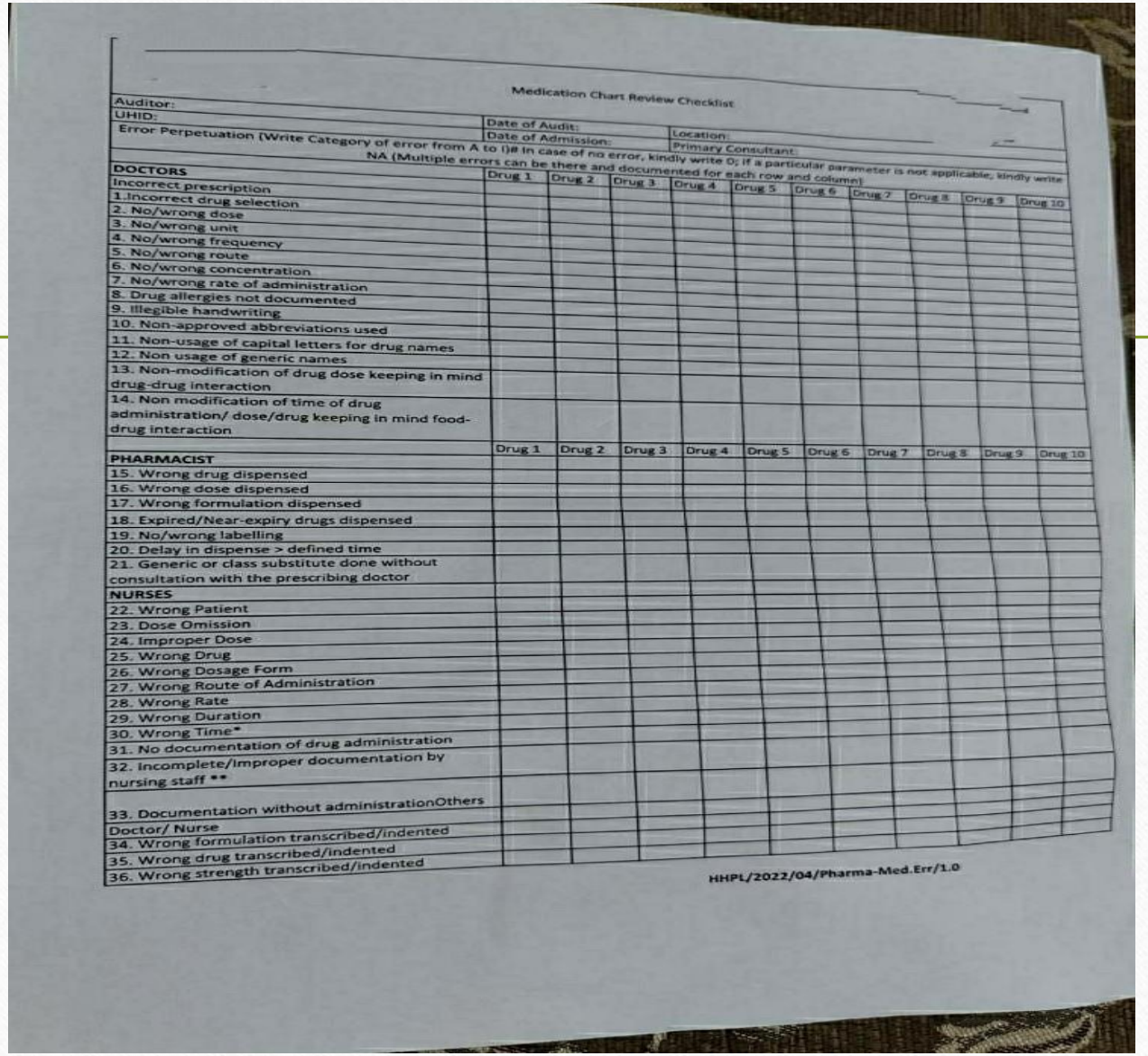
Categories of Medication Error

Level of Harm	Category of Error	Explanation of Events/error
No Error	Category A	Circumstances or events that have the capacity to cause error
Error,No Harm	Category B	An error occurred but the error did not reach the patient (An "error of omission" does reach the patient.)
	Category C	An error occurred that reached the patient, but did not caused patient harm
	Category D	An error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to patient and/or required intervention to preclude harm
Error,Harm	Category E	An error occurred that may have contributed to or resulted in temporary harm to the patient that required intervention
	Category F	An error occurred that may have contributed to or resulted in temporary harm to the patient that required initial or prolonged hospitalization
	Category G	An error occurred that may have contributed to or resulted in permanent patient harm
	Category H	An error occurred that required intervention necessary to sustain life
Error,Death	Category I	An error occurred that may have contributed to or resulted in patient's death.

Prescription Audit

- Prescription is a written medicolegal document by an authorized person for the treatment of the patient and is a reflection of the quality of health-care service being delivered to the patient.
- Irrational prescriptions unnecessarily increase the cost and duration of the treatment. Such practices also lead to the emergence of drug interactions, drug resistance, and adverse drug reactions. It ultimately increases the mortality, morbidity, and financial burden on the patient.
- Prescription audit is a part of the holistic clinical audit and is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change
- Audits were taken in IPD i.e., General wards, Twin wards, Deluxe rooms, MICU and SICU
- 10-15 audits were taken on daily basis
- OPD prescription audit

Audit form



Medication Chart Review Checklist

Auditor:
UHID:
Date of Audit:
Date of Admission:
Location:
Primary Consultant:

Error Perpetuation (Write Category of error from A to I)# In case of no error, kindly write 0; if a particular parameter is not applicable, kindly write NA (Multiple errors can be there and documented for each row and column)

DOCTORS	Drug 1	Drug 2	Drug 3	Drug 4	Drug 5	Drug 6	Drug 7	Drug 8	Drug 9	Drug 10
Incorrect prescription										
1.Incorrect drug selection										
2. No/wrong dose										
3. No/wrong unit										
4. No/wrong frequency										
5. No/wrong route										
6. No/wrong concentration										
7. No/wrong rate of administration										
8. Drug allergies not documented										
9. Illegible handwriting										
10. Non-approved abbreviations used										
11. Non-usage of capital letters for drug names										
12. Non usage of generic names										
13. Non-modification of drug dose keeping in mind drug-drug interaction										
14. Non modification of time of drug administration/ dose/drug keeping in mind food-drug interaction										

	Drug 1	Drug 2	Drug 3	Drug 4	Drug 5	Drug 6	Drug 7	Drug 8	Drug 9	Drug 10
PHARMACIST										
15. Wrong drug dispensed										
16. Wrong dose dispensed										
17. Wrong formulation dispensed										
18. Expired/Near-expiry drugs dispensed										
19. No/wrong labelling										
20. Delay in dispense > defined time										
21. Generic or class substitute done without consultation with the prescribing doctor										
NURSES										
22. Wrong Patient										
23. Dose Omission										
24. Improper Dose										
25. Wrong Drug										
26. Wrong Dosage Form										
27. Wrong Route of Administration										
28. Wrong Rate										
29. Wrong Duration										
30. Wrong Time*										
31. No documentation of drug administration										
32. Incomplete/Improper documentation by nursing staff **										
33. Documentation without administrationOthers										
Doctor/ Nurse										
34. Wrong formulation transcribed/indented										
35. Wrong drug transcribed/indented										
36. Wrong strength transcribed/indented										

HHPL/2022/04/Pharma-Med.Err/1.0

Aims and Objectives

Aim:-To study rational use of drugs in Fortis Hiranandani Hospital ,Navi Mumbai

Objectives:-

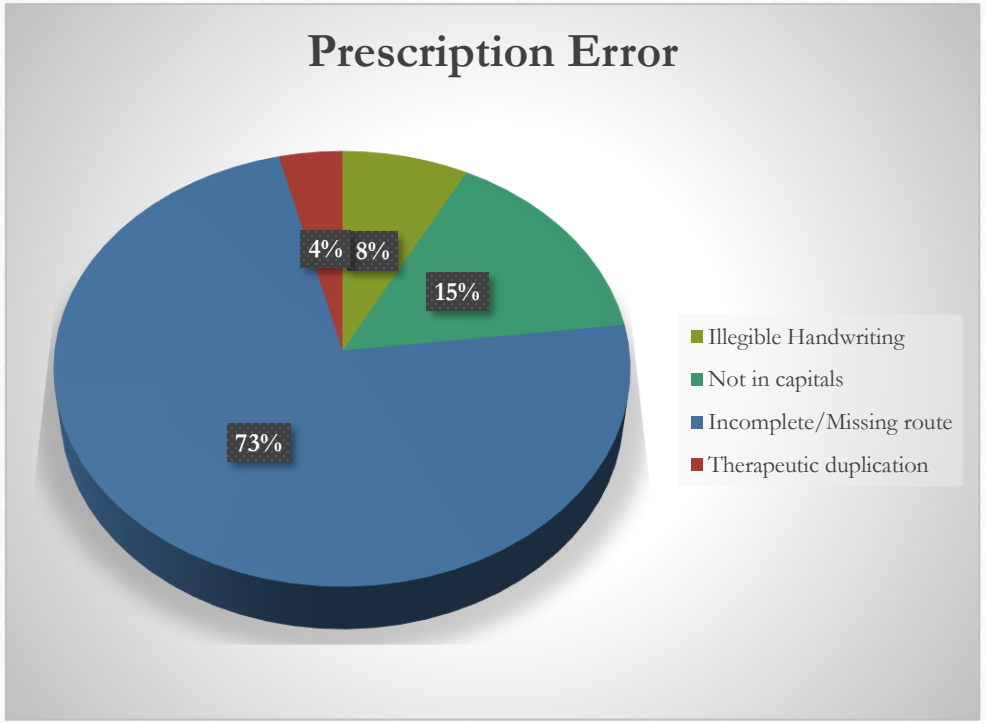
- To enhance patient safety and improve quality of life.
- To study adverse health outcome arising out of drug-to-drug interaction.
- To find out nature and types of medication errors
- To create awareness among healthcare professional about medication errors.

Methodology

- **Study setting**: In-Patient Department at Fortis Hiranandani Hospital, Navi Mumbai
- **Type of Study:** Secondary Data Research
- **Sources of Data: -**
- Secondary Data: - Data was obtained from Patients File who were under medication.
- **Study of Population:** IPD Patients at General Ward, Deluxe/Exclusive, Sharing Ward, SICU, MICU
  - Inclusion Criteria: Patients who are under medication.
  - Exclusion Criteria: Emergency/Casualty and Day Care patients
  - Study Tools: Medication Error Audit Checklist developed by hospital.
- **Sample Size**: 750 audits during internship period
- **Research Area**: Fortis Hiranandani Hospital, Navi Mumbai

Findings

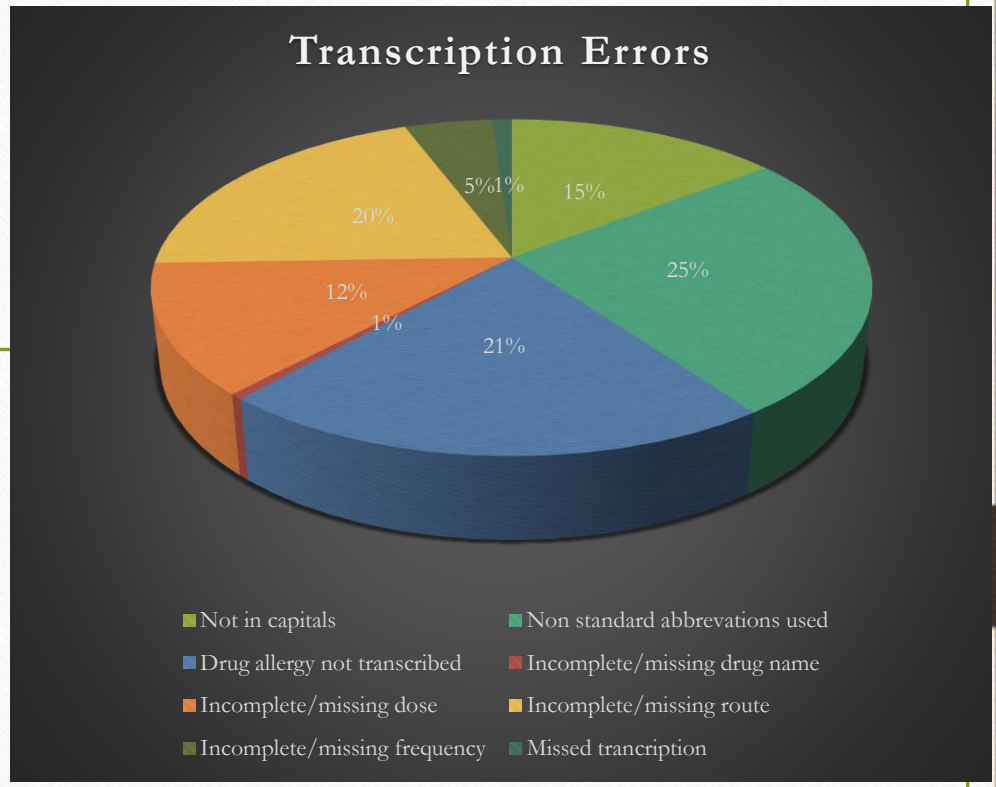
- Audits were taken in SICU, MICU, general wards, twin sharing, Deluxe rooms. We also used to check the bedside medication as per the drug chart of the patients. A total of 750 audits were taken including all the departments. The errors found out during internship tenure are depicted below in the form of pie chart.



Interpretation:-

- The most common error was an incomplete/missing route, which accounted for 73% of all errors.
- The graph reveals that 15% of the errors were not in caps.
- 8% of errors were caused by illegible handwriting.
- The therapeutic duplication mistake accounted for 4% of the total.

- The most common error was for non-standard abbreviations used in patient drug chart while writing prescription by the doctors and it accounted for 25%
- The second highest error was recorded for drug allergies which were not mentioned in patients drug chart, and it accounted for 21%
- 20% error were of incomplete or missing route
- The graph reveals that 15% errors were not in caps
- 12% errors were of incomplete/missing dose
- The graph shows that 5% errors were of incomplete/missing frequency
- Minimum percentage of error was for missed transcription and incomplete /missing drug name and it accounted 1% for both



Medication Errors

Medication Error	Total	Reached	Not Reached
March	4	4	-
April	55	2	53
May	77	2	75

Errors in March 2023

Sr.No.	Brief about Error	Details of harm, if caused	Error Category	Actions
1.	Tab Azee 500mg was prescribed by the doctor for 5 days but the staff administered the tablet for 6 days	No harm to the patient	C	Trained the staff on following the correct duration of antibiotics
2.	Tab Brilinta 90mg 2 tab stat at 11 am was prescribed but it was not administered as per orders. Evening staff signed the drug chart when medicine was not available on bedside.The medication was administered after 5 pm	No harm to the patient	C	Trained the staff to follow doctors order correctly and importance of STAT orders
3.	Inj. Targocid OD single dose was prescribed but the duration of medicine was not mentioned on notes and same was transcribed on drug chart and staff administered the dose as per drug chart . Post surgery only single dose was to be administered but it was continued for 4 days more	No harm to the patient	C	Trained the doctors to write orders properly with correct instructions

Errors in April 2023

Sr.No.	Brief about Error	Details of harm, if caused	Error Category	Actions
1.	Patient was Advised to continue Glyciphage 500mg but staff intended and administered Gycomet GP 500mg for 2 days. Patient shifted to twin ward and 1 dose of wrong medicine was given, error was identified and rectified by intending the correct medicine	No harm to the patient	C	Trained the staff to check medicine properly before administration and to utilize all possible opportunities to avoid medication error
2.	Patient was advised to continue own medication as per progress notes. On medication history, it was documented as Telmisartan + Amlodipin 40 mg. On drug chart it was documented as Telma 40 mg and same has been administered	No harm to the patient	C	Spoke the consultant, rechecked the vitals and advised to continue Tab Telma 40 mg as there was no fluctuation on BP

Errors in May 2023

Sr.No.	Brief about Error	Details of harm, if caused	Error Category	Actions
1.	Patient was newly diagnosed with Hypothyrodism in ICU and started Tab Thyronorm 25 mg. After step down in general ward the RMO failed to transcribe the drug name in the drug chart so 3 days dose was missed	No harm to the patient	C	Informed the RMO about the error and trained accordingly
2.	Patient was advised Tab Clopitab 150mg STAT in ER by the doctor. Instead, the staff administered the patient with Tab (Clopidogrel + aspirin) from the ward stock	No harm to the patient	C	Informed the staff to check the medication properly before administration
3.	Patient was having low sodium level, so he was administered sodium supplement, but even after sodium level came to normal, he was administered it for 4 more days	No harm to patient	C	Informed the consultant about the same and told to crosscheck with the laboratory reports continuously

Conclusion

- Transcription errors account for most errors, followed by prescription and administration problems. The most common causes of prescription and transcription errors are incomplete prescriptions and overwriting on prescriptions. By conducting various medication audits, clinical chemists can play a vital role in addressing drug mistake. Consultants must be more cautious while prescribing and reviewing prescription charts. Medication errors are common, yet they are underreported. There must be strict protocols and procedures in place for reporting and responding to drug errors.
- Computerising the medication process system in the hospital context, as well as pharmacological education for prescribers and nurses, could help to reduce medication mistake. Furthermore, drug usage policies should be created and maintained in order to decrease inappropriate drug use.

Suggestions and Recommendations

- Training must be provided to healthcare providers to avoid medication errors.
- CME (Continuing Medical Education) must be provided to nursing staff, and it should be continuously monitored by experienced nursing staff.
- Taking proper root cause analysis for medication errors can help in reducing them as well as help in identifying the department with most patient safety concerns.
- The errors encountered should be addressed and action should be taken against it.
- Bar code medication can be used for dispensing and administration.

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Thank you!