

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



The IIHMR University, Jaipur

for the partial fulfilment for the award of the
degree of Master of Business Administration

(MBA)

in

Hospital and Health Management

By

Manisha Sharma

IIHMR-U/01/2021-23/1316

Under the Supervision and Guidance of

Ashish Bandhu, Assistant Professor

IIHMR University

May 2023

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled “An observational Study on medication error in fortis Hiranandani Hospital, Navi Mumbai” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Manisha Sharma

Date: -6/06/2023

CERTIFICATE

This is to certify that Manisha Sharma in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her/his internship at Fortis Hiranandani Hospital during February 23- May 19, 2023.

Place:

Preceptor/Head of Organization

Date:

Poonam Kanaskar

CERTIFICATE

This is to certify that dissertation titled “**An observational study on medication error in Fortis Hiranandani Hospital, Navi Mumbai**” is a record of the research work undertaken by Manisha Sharma in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

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Date:-

School Dean

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Date:-

INTERNSHIP CERTIFICATE

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17th May 2023

To Whomsoever It May Concern

This is to certify that, **Ms. Manisha Sharma** has successfully completed her internship program in **Quality Department** in our organization from 23rd February 2023 to 15th May 2023.

During the period of her internship programmed with us, she was found punctual, hardworking & inquisitive.

We wish her all the best in her future endeavors.

For Hiranandani Healthcare Pvt. Ltd.


Albin John
Unit Head - HR



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I would be failing to my duty if I do not acknowledge with a deep sense of gratitude the sacrifices made by my parents and thus have helped me in completing my project work successfully.

Place: Navi Mumbai

Date: \ \

Ms. Manisha Sharma

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Chapter 1: Introduction to project

Introduction

Medication Error

NCCMERP (National Coordinating Council for Medication Error Reporting and Prevention) 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.

Drug use is a complex process with numerous drug related issues involving doctors, chemists, nurses, and patients at various levels. Mistakes can happen everywhere in healthcare systems, and many of them are avoidable.

An observational study on finding out medication errors of patients who have been admitted to the hospital. “Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient or consumer” is called medication error. These incidents may be associated to professional practice, procedures, and systems such as prescribing, order communication, product labelling, product packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use. The main aim of the study is to track the nature and types of prescription, transcription, indenting, storage errors, and to study occurrence of drug-drug interaction of the medication.

Administering drug is one of the basic roles of nursing staff of the wards and errors occurring due to lack of experience and knowledge about drug administration are one of the worst errors among nurses causing unfavorable outcome for patients. A variety of documentation, including admission notes, progress notes, physician orders, nursing notes, laboratory and imaging reports, medication records are routinely examined by the reviewer throughout the process. The goal of this study is to guarantee that medications are used appropriately in hospitals. WHO's position is that the rational use of medications implies that the patient will get a treatment which is suitable for his medical state, right dose, right route and at right time, taking into consideration whole cost of therapy. In India, research in Uttarakhand and Karnataka found that the medication mistake rate among hospitalized patients was as high as 25.7% and 15.34%, respectively. Any incidence that can be prevented and that has ability to contribute to inappropriate pharmaceutical use or harm to the patient while the medicine is under the control of doctors/nurses/consultants is characterized as a pharmaceutical error.

As a result, the study's goal is to find solutions to avoid drug errors in hospitals. By creating technical techniques, healthcare providers with a professional mindset towards control systems such as validation can reduce the chances of occurrence of medication errors.

1.1.Types of Medication Error:-

1. **Prescription Error:** - Incorrect drug selection, wrong dose, wrong frequency, wrong route, wrong rate of administration, drug allergies not documented, Illegible handwriting, non-usage of capital letters for drug names, non-usage of generic names, non- modification of drug dose keeping in mind drug-drug interaction, non-approved abbreviations used, non-modification of time of drug administration/dose/drug keeping in mind food-drug interaction are examples of prescription error.
2. **Transcription error:** - Orders that are manually copied onto manual records are subject to transcription errors. Transcription errors comprises of incorrect medicine, incorrect time, inappropriate dose frequency, duration, rate patient/chart, misinterpretation of verbal directions, and telephonic/verbal orders not transcribed properly in patient file as well as in his medication chart.
3. **Dispensing error-** Incorrect labelling, improper quantity, drug, dose, diluents, formulation, expired medication, and pharmaceutical delivery delay are examples of preparation and distribution errors.
4. **Indenting error:** - Error that happens during the indenting procedure. It comprises the incorrect medicine, strength, formulation, dose, method, and frequency.
5. **Administration error:** - Administration errors comprise of the following: wrong patient, wrong dose time, incorrect medicine, missing route, rate, and unauthorized dose delivered, missing dose, and so on.

Medication Process and Definition

The medicine process consists of five steps: transcribing, ordering, preparation, administration, and monitoring of drugs. The medicine usage process in the hospital follows this five-step method, and all phases except ordering are handled by registered nurses in hospital.

Nurses review the physician ordering sheet, copy the medication orders of physicians into patient's medication chart, prepare the medicine based on the instructions of physicians, deliver the medicines, and evaluate patient's effects after doctor orders a medication regimen for a patient.

Categories of medication errors: -

- **Incorrect order:**

Any prescription that is unreadable, partial (missing dosage, drug name, or planned administration technique), or incorrect (wrong drug composition, combination drugs, incorrect dosage) If a nurse identifies an error related to any of this, she must double-check the order with the concerned physician.

- **Incorrect Transcription:**

A medication order transcribed incorrectly in patient drug chart from physician order sheet by Registered medical officer/ Registered nurse.

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- **Incorrect administration:**

Any medication administration that does not adhere with the standard proposed by authorized body or violates the rights of patients. Before administration the staff should check for correct patient, correct medicine, correct dose, route and time to avoid any adverse reaction.

1.2. Categories of Medication Error

Level of Harm	Category of Errors	Explanation of Adverse events/errors
No Error to the patient	A	Situations or patient condition that have the ability to produce inaccuracy
Error, But No Harm to the patient	B	A mistake that has been occurred, but it did not reach the patient (An “error of omission” does reach the patient.)
	C	Wrong Medication administered to the patient but did not cause any harm
	D	An error happened that reached the patient and necessitated monitoring to ensure that no harm was done to the patient and/or intervention to avoid harm.
Error/Harm to the patient	E	An error that took place and may have contributed to or resulted in the patient's temporary injury, necessitating action.
	F	An error happened, which may have contributed to or resulted in the patient's temporary injury, necessitating initial or protracted hospitalization.
	G	An error happened, which could have contributed to or resulted in long-term or permanent patient harm.
	H	An error happened, necessitating the intervention required to maintain life.
Error/Death of patient	I	An error happened, which may have contributed to or resulted in the death of the patient.

1.3.Policy

- Only registered/credentialed physicians have the authority to provide medication orders.
- All medical practitioners must utilize standard prescription format when prescribing pharmaceuticals to patients, and each prescription must include the medical practitioner's name, date, and signature. It is advised that the prescription sheet bear the medical practitioner's stamp.
- In inpatients, each prescription entry must be signed, named, timed, and dated by the ordering physician; in the event of an oral order, the junior doctor must write the physician's name and have it countersigned by the senior doctor within 12 hours.
- All medication errors must be documented in the register maintained for recording errors by a certified Medical Practitioner who has been identified and authorized by hospital management.
- Every patient should have unique prescription sheet.
- All prescriptions should be written in prescription form by the doctors as well as in patient file also.
- The concerned doctors name and signature along with date should be compulsorily mentioned in prescription with ability to read it.
- The route, dose, timing, and frequency of administration of the medicine must be specified in the prescription.
- Patient record should facilitate and reflect drug administration and care coordination.
- Before dispensing drugs, the medical practitioner shall check that the prescription is readable, and the concerned pharmacist should settle any wrong or incorrect prescriptions received with the consulting doctor/physician responsible.
- Only medication shall be dispensed once the prescription has been written by a licensed chemist and checked for completeness.
- Abbreviations must not be used to avoid misunderstandings. For example, "Units" must be spelled completely and not reduced to "U"
- When the physician is unavailable to prescribe the medication and delay in it will result in deterioration of patient health, only then the verbal orders shall be used. Efforts will be made to reduce the suffering of patient which will ultimately help in recovery.
- In an emergency circumstance, the treating consultant issues a verbal order. The concerned staff must adhere to the read back policy. This must be preceded by a written directive and confirmation by the physician who has prescribed, and it must be countersigned by the RMO within 12 hours.

1.4. Procedure for Identification of Medication Error: -

During their hospital stay, inpatients who are given various drugs must be monitored. This is especially important for patients receiving therapy in intensive care units. Certain medications might have dangerous side effects which are not visible at that point of time but can be seen later. Patients who have a history of drug allergies must be tracked down. If medications are known to cause allergic responses, they should be used with caution. A small dosage of medicine is administered intradermally and timed; if any allergy from medicine is detected, the major dose is withheld, and the physician is notified about the same. Drug responses causing cardiac, neurological, pulmonary, cutaneous, and other adverse effects must be diagnosed as soon as possible, and the responsible doctor must be informed, and corrective action followed. The nurses in charge should record all events and acts on the case sheet of patient along with sign and date. Whenever wrong prescriptions are given to a patient or nursing staff fails to follow drug administration instructions, the medical superintendent or nursing supervisor must be notified, and necessary investigations must begin. When intravenous (I.V) drugs are administered, a nurse must be present to monitor the patient's progress and note any unusual adverse effects. The treating nurse will start and stop I.V medicine, and the specifics will be written on the case sheet on patient with a sign, date, and time. After treatment, the nurse should keep track of patient's well-being and ensure that everything is operating smoothly.

1.5. Procedure for identification and reporting of ADR (Adverse Drug Reaction) –

Staff nurse who had identified drug reaction will have to immediately report to RMO and consulting physician and corrective measures are taken immediately to reduce patients' sufferings. At the end of shift of nurse who had identified ADR will have to fill ADR form which is available in all the departments. It should be handed over to Chief nursing office via nursing supervisor.

Adverse medication occurrences must be recorded and analyzed. ADRs should be reported and evaluated at relevant pharmacy and Therapeutic Committee meetings. The committee will then analyze these events to determine the likely cause and advise and implement preventative actions in the future. When undesirable trends emerge, policies are amended to reduce adverse drug occurrences. Labels, packets of medicine, empty vials from which an adverse drug reaction occurred must be secured and given to the committee by the on-duty staff nurse. Also, doctors and primary consultants should be informed about this to take actions against adverse reaction.

Adverse drug reaction/Adverse Events

An adverse drug reaction/event is described as "any abnormal sign, symptom, or laboratory test, or any syndromic combination of such abnormalities," "any undesirable or unexpected occurrence (e.g., an accident or an unwanted pregnancy)," "any unexpected deterioration in a concurrent illness. "An adverse drug response (ADR) may occur if an individual experiences an undesirable occurrence while taking a drug. The term 'adverse drug reaction is occasionally used to explain that, however it is not a good choice and it should be avoided. If an allergic reaction is not caused by medicine, it is labelled as such; if it could be caused by a medication, it is labelled as a suspected ADR.

Prescribing /Prescription errors

Prescription errors include irrational prescribing, improper prescribing, in-effective prescribing, under-prescribing, over-prescribing, and prescription transcribing errors. The term "mistake" clearly does not encompass all of these. There are two forms of errors: prescription an anticoagulant to a patient who does not need it (under-prescribing) and prescribing one to a patient who does not need it (over-prescribing). As a result, the preferred terms are "prescribing errors" and "prescribing flaws." The word 'prescribing errors' is misleading because it includes both groups.

1.6. 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.



Chapter 2: Review of Literature

Sr. No.	Study	Authors	Year of study	Sample Size	Salient Features
1.	A study on medication error in tertiary care hospital	Nrupal Patel, Mira Desai, Samidh Shah, Prakruti Patel, Anuradha Gandhi	October - December 2016	1109 Patients	To find the burden of morbidity and mortality rate among Inpatient department occurring due to medication errors
2.	Medication Error: A focus on nursing practice	Nasr Alrabadi, Razan Haddad, Rana Abu Farha, Tareq Mukattash	March 2021	-	Focus on nursing activities and factors related to occurrence of errors due to lack of their knowledge and training
3.	Errors in a Swiss Cardiovascular Surgery Department: A Cross-sectional study based on a novel Medication Report Method	Kaspar Kung, Thierry Carrel, Brigitte Wittwer, Sandra Engberg, Natalie Zimmermann, Rene Schwendimann	January 2013	60 patients	This was the first study in Swiss cardiovascular hospital setting record medication errors with new reporting method. Medication omission errors and administering unauthorized drugs were not captured by medication error self-reporting tool
4.	A study on prevalence of medication error in multispecialty hospital	M. Bothiraj, M. Alagusudaram, K.B.C. Shekhar	January 2020	100 prescriptions	The study suggests perpetual inculcation and training programs to be conducted to incorporate cognizance and practice inputs of medicos, nurses, and pharmacists.
5.	Preventing the medication errors in hospital, A qualitative study	Alireza Salar, Fatemi Kiani, Nasrin Rezaee	April 2020	16 nurses and 1 Physician	The study demonstrated that having clinical abilities and knowledge more effectively reduces medication mistakes thus y improving quality of care.
6.	Medication Error and consequences	S.P Srinivas Nayak, Asma Fatima, Syed Shoib Hussain, Suhail Syed	April 2021	50 pharmacists	The consequences of medication errors arising out of allergic condition, drug-drug interaction, over-medication, under-medication
7.	Medication Administration and associated factors among nurses	Dejene Tsegaye, Girma Alem, Zenaw Tessema,	December 2022	422 Patients	Study shows that medication error was most practiced at referral hospital ,thus doctors and nurses should study the

		Wubet Alebachew			patient history properly before starting the treatment
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Chapter 3: 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

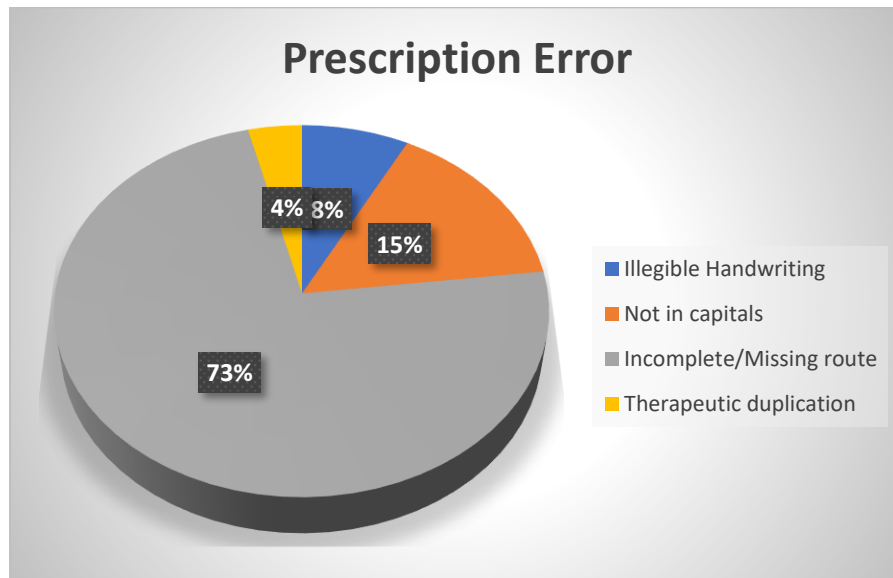
- Inclusion Criteria: Patients who are under medication.
- Exclusion Criteria: Emergency/Casualty and Day Care patients
- Study Tools: Medication Error Audit Checklist developed by hospital.

Sample Size: 750 audits during internship period

Research Area: Fortis Hiranandani Hospital, Navi Mumbai

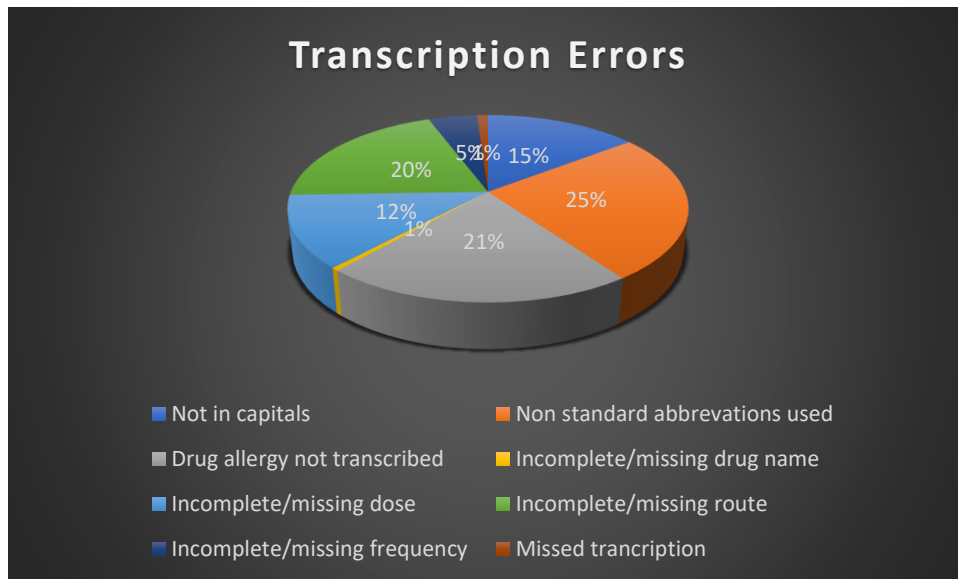
Chapter 4: Results

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 per day. The errors found 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.



Interpretation:-

- 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

Summary of Medication error During internship period

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

- We also found **1 indenting error** and **1 dispensing error** during the study

The following table shows the summary of errors which was observed during the study:-

1.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

2.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

3.Errors in May 2023

Sr.No.	Brief about Error	Details of harm, if caused	Error Category	Actions
1.	Patient was newly diagnosed with Hypothyroidism 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

4.Storage Error found during the study

Sr.No.	Drug Name	Description	Category	Corrective Action
1.	CUDO FORTE	Cudo forte needs to be stored in refrigerator at 2-8 C, was found in patient bedside drawer	B	Informed to the staff and rectified. Training given to nursing staff
2.	EVPROCOP FORTE CAP	Evprocop forte needs to be stored in refrigerator at 2-8 C, was found in patient bedside drawer	C	Informed to the staff and rectified. Training given to nursing staff
3.	NEB FORACORT	Fortcort needs to be stored in refrigerator at 2-8 C, was found in patient bedside drawer	C	Informed to the staff and rectified. Training given to nursing staff

Adverse Drug Reactions encountered during study

- 1. Suspected Adverse Reaction:-** The patient was administered Inj. C-Let 1g. The test dose was given at 7.50 pm for which no reaction was observed. The full dose was started at 8.05 pm . After completion of the half vial the patient complained of itching all over the body due to which the medication was immediately stopped after informing the RMO and consultant.

Date of reaction:-28-3-23

Suspected Medication:-Injection C-let 1g (Ceftriaxome)

Manufacturer:-Emcure Pharmaceutical

Date of Expiry:-9/24

Route use:-IV

Dose:-1g

Frequency:-1-0-1

Therapy start date:-28-3-23

Therapy end date:-28-3-23

Action taken:-Stopped drug immediately Inj.Avil, Inj Effcorlin 100mg given STAT and Tab Allegra 120 mg SOS

Remarks:-P/H/O MRSA + debriment and SSG done over the lower left thigh

2.Suspected Adverse Reaction:- The patient was administered Inj. Feringect 1g, STAT. On giving the dose, no reaction was seen .Full dose started at 2pm. After half dose patient complained of itching at 4.30 pm

Date of reaction:-23-4-23

Suspected Medication:-Injection Ferinject 1g

Manufacturer:-Emcure Pharmaceutical

Date of Expiry:-5/25

Route use:-IV

Dose:-1g

Frequency:-STAT

Therapy start date:-23-4-23

Therapy end date:-23-4-23

Action taken:-Inj. Avil 2ml in 100ml NS was given STAT

Remarks:-Hb:5.8. Total iron binding saturation:2% count: 2:7

Chapter 5: Discussion

MEs are thought to cause substantial health issues in hospitalised patients, resulting in significant morbidity and mortality. The study found that majority errors were prescription errors, followed by transcription errors, storage difficulties, and drug administration errors. All drugs were prescribed by doctors and recorded by RMOs. With use of modern techniques to enter physician order in system with a barcode on it, drug administration record could be handled effectively thus by decreasing ordering and transcription errors. This indicated a direct link between prescription errors and the likelihood for drug administration errors.

Medication administration is one of the actions that has a significant impact on patients' therapy, however medication errors do occur. Because nurses are responsible for medicine administration, preventive strategies should be implemented for the errors reported. One of the most important preventive interventions identified in this study to avoid medication errors was nurses acting professionally. Reading pharmaceutical instructions, following errors, nurses' awareness of medication errors, legal difficulties, continuous training concerning medication processes, and precision were all identified as professional functioning aspects.

Quality team and clinical pharmacist can assist nurses in reducing medication errors and reporting more erroneous events by teaching and continuously training them, ensuring a safe environment for providing quality services to the patients.

Another finding of the current study was the presentation of technical strategies to reduce medication errors, such as labelling LASA drugs, high-alert medication, narcotic drugs, separating medications from one another, being aware of hospital formulary and restricted antibiotics, using trained nurses to administer drugs, and attending training programs in order to reduce medication errors.

The key points made by nurses in the study were their lack of understanding of a new medicine, new prescription technique, storage, and handling techniques of medicines. This supports the study's findings that clinical errors are caused by a lack of knowledge and awareness. Nurses who are unfamiliar with new rules and regulation or hospital formulary will be unable to prevent pharmaceutical errors purely on the basis of their out-of-date academic knowledge; therefore, they must regularly update their pharmacological understanding.

Medication error's purpose is to accomplish a defined treatment outcome while improving quality of life and minimising patient risk. The error can occur at any point during the therapy process. It increases morbidity and mortality in the population, as well as the expense of treatment. It also has an impact on patients' trust in medical care. As a result, effective solutions for reducing medication errors in hospitals should be developed, thereby increasing treatment quality and lowering morbidity and death rates.

Chapter 6: Conclusion

Conclusion

The study demonstrates the occurrence of medication/prescription errors at any phase of the medication cycle. Patient comes to hospital to get rid of his sufferings and for getting cured he needs to undergo many processes amongst which the most important one is taking medicines. As the graph shows that the highest error rate accounted for incomplete/missing route, so hospital should make strategies to minimize it. So, it is important to train the clinical staff to reduce medication error. Nowadays, hospitals use a variety of advanced technologies to decrease drug errors. Computerising the medication process in the healthcare setting, as well as continuous medical education for doctors, consultants and nurses, can help in decreasing medication errors. Furthermore, hospital formulary usage policies should be created and maintained in order to decrease the inappropriate drug use.

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.

Chapter 7: Suggestion and Recommendation

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.

Bibliography

1. Patel N, Desai M, Shah S, Patel P, Gandhi A. A study of medication errors in a tertiary care hospital. *Perspect Clin Res*. 2016;7(4):168.
2. Tsegaye D, Alem G, Tessema Z, Alebachew W. Medication Administration Errors and Associated Factors Among Nurses. *IJGM*. 2020 Dec;Volume 13:1621–32.
3. Asma Fatima SSH. MEDICATION ERRORS AND CONSEQUENCES. 2021 May 3 [cited 2023 May 27]; Available from: <https://zenodo.org/record/4733916>
4. Küng K, Carrel T, Wittwer B, Engberg S, Zimmermann N, Schwendimann R. Medication Errors in a Swiss Cardiovascular Surgery Department: A Cross-Sectional Study Based on a Novel Medication Error Report Method. *Nursing Research and Practice*. 2013;2013:1–6.
5. Alrabadi N, Shawagfeh S, Haddad R, Mukattash T, Abuhammad S, Al-rabadi D, et al. Medication errors: a focus on nursing practice. *Journal of Pharmaceutical Health Services Research*. 2021 Feb 23;12(1):78–86.
6. Salar A, Kiani F, Rezaee N. Preventing the medication errors in hospitals: A qualitative study. *International Journal of Africa Nursing Sciences*. 2020;13:100235.
7. Patel G, Kane-Gill S. Medication Error Analysis: A Systematic Approach. *CDS*. 2010 Jan 1;5(1):2–5.

Webliography

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079090/>
- <https://www.who.int/activities/promoting-rational-use-of-medicines/>
- [https://academic.oup.com/jphsr/article/12/1/78/6065944?login=false\](https://academic.oup.com/jphsr/article/12/1/78/6065944?login=false)
- <https://ijpsr.com/bft-article/a-study-on-prevalence-of-medication-errors-in-a-multispecialty-hospital/>
- <https://www.hindawi.com/journals/nrp/2013/671820/>
- <https://www.sciencedirect.com/science/article/pii/S2214139120301128>
- <https://academic.oup.com/intqhc/article/33/1/mzaa136/5925732>
- [https://www.researchgate.net/publication/353555068 MEDICATION_ERRORS AND CONSEQUENCES](https://www.researchgate.net/publication/353555068_MEDICATION_ERRORS_AND_CONSEQUENCES)
- <https://www.tandfonline.com/doi/full/10.2147/IJGM.S289452>

Annexure

1.Audit Form

Medication Chart Review Checklist										
Auditor:		Date of Audit:		Location:						
UHID:		Date of Admission:		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										
PHARMACIST	Drug 1	Drug 2	Drug 3	Drug 4	Drug 5	Drug 6	Drug 7	Drug 8	Drug 9	Drug 10
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 administration Others										
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

2. Medication Error reporting form:

AFFIX PATIENT STICKER HERE

Hospital

MEDICATION ERROR REPORTING FORM

1) Name of patient involved: _____ UHID/IPD No.: _____ Date: _____
Unit: _____ Shift (M/E/N): _____

2) Name of the Drug: _____

3) Category of error. Tick (✓) as appropriate.
Potential error (A B not for reporting in CESC) Actual error : C D E F G H I

4) Employee category. Tick (✓) as appropriate.
a) Doctor b) Staff Nurse c) Pharmacist d) Any Other _____

5) Location of medication error. Tick (✓) as appropriate.
a) Patients Room b) Wards c) ICU d) IP Pharmacy e) ER f) ot g) Any other _____

6) Type of error -

I. Prescription errors :

- a) Drug allergies not identified
- b) Prescribed in illegible handwriting
- c) Incomplete prescription

II. Transcription Error :

- a) Wrong drug
- b) Wrong dose
- c) Wrong route
- d) Wrong frequency
- e) Missed transcription
- f) Any other _____

III. Non-Compliance in drug administration :

- a) Wrong Patient
- b) Wrong Drug
- c) Wrong Time
- d) Wrong Dose
- e) Wrong Route
- f) Wrong Frequency
- g) Missed Dose
- h) Expired Drug

IV. Documentation Error :

- a) Documented before administration of drug
- b) No documentation

V. Drug Monitoring Error :

- a) Insulin / Conc. KCL / Conscious sedation not monitored

VI. Dispensing Error :

- a) Wrong drug dispensed from pharmacy
- b) Wrong dose dispensed from pharmacy
- c) Expired drug dispensed

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Factors Leading to Error

Human Error

- a) New Nurse / New Doctor
- b) Possible carelessness

Process Deficiency

- a) Drug received late from Pharmacy
- b) Expiry not checked by pharmacist / Nurse
- c) Drug storage inappropriate
- d) Drug labeling inappropriate
- e) Any other _____

Human Resource Issue

- a) Training requirement
- b) Inadequate staffing
- c) Poor performance of staff not addressed

Information Issues

- a) Clean written instructions not-available in progress notes
- b) Improper handover given
- c) Verbal order not documented on file

Environmental Issues

- a) Improper working environment for Nurse / Junior Doctor / Pharmacist

Brief description of the incident :

RCA Required

☐

RCA Not Required

☐

Name of Auditor : _____ Designation : _____

Signature : _____ Date: _____ Time: _____

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3. Suspected ADR Form

SUSPECTED ADVERSE DRUG REACTION REPORTING FORM For VOLUNTARY reporting of Adverse Drug Reactions by healthcare professionals										
INDIAN PHARMACOPOEIA COMMISSION (National Coordination Centre-Pharmacovigilance Programme of India) Ministry of Health & Family Welfare Government of India Sector-23, Raj Nagar, Ghaziabad-201002 www.ipc.nic.in						(AMC/ NCC Use only) AMC Report No. _____ Worldwide Unique _____				
A. PATIENT INFORMATION						12. Relevant tests / laboratory data with dates				
1. Patient Initials _____		2. Age at time of Event or date of birth _____		3. Sex ☐ M ☐ F						
				4. Weight _____ Kgs						
B. SUSPECTED ADVERSE REACTION						13. Other relevant history including pre-existing medical conditions (e.g. allergies, race, pregnancy, smoking, alcohol use, hepatic/ renal dysfunction etc)				
5. Date of reaction started (dd/mm/yyyy)										
6. Date of recovery (dd/mm/yyyy)										
7. Describe reaction or problem										
						14. Seriousness of the reaction				
						☐ Death (dd/mm/yyyy) ☐ Congenital anomaly ☐ Life threatening ☐ Required intervention to prevent permanent impairment / damage ☐ Hospitalization/prolonged ☐ Disability ☐ Other (specify) _____				
						15. Outcomes				
						☐ Fatal ☐ Recovering ☐ Unknown ☐ Continuing ☐ Recovered ☐ Other (specify) _____				
C. SUSPECTED MEDICATION(S)										
S.No	8. Name (brand and /or generic name)	Manufacturer (if known)	Batch No. / Lot No. (if known)	Exp. Date (if known)	Dose used	Route used	Frequency	Therapy dates (if known, give duration)		Reason for use of prescribed for
								Date started	Date stopped	
i.										
ii.										
iii.										
iv.										
S.No As per C	9. Reaction abated after drug stopped or dose reduced					10. Reaction reappeared after reintroduction				
	Yes	No	Unknown	NA	Reduced dose	Yes	No	Unknown	NA	If reintroduced dose
i.										
ii.										
iii.										
iv.										
11. Concomitant medical product including self medication and herbal remedies with therapy dates (exclude those used to treat reaction)						D. REPORTER (see confidentiality section on first page)				
						16. Name and Professional Address : _____				
						Pin code: _____ E-mail: _____				
						Tel. No. (with STD code): _____				
						Occupation: _____ Signature: _____				
17. Causality Assessment						18. Date of this report (dd/mm/yyyy)				