Chapter 10

MEDICATION ERROR

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DEFINITION

The national co-ordinating council for medication error reporting and prevention [NCCMERP] defines a medication error as follows;

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 professionals, patient or consumer. Such events may be related to professionals, health care products, procedure and systems, including prescribing, order communication, product labeling, dispensing, distribution, administration, education, monitoring and use.
According to ASHP (American Society of Hospital Pharmacist) guidelines, medication error can be categorized into 11 types:

1. Prescribing error
2. Omission error
3. Improper dose error
4. Unauthorized drug error
5. Deteriorated drug error
6. wrong time error
7. wrong dosage form error
8. wrong drug preparation error
9. wrong administration technique error
10. monitoring error
11. compliance error
1. PRESCRIBING ERROR

- A prescribing error occurs at the time a prescriber orders a drug for a specific patient.
- Error may include the selection of an incorrect dose, dosage form, route of administration, length of therapy or number of doses.
- For example:
  - Amoxicillin 250 mg PO TID may be appropriate to treat a middle ear infection in 5 yr old child but would be too high a dose for 12 month old infant & thus would be considered as prescribing error.
2. **Omission error**

- Failure to administer an ordered dose to a patient in a hospital, nursing home, or other facility before the next scheduled dose is considered as an omission error.
- Omission is not an error
- If there is any medical reason
- When patient cannot take anything by mouth (NPO) prior to a procedure or
- Patient refuses to take them.
3. IMPROPER DOSE ERROR

- It occurs when a patient is given a dose that is greater (extra dose error) or less than the prescribed dose.
- Cause: delay in documenting a dose or absence of documentation
- Inaccurate measurement of an oral liquid is also an improper dose error.
- Excluded from this category are:
  (i) doses that cannot be accurately measured
  (ii) or not specified as in topical application.
  (iii) metric conversions are excluded as well
4. UNAUTHORISED DRUG ERROR

- Administration of a medication to a patient without proper authorisation by the prescribers categorised as an unauthorised drug error
- Causes:
  (i) If a medication for one patient was given mistakenly to another patient
  (ii) Nurse give a medication without a physician order
  (iii) Patients at home who sometimes share prescription
  (iv) Refilling a prescription that has no refills remaining without authorisation from the physician
  (v) Adminstring medication on the basis of specific patient parameters, by nurses may be wrong
  (vi) Administration of medications outside the established guidelines
Medications that are dispensed or administered beyond their expiration date may have lost potency or less effective or ineffective.

Refrigerated drugs stored at room temperature may decompose to the point where efficacy is less than optimal.

So monitoring expiration date of product and storage of products are very important.
6. WRONG TIME ERRORS

- Timing of administration is critical to the effectiveness of medications
- Maintaining an adequate blood level of drug is required for effectiveness
- Administering doses too early or too late may effect the drug serum level and consequently the efficacy of the drug
- Wrong time errors are occasionally unavoidable because the patient is away from the patient care area for a test or the medication is not available at that time
7. **WRONG DOSAGE FORM ERRORS**

- Doses administered or dispensed in a different form from that ordered by the prescriber are classified as wrong dosage form errors.
- Depending on the state and health care facility guidelines, dosage forms changes may be acceptable to accommodate particular patient needs.
- For example:
  
  Dispensing a liquid formulation without specific prescription to a patient who has difficulty swallowing tablets might be an acceptable dosage form change.
8. Wrong Drug Preparation Errors

- Drugs requiring reconstitution, (adding liquid to powdered drug), dilution or special preparation prior to dispensing or administration of drug
- But, fail to do such type of procedure leads to wrong drug preparation error
- Eg: cephalaxin oral suspension with an incorrect volume of water
- Using a wrong base product when compounding an ointment is another
9. WRONG ADMINISTRATION TECHNIQUE ERRORS

- Doses that are administered using an inappropriate procedure or incorrect technique are categorized as wrong administration technique errors
- A subcutaneous injection that is given too deep
- An I.V drug that is allowed to infuse via gravity instead of using an I.V pump
- Instilling the eye drops in the wrong eye is another example
10. MONITORING ERRORS

- Monitoring errors result from inadequate drug therapy review
- Prescribing an anti hypertensive agent which lowers blood pressure, and failing to check blood pressure

11. COMPLIANCE ERRORS

- Medication errors are committed by patients when they fail to adhere to a prescribed drug regimen
Errors that can not be placed into one of the 11 categories are grouped together in miscellaneous category:

(I) Calculation error
(ii) Decimal points and zero error
(iii) Abbreviation error
(iv) Look a like and sound a like error
Impact of medication error:
- Financial problem
- Loss of trust on health care system
- Serious ADR
- Death
Techniques to prevent the medication error:

- Root cause analysis
- Bar check
- Code check
- Color coding
MEDICATION ERROR REPORTING

On identifying medication error the pharmacist reports to the physician

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And further the medication error report form is filled and forwarded to MEDWATCH website

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The reports are being reviewed by the staff of the department DMEPA (division of medication error prevention and analysis) which is a part of CDER (center for drug evaluation and research)
The DMEPA uses the NCCMERRP (National Coordination Council for Medication Error Reporting and Prevention) guidelines for the conformation of medication error.

They find the cause and solutions and inform them to FDA.

FDA publishes in journals.