Medication Error – Does It Happen?

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Abstract:

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| A medication error is represented as "any preventable circumstance which may cause inappropriate use of medication or patient harm while the medication is within the control of the health care professional, patient, or consumer’’. A Medication Error can be occurred because of prescribing error like non-appropriate, irrational, ineffective prescribing of medicine and may also happen because of the dispensing error like incorrect dispensing of medication which includes dispensing of medication in improper dose and dosage form and therapeutic duplication of the medicine and also inappropriate labelling. In health care, medication failures are a mutual concern which cost billions of pounds annually while causing significant morbidity and mortality. While national attention has been paid to prescription, dispensing problems errors, it remains a well-known issue. Development of a multi-faceted educational and preventative approach is the finest way to increase patient condition. Clinical pharmacists decrease the possible risks of the medication errors by providing the medicinal care to the patients within the hospitals. It is the firsthand responsibility of the clinical pharmacists to revaluation the medical charts within the ward by completing the patient’s pharmacotherapy monitoring form and reporting related drug therapy problems. Accurate and complete medicine reconciliation can decrease multiple prescribing and administration errors. Failure to act reconciliation of medicines may be compounded by the practice of writing "blanket" orders, like "resume pre-op medications," These are extremely error prone and are known to lead to ADR.  Introduction:  Medicine is a product which contains a substance which has proven therapeutic or biological effects with additives or excipients. The active compound with therapeutic effect is known as a drug.  A Medication Error can be said to be a failure in the treatment process that may cause harm to the patient or have the potential to lead to harm. A medication error can happen at any stage of the treatment process from prescribing medicines to administering the medicines. A Medication Error can be happened because of prescribing errors like non-appropriate, irrational, or ineffective prescribing of medicines and may also happen due to the dispensing error like incorrect dispensing of medicines including dispensing of medicines in wrong dose and dosage form and therapeutic duplication of the medicines and also inappropriate labelling. A Medication Error can be happened not only in prescribing and dispensing of the medication. But also wrong administration of the medicines like administration of medication in the wrong dose and dosage form and wrong frequency and route may also lead to the Medication Error.  It is essential to identify and rectify the medication error where they may lead to therapeutic failure or serious harm to the patient so medication errors can be avoided by improving the rationality of prescribing medicines and can also be avoided through proper dispensing of medicines in the appropriate dose, dosage form and also by providing proper patient counselling about the medication administration error can be also avoided.1  A Medication Error can be defined as 'a failure in the treatment process that results in harm to the patient, or has the potential to lead to it.' The use of the term 'failure' means that the practice has fallen below some attainable standard. The 'treatment process' consists of the management of symptoms or their causes, or the investigation or prevention of disease or physiological changes.  It contains therapeutic medications and the above-mentioned compounds. It also involves the manufacture or compounding of a drug, its prescription, transcription (if applicable), distribution and administration, and the consequent monitoring of its effects. The term 'Harm' also indicates 'lack of benefit' in the description, a type of failure of treatment. It does not specify who makes the mistake-it may be a physician, a pharmacist, a nurse, a caregiver, or another; nor does it specify who is accountable for avoiding mistakes.2  **What is Medication Error?**  According to the FDA or the National Coordinating Council for the Reporting and Prevention of Medication Errors (NCC MERP), a medication error is described as "any preventable circumstance which may cause inappropriate use of medication or patient harm while the medication is within the control of the health care professional, patient, or consumer’’. The contributing factors which lead to medication errors, which are commonly classified as the patient, system and personal factors have been recognized by numerous studies.3Medication Errors can lead to adverse outcomes such as increased the number of mortality, increased duration of hospital stay, and increased medical costs. Although all members of the health care team may be accountable for Medication Errors, nursing Medication Errors are the most common.  **Types of Medication Errors?**  Medication Errors were classified according to the WHO classification, which describes the errors of the medication: prescribing errors, administration errors, dispensing errors, indenting errors and monitoring errors. In addition, according to the NCC for Medication Error Reporting and Prevention, we have also considered the severity  • Administration errors,  • Prescribing errors  • Monitoring errors  • Dispensing errors  • Indenting errors  In general, a Medication Error was defined as a dose administered differently than ordered on the patient's medical record. Medication Errors have been viewed as system fault; Medication Error categories were defined as follows  1. **Unauthorized drug**: The administration of a drug that was never ordered for that patient.  2. **Extra dose**: Any dose given more than the total number of times ordered by the medical practitioner, like the dose ordered based on the old guidelines, after the drug has been interrupted or after the drug has been stopped.  3. **Miscellaneous dose**: Any dose of defined dosage units (such as tablets) that contained unacceptable strength or number; if an injectable product, any dose that was ±10 % or more different from the proper dosage; if any other dosage form, any dose that was ±17 % or more of the accurate dose, in the opinion of the observer. In the calculation of the dosage, measuring devices and graduations were those provided for regular use by the organization: graduations on injection syringes, graduations on oral fluid medicine cups, and drops on the dropper supplied. Improper dose errors for ointments, topical solutions, and similar drugs were counted only when the dose was quantitatively determined by the medical practitioner.  4. **Omission**: Failure to give the daily dosage. If no attempt has been made to administer the proper dose, an error of omission has also been recorded. If the patient refused to take the medication, a possibility for error was not counted provided that the nurse accountable for administering the dose tried to give it. Doses withheld according to guidelines calling for the withholding of doses of medicine, such as nothing by mouth before treatment, were not counted as errors. Omissions were detected by comparing drugs administered at a given time with doses that should have been given at that time based on written doctor's orders and treatment guidelines.  5. **Wrong Route**: Medicine administered to a patient using a route different from that ordered. Doses given at the incorrect site, such as the right eye instead of the left eye, were included in this class.  6. **Wrong form**: The administration of a dose in a different form than that ordered by the medical practitioner. If enteric-coated aspirin has been ordered but plain aspirin has been administered, an improper form error has been recorded.  Each dose observed to be administered or excluded was operationally defined as a dose and is the basic unit of data. Any dose could only be in error or not in error. The doses included only those for which an observer was aware of the formulation and administration of the medicine or for which the observer was certain that it had not been administered.3  There are many types of medical errors that can happen anywhere in the healthcare system, from hospitals to nursing homes to pharmacies. We will analyze many types of drug errors, how they occur, and preventative measures to reduce these errors. Medical errors are not only monetarily expensive but expensive in terms of patients' loss of trust in the healthcare system, reduced patient satisfaction and degraded morals among healthcare professionals, who often feel hopeless to change the condition.4   |  |  | | --- | --- | | Category A | Events or circumstances that have the potential to lead to error. | | Category B | Error happened, but it didn't get to the patient. | | Category C | An error that reached the patient but did not do any harm (including omission errors) | | Category D | Error reached the patient; necessitating monitoring to make sure the patient wasn't harmed and/or requiring action to stop the harm. | | Category E | Error happened that may have caused the patient's momentary injury or resulted in it, necessitating action. | | Category F | An error was made that may have caused the patient's momentary injury or resulted in it, necessitating the patient's initial or extended hospitalization. | | Category G | Error happened that may have caused the patient's irreversible injury or perhaps just contributed to it. | | Category H | Error happened that necessitated intervention to maintain life. | | Category I | Error happened that could have caused the patient's death or contributed to it. |   Table 1: Categorization of Medication Error based on the harm score13  **DETECTION OF MEDICAL ERRORS**  Incident analysis is a precious way of learning about healthcare institutions and, ideally, contributes to progress to improve patient condition, such as the introduction of procedures or systemic alteration in the environment where the error is more possible to happen. The primary policy that would be implemented by medical staff to try to reduce mistakes is non-punitive incident reporting.6  If this is the purpose, it is essential to record not only injuries but also near misses, where a near miss is represented as "any action that might have caused an injury or damage." Near misses are precious resources to boost patient safety, since they provide a wider explanation of the problem than just those accidents that occur. Reporting of incident has its drawbacks as a way of determining the causes of human error in medicine: reports are not well distributed across all personnel grades, adverse reactions can occur only over a matter of days, weeks or months, and voluntary reporting is occasionally used because workers are not sure of namelessness.6  **Detection**  Chart analysis, computerized tracking, injury detection, and scanning evidence for allegations are significant approaches for identifying adverse events. Medication Errors are reported generally by close observation, self-imposed notification (by physicians, pharmacists, nurses, patients, and other healthcare workers) and medicine chart analysis.  Based on relevant references (medical charts and laboratory records, drug data and administrative data), the chart analysis is retrospective. By using computerised evidence, such as electronic medical reports (EMR), computerised doctor order entry (CPOE), and computer-integrated stimuli, it can be strengthened.  The disadvantages of this approach are the challenge of educating reviewers (nurses, pharmacists, testing assistants) and the fiscal and human capital necessary. In addition, the outcomes depend on the consistency of reporting and the ability of reviewers to capture effects.12  **Computerized Monitoring**  The current version of self-imposed pharmacist reporting (pharmacy logs) is computerized tracking. Pharmacists locate order mistakes, correct them, and complete a report. Therefore, drug failures before adverse effects occur should be intercepted. If CPOE is in use, errors can be easily found in prescribing and dispensing. The introduction of advanced software facilitates the convergence of laboratory and clinical evidence with Clinical Decision Support Systems (CDSS), including adverse effects determination and prevention. Protection is improved by CPOE systems but needs to be used in conjunction with CDSS. It is expensive and important for safety to incorporate information technology, but it can also give rise to new, unidentified hazards. |

**Administrative databases**

Screen International Classification of Diseases Administrative Lists, 9th Edition Codes, for statistical purposes. From a mixture of discharge results, patient safety indices and adverse event adjusted rates are drawn up. However, because of the insufficiency of clinical records, adverse effects are poorly detected.

The value of the screening of data on claims is constrained by the underlying, much irrational, motives for the action and the presence of little numbers of local claims. Incidental events also need to be constantly monitored, and almost one-third of claims lack proof of mistakes. Data on statements have a affirmative predictive benefit of about 50 % for adverse outcomes, of which just about 18 % point to a drug's origin.

Direct examination is the lone available tool for the identification of drug management errors. A qualified nurse monitors the delivery of medications, documents each activity, and then compares what has been done with the original instructions of the doctor. It is essential to train the observer and visit various units in sequence.12

**Reporting systems**

Reporting of events where this is in effect, significant accidental events/deaths are compulsory and limited to (sentinel event list). With root cause analysis, a prompt narrative account of the incident must be submitted to the central agency that provides annual statistical analyses, captures all adverse effects and drug failures, and addresses questions for quality management.

**There are 2 safety‐oriented levels of reports:**

1. Voluntary reporting must be confidential, private and free of responsibility. To assist with reporting and review, a simple standardized form is needed. Feedback, daily reporting and corrective action execution are all essential. Near misses and prescription, mistakes are commonly registered, but adverse effects are hardly documented.

2. A rising number of studies do not generally reflect bad practice, but are due to increased incident capture. The results of voluntary notification are the detection of deficiencies in functioning and latent systems, proof of the sensitive existence of procedures, the elimination of contributory factors and the propagation of a safety culture.

Generally, an increasing number of studies do not symbolize poor practice but are attributed to improved capture of events. The discovery of defects in active and latent processes, evidence of the responsive nature of procedures, elimination of contributing factors and the spread of a protection culture are the effects of voluntary notification.12

**Information technology processes in medicine management**

“Clinical decision-making” is a complex process that rely on the human ability to produce undivided attention and to memorise, recall, and analyze huge amounts of information – all vulnerable areas. Information technology systems can improve access to portion of a data, organize them, and identify links between them. Practitioner often ‘know’ the data (such as a patient's allergies, a drug recall warning, or a drug-drug / drug-food interaction) but forget to think about it at the time of prescribing or transcribing. Information technology systems are effective in bridging this ‘knowing–doing’ gap, 7 by presenting the relevant information to the clinician during the time of decision making.

**Computerized physician order entry (CPOE) with decision support**

Since most Medication Errors happen at the prescribing step, computerized physician order entry (CPOE) with patient-specific decision support may be a potentially strong intervention for improving patient safety. General prescribing errors include using the wrong drug or dosage form, wrong dose calculation, no checking for allergies, and failure to regularise dosages in patients with renal or hepatic dysfunction. CPOE systems work by (i) assuring that the order is legible and complete, including all required information, like dose, route, and dosage form; (ii) checking for problems like drug allergies and drug-drug / drug-food interactions; (iii) providing dose adjustment calculations supported medical features such as weight or renal function; (iv) checking for suitable baseline laboratory results, such as platelet count and international normalized ratio for patients receiving anticoagulants; (v) computing drug–laboratory interactions, like alerting the physician to a low potassium concentration when digoxin is being prescribed; and (vi) updating the physician with the most recent medicine information, like the necessity to avoid rofecoxib after it had been withdrawn by the business concern.

Of the different systems used in the medication process, CPOE systems have the most essential impact on decreasing the Medication Errors, with reported error reductions of 55–83%. Some other studies have shown significant reductions in antibacterial drug-related adverse events, reduced lengths of hospital stay, and improved dosage of psychoactive drugs in older people.

# Medication management process in older adults

Managing medications is a leading part of providing care to older adults. Poly-pharmacy is common among the older adults and is fraught with risks. A careful and systematic approach is required for managing drug therapy in these patients, recognizing the patient’s specific goals.

Medicines started for suitable indications in middle age may need to be supervised more closely as the patient ages. Some other drugs may become unnecessary or may be hazardous as the patient ages, functional status and renal function decline, and goals of care change.

Older adults tend to own multiple illnesses and thus take more than one or two drugs, and poly-pharmacy increases the chances of unfortunate outcomes. The number of medications someone uses could be a risk factor for adverse drug reactions, non adherence, economical burden, drug-drug interactions, and worse outcomes.

1. The prevalence of poly-pharmacy increased from an estimated 8.2% to 15% from 1999 to 2011 based to the National Health and Nutrition Examination Survey.
2. Guideline-based treatment for specific diseases may cause the addition of more medicines to succeed in disease targets.
3. Older adults in the United States compound the chance of prescribed medicines by also taking over-the-counter (OTC) medications and dietary supplements.
4. In addition, medicines are often used in older adults based on studies of younger persons without significant comorbidities. Applying clinical guidelines based on these studies to older adults with co-morbidity and functional impairment is challenging.
5. Age-related pharmacokinetic and pharmacodynamic changes increase the threat of ADR.

**Various guidelines for avoiding medication error:**

The intent of these guidelines is to provide clinical pharmacists with practical recommendations and best available practices for the management and protection of patient harm from Medication Errors in the setting of the health care body. These guidelines are primarily intended to apply to acute care settings as a result of the special collaborative processes established in this setting. Medication Errors may happen at any point in time.

1. **Planning for safe medicine use practices**:

Safe drug use practices begin by placing drug safety as an organizational and departmental priority and by implementing a process that will assist these practices. The organization must have a comprehensive program which includes a leader in the safety of drugs, key elements in place to provide a framework for safe medicine practices and a successful strategic plan. The error reporting and review process is an important component of the drug safety system; the ultimate goal is to improve patient well being and prevent harm to the patient.10

2. **Selection and procurement**:

Selection and procurement of medicines include the appropriate selection of which medicines will be stored at the institution. Divided into

• Formulary assessment and management: A well-designed form system will guide physician to prescribe the safest and most cost-effective medicine for the treatment of a particular disease or medical condition.

• Safety-alert monitoring: Medicine safety evaluation does not end when a drug is added to the form. Clinical pharmacists should be actively involved in evaluating the payment and replacement decisions of all therapeutical goods.

• Medication deficiency management: In hospitals, the pharmacy department, should have a procedure to communicate shortages, Hospitals, via clinical pharmacy department, should have a process to communicate drug shortages, Pharmacy department should play an pivotal role in developing and managing a contingency plan in close cooperation with required medical practitioner and health-system committees when faced with severe shortages.

•Storage: Proper storage of medicines in the pharmacy and throughout the hospital can help decrease the risk of errors in medicines. Ambiguous nomenclatures should be avoided. The same drug nomenclature should be used in all databases used throughout the medicine use process using differentiation and screen alerts for drugs that may pose a risk of potential errors, Pharmacy inventor.11

**Prevention strategies for medication errors**

In healthcare, medication management failures are a mutual concern which costs billions of dollars annually while causing substantial morbidity and mortality. While society paid attention to prescription dispensing errors, it remains a widespread issue. Development of a multi-faceted educational and preventive approach is the finest possible way to increase patient well being. Healthcare providers working as a group and engaging as well as empowering patients to be more knowledgeable about their drugs should be stressed. With a culture of protection, it is possible to minimize medication mistakes in dispensing. Hospitals have developed strategies to prevent errors in medications. Some of these strategies include:

• Double-check the dose and frequency of all high-alert medications.

• Talk to the clinical pharmacist or hospital pharmacist if you are unsure about the drug or dose.

• If prescription is illegible, don't give the medicine you think you know what it is.

• Call the health care provider to confirm the dose or the drug.

• Check the calculation of medicine dose to make sure that the right therapeutic dose is advised to the patient.

• Ask another practitioner to re-check your calculations.5

**ROLE OF CLINICAL PHARMACIST IN MANAGING MEDICATION ERRORS**

Clinical pharmacists decrease the potential risks of Medication Errors by providing pharmaceutical care to the patients in the health care system. It is the foremost and primary responsibility of the clinical pharmacists to review the medical charts in the ward / ICU by completing the patient's pharmacotherapy monitoring form and reporting related drug therapy issues. Utilization of paper in medical records instead of using computerized registration of medication, non-availability of the medical record for pharmacists in the hospital pharmacy, patient overload in teaching hospital, and consequently working overload of physicians and nurses and unavailability or lack of treatment protocol may be the cause of medical errors.

Participation in almost the entire drug phase, from delivery to drug administration, of clinical pharmacists, can minimize medication errors and are beneficial to patient care. This can be done by taking part in special rounds of prescription by the clinical pharmacist and testing the various pharmaceutical measures.7

**How Can We Avoid Prescribing Error?**

The medical reports were screened by clinical pharmacists for prescription errors and addressed with the senior medical practitioner in control. The clinical pharmacist attended ward rounds in addition. Clinical pharmacists' interventions led to a significant reduction in prescribing errors, contributing to a safer medication process.8

Reconciliation of medicines is to prevent drug errors including omissions, duplications, dose errors or medication. The new added drugs should be ordered or current orders rewritten at every treatment alteration. Care transitions include changes in the community, program, practitioner or care level. This process comprises 5 steps:

1) Develop a list of on-going medications;

2) Develop a list of medicines to be prescribed;

3) Compare the medications on the two lists;

4) Make clinical decisions based on the comparison;

5) Communicate the new list of drug to appropriate caregivers and the patient.

Accurate and complete medicine reconciliation can prevent many prescribing and administration errors. Failure to act on reconciliation of medicines may be compounded by the practice of writing "blanket" orders, such as "resume pre-op medications," They are highly error-prone and are known to result in adverse drug reactions.9

**CONCLUSION**

A Medication Error can be said to be a failure in the medication management process that may cause harm to the patient or have the potentiality to cause harm. A Medication Error can be occurred due to prescribing errors like no-appropriate, irrational, or ineffective prescribing of medication and may also happen due to the dispensing error like improper dispensing of medicine including dispensing of medicine in incorrect dose and dosage form and therapeutic duplication of the medicine and also inappropriate labelling. In this case, it was done by drawing up scenarios and determining which would constitute an error. It does not specify who makes the mistake-it may be a medical practitioner, a pharmacist, a nurse , a caregiver, or another; nor does it specify who is accountable for avoiding mistakes. It also involves the manufacture or compounding of a drug, its prescription, transcription (if applicable), distribution and administration, and the consequent monitoring of its effects. The definition above, slightly modified, was the only definition that categorised all error scenarios and only error scenarios. Various explanation of Medication Errors have been tested, as all technical definitions should be. The term 'Harm' also indicates 'lack of benefit' in the description, a type of failure of treatment. It is important to identify and correct a medicament error where it may lead to therapeutic failure or serious harm to the patient so that a medicament error can be avoided by improving the rationality of the prescription of the medicament and the proper dosage of the medicament can also be avoided, as well as by providing proper patient advice on the ad medicament. Chart analysis, computerized tracking, injury detection, and scanning evidence for allegations are the key approaches for identifying adverse events. Based on relevant references, the chart analysis is retrospective. The disadvantages of this approach are the challenge of educating reviewers and the fiscal and human capital necessary.

Mainly clinical pharmacist provides pharmaceutical care to the patients thus reducing the event of medication errors. The clinical pharmacist completes the patient's pharmacotherapy monitoring form and then performs the medication chart review and then reported any drug-related problems. Clinical pharmacists should undertake special ward rounds and monitor any pharmaceutical measures. There are various guidelines and protocol available for medication errors and the purpose of these is to provide pharmacists with various recommendations for the management and protection of patients from various harm caused due to medication errors. These include planning for safe medicine management purposes, selection and procurements including formulary assessment and management, safety alert monitoring and medication shortage management. Careful storage of medicine in the pharmacy and the hospital setting helps to prevent the occurrence of medical errors. The goals of detecting Medication Errors include the following:

• Promote a culture of safety to reduce harm from Medication Errors.

• Increase identification and reporting of Medication Errors and potentially hazardous drug–use situations.

• Explore and realize the root causes of and factors that contribute to Medication Errors.

• Educate Healthcare practitioners about the system-based causes of errors and their prevention.

• Recommend methods to facilitate the implementation of organization-wide, system-based changes to prevent Medication Errors.

• Respond to potentially dangerous situations before errors occur.

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