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MEDICATION ERROR – THE CHALLENGING CONCERN

Dr. P. L. Alekhya*

Internee – S.V. Auyrveda Hospital, Tirupathi, Andhra Pradesh.

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***Corresponding author: Dr. P. L. Alekhya**

Internee – S.V. Auyrveda Hospital, Tirupathi, Andhra Pradesh.

ABSTRACT

Medication Error is one of the most common causes of un-intentional harm. Health grades reports suggest that annual deaths attributable to Medication errors are more than **250,000.** This number is exceeded by only deaths due to Heart Diseases (**700,142**) and Cancers (**553,768**). **37.6 $** Billion costs are directly associated with Medication errors which are preventable. The extra Medical costs of treating medical errors occurring in hospitals alone conservatively amounts to **3.5 $** billion per year. This estimate does not take into account lost Wages and Productivity or additional Health care costs. The impact of these errors on patients includes increased length of the stay in hospitals, disability and mortality. Understanding the magnitude and nature of harm in primary care is important. Ongoing research plays a key role in identifying the works to improve safety and how to implement best practices. The range of opportunities for interventions in terms of reducing error rates, those provided by clinical pharmacists are quite promising.

KEYWORDS: Medication; Medication Error; Medication Administration Error; Iatrogenic illnesses.

INTRODUCTION

Medication, also referred to as medicine or drug or pharmaceutical drug, is a substance used to diagnose, cure, treat, or prevent disease. It is an important part of the Medical Field and relies on the science of Pharmacology for continual advancement and on Pharmacy for appropriate management.

The goal of medication use is to achieve defined therapeutic outcomes with improvement of quality of life and minimize patient risk. But, using medication to help the patient is not a risk-free activity. With the substantial and increasing medication use, come a growing risk of harm.[1] This is compounded by the need to prescribe for an ageing population with increasingly complex medical needs and the introduction of many new medications.

However, Patients have a role to play in the diagnosis of their illness. Without the patients' knowledge, the process poses the risk of the patient continuing the medication inappropriately as the drugs bear the heightened risk of causing significant harm to the patient when they are used in error.

Most of the patients were not aware of their medication status. This is because most of them neither ask for it nor were they informed about the diagnosis made on them and the drugs they were taking at the hospital. Without the patients' knowledge, the process poses the risk of the patient continuing the medication inappropriately.

It has been estimated that in some countries approximately **6 - 7%** of hospital admissions appear to be medication related, with over two-thirds of these considered avoidable. The problem is likely more pronounced in the elderly, because of multiple risk factors, one of which is poly-pharmacy.

Rules of Medication Administration

S.No.	Medication Rule	Things To Be Observed
1.	**Right Patient**	▪ Check the name on the prescription and wristband. ▪ Ideally, use 2 or more identifiers and ask patient to identify themselves.
2.	**Right Medication**	▪ Check the name of the medication, brand names should be avoided. ▪ Check the expiry date.

		▪ Check the prescription. ▪ Make sure medications, especially antibiotics, are reviewed regularly.
3.	**Right Dose**	▪ Check the prescription. ▪ Confirm appropriateness of the dose using the BNF or local guidelines. ▪ If necessary, calculate the dose and have another nurse calculate the dose as well.
4.	**Right Route**	▪ Check the order and appropriateness of the route prescribed. ▪ Confirm that the patient can take or receive the medication by the ordered route.
5.	**Right Time**	▪ Check the frequency of the prescribed medication. ▪ Double-check that you are giving the prescribed at the correct time. ▪ Confirm when the last dose was given.
6.	**Right Patient Education**	▪ Check if the patient understands what the medication is for. ▪ Make them aware they should contact a healthcare professional if they experience side-effects or reactions.
7.	**Right Documentation**	▪ Ensure you have signed for the medication after it has been administered. ▪ Ensure the medication is prescribed correctly with a start and end date if appropriate.
8.	**Right to Refuse**	▪ Ensure you have the patient consent to administer medications. ▪ Be aware that patients do have a right to refuse medication if they have the capacity to do so.
9.	**Right Assessment**	▪ Check your patient actually needs the medication. ▪ Check for contraindications. ▪ Baseline observations if required.
10.	**Right Evaluation**	▪ Ensure the medication is working the way it should. ▪ Ensure medications are reviewed regularly. ▪ Evaluate ongoing observations if required

(Points 1 to 5 are the '5 Rights of Medication Administration' Nice Guidelines in the UK. Points 6-10 are un-ratified checks that have been uggested by multiple US boards and research panels to enhance patient safety).

Definition

There is no consensus about the definition of a medication error. A systematic literature review found **26** different terminologies employed for a medication error.[2]

"Medication Error is defined as 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."

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

Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order Communication, product labelling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.[3]

The definition is very broad and suggests that the medication error is preventable at every stage and also at different levels. It has also been defined as a reduction in the probability of treatment being timely and effective, or an increase in the risk of harm relating to medicines and prescribing compared with generally accepted practice.[4]

Prevalance

Estimating the prevalence of medication errors is difficult due to the varying definitions and classification systems employed. Rates can vary depending on the denominator used hence vary widely in different parts of the world.**(5)** In India the prevalence rate of medication error is estimated to be *5.2 million per year*. The morbidity rate due to medication errors is second to Heart-diseases.

Medication administration errors are reported to occur in one in five medication dosages. (6) Observational studies found that these rates in the acute-care setting varied between 14.9% and 32.4%.(7) The medication error rate for intravenous medications is significantly higher than other types of medications with Prescription error rate of 65% Dispensing error rate of 4% and administration error rates of 31%.

Studies have found that medication errors are associated with increasing number of medications, childhood and older age, and specific medications and medications for certain disease states like musculoskeletal, oncology and immunosuppression, dermatology, ophthalmology, otolaryngologic conditions, infections and cardiovascular.[8]

The Institute of Medicine (IOM) in the USA published a report in which it was stated that the people dying in American hospitals due to adverse events[9] exceed the number attributable to the 8th-leading cause of death and is more than from motor vehicle accidents, breast cancer

or AIDS[10] Yet silence surrounds this issue. For the most part, consumers believe they are protected.

British Medical Journal, in itspublished a report says that annual rates of medical error are still high and the reporting inadequacies continue to make estimates difficult. It concluded saying that the medical profession was not being transparent with itself or with the public about the nature and extent of lethal error in its own practice.[11]

Contributing Factors

S.NO.	FACTOR	PERCENTAGE	CAUSE
1.	Medication Related	**5%**	• Look alike Medication • Look alike Packaging • Sound alike Medication
2.	Staff Factors	**35%**	• Distraction • Inadequate Knowledge • In-experienced Personnel
3.	Task & Technology	**12%**	• Illegible Prescription • Use of Abbreviations • Incorrect Entry into Records • Inaccurate/Incomplete information • Failure to adhere to Task Procedure
4.	Environment Related	**48%**	• Heavy Work-load • Peak Hour • Stock /Storage Problem • Wrong Labelling • Wrong Instructions

Incidences of Medication Errors

a) Improper Dose - **41 %**
b) Wrong Drug - **16 %**
c) Wrong Patient - **10%**
d) Wrong Route - **3 %**
e) Other Causes - **30%**

Types of Errors

a) Prescribing Errors
b) Omission Errors
c) Wrong-Time Errors
d) Un-authorized Drug Error
e) Improper Drug Error
f) Wrong Dosage form Error
g) Wrong Dose Preparation Error
h) Deteriorated Drug Error
i) Monitoring Error
j) Compliance Error.
k) Wrong Administration Technique Error

Causes:[12]

S. No.	Associated factors	Issues
1.	**Health Care Professionals**	• Lack of therapeutic training • Inadequate drug knowledge and experience • Inadequate knowledge of the patient • Inadequate perception of risk • Overworked or fatigued health care professionals • Physical and emotional health issues • Poor communication between health care professional and with patients • Reluctance of Doctors to admit their Mistakes
2.	**Patients**	• Patient characteristics (e.g., personality, literacy and language barriers) • Complexity of clinical case, including multiple health conditions, • Poly-pharmacy and high-risk medications
3.	**Work Environment**	• Workload and time pressures • Distractions and interruptions (by both primary care staff & patients) • Lack of standardized protocols and procedures • Insufficient resources

		• Issues with the physical work environment (e.g., lighting, temperature and ventilation)
4.	**Medicines**	• Look alike Medicines • Sound alike medicines • Labelling and packaging
5.	**Tasks**	• Repetitive systems for ordering, processing and authorization • Patient monitoring (dependent on practice, patient, other Health care settings, prescriber)
6.	**Computerized Information Systems**	• Difficult processes for generating first prescriptions (e.g. Drug picks lists, default dose regimens and missed alerts) • Difficult processes for generating correct repeat prescriptions • Lack of accuracy of patient records • Inadequate design that allows for human error
7.	**Primary-secondary care Interface**	• Limited quality of communication with secondary care • Little justification of secondary care recommendations

Outcome Of Medication Errors

Medication Error can occur at any phase of medication use cycle from prescribing, dispensing, and administration of a drug to the patient. Undesirable outcomes include adverse drug reactions, drug-drug interactions, lack of efficacy, suboptimal patient adherence and poor quality of life and patient experience. In turn, these may have significant health and economic consequences, including the increased use of health services, preventable medication-related hospital admissions and death.[13]

Ivan Illich, an Austrian born philosopher claimed that iatrogenic illnesses were causing between 60,000 to 140,000 deaths in America each year, and leaving two to five million others more or less seriously ill[14] Moreover, asserted Illich, the situation was worst at the heart of the medical establishment, in university hospitals where one in five patients contracted an iatrogenic disease which usually required special treatment and led to death in one case out of thirty.

He went on to say that the medical establishment has become a major threat to health. The disabling impact of professional control over medicine has reached the proportions of an epidemic

It has been estimated that in some countries approximately 6-7% of hospital admissions appear to be medication related, with over two-thirds of these considered avoidable and thus, potentially due to errors. The problem is likely more pronounced in the elderly, because of multiple risk factors, one of which is poly-pharmacy.[15,18]

Prevention[19]

- Patient Identification
- Communication during Patient hand-overs
- Performing the correct procedure at correct body site & time
- Control of concentrated electrolyte solutions
- Medication accuracy at transitions in care
- Avoiding Catheter & Tubing misconnections
- Single use of Injection devices
- Improved Hand hygiene to prevent health care associated infections
- Correct documentation

Solution

There is no single solution to this ongoing problem, but rather many solutions and systems must be in place and work properly to decrease the risk. The focus must be not on blaming the individuals but on learning from the past errors and preventing the future ones.[20]

Educating Health Care providers and Patients

- Educating primary care providers about common causes of medication errors
- Providing simple tools to assist primary care providers in safe medication prescribing and use process
- Considering how patients can be actively involved in medicine management
- Providing patient engagement tools to address non-adherence.

Implementing medication reviews and reconciliation

- Ensuring that pharmacists actively review prescriptions
- Encouraging and supporting use of medication reconciliation by clinicians.

Using computerized systems

- Strengthening electronic prescribing and alert systems.

- Computerized provider order entry with decision support
- Focusing on clinically-relevant warnings.

Prioritizing areas for quick wins

- Target use of injections as a key source of errors
- Target interventions related to the care of children and the elderly
- Implement multi-component interventions with a mix of education, health informatics, medication reviews and involvement of community pharmacists
- Consider specialist outpatient clinics for the prescription of selected medications that require routine monitoring (warfarin)
- Conducting further research on medication errors
- Develop a better understanding of the causes
- Generate evidence for interventions impacting on adverse outcomes, and
- Help bridge knowledge gaps in low- and middle-income countries on injection use and the specificities of the paediatric population.
- Interdisciplinary interactions

CONCLUSION

Medication error is common and causing preventable human suffering and financial cost. It can occur anywhere in the health care system from prescriber to dispenser to administration and finally to patient use. The leading cause of medical mistakes is the increasing complexity of Health Care. The simple truth is that many errors are preventable but Health Care sector is nearly 10 years behind other industries in reducing errors.

Though Health services work hard to provide safe and high quality care, sometimes people are inadvertently harmed. Unsafe health care has been recognized as a global challenge. Though mistakes may or may not be common with the drugs, the consequences of an error are clearly more devastating to the patients.

Understanding the magnitude and nature of harm in primary care is important because most health care is now offered in this setting. Every day, millions of people across the world use primary care services. Good primary care may lead to fewer avoidable hospitalizations, but unsafe primary care can cause avoidable illness and injury, leading to unnecessary hospitalizations, and in some cases, disability and even death.

Perhaps the greatest obstacle, even when proven interventions exist, is successful implementation. Barriers to implementation include costs, institutional resistance, nervousness about the consequences, and the swift development of workarounds.[20] These and similar findings show that parallel to the committment to excellence and safety within Medical systems, there exists an all-too-human resistance to the reforms necessary to protect patients from iatrogenic injury and death.

Arguments concerning the pervasiveness of iatrogenic disease in medical practice and the primacy of guild politics in the control of public medicine have been with us for a long time. If these are given due consideration, then medical authorities and practitioners might be expected to show greater interest in evaluating a wider range of safe therapies, including meaning-responses (placebos), as an important and valuable element of healing.

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