Medication Safety and Error Prevention

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Abstract

Medical errors are a serious public health problem and a leading cause of death. It is challenging to uncover a consistent cause of errors and, even if found, to provide a consistent viable solution that minimizes the chances of a recurrent event. By recognizing untoward events that occur, learning from them, and working toward preventing them, patient safety can be improved.

This review paper focuses on the most common errors related to medications and outlines some strategies to prevent medication errors from occurring. Summarize interprofessional team strategies for decreasing medication errors.

Keywords: Medication safety, Medication errors, Medication prevention

Contents

Medication errors and preventable adverse drug events have a variety of public health implications ranging from increased hospital length of stay to detrimental effects on quality of life, and death. Prevention of medication errors continues to be an important public health concern[1].

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 healthcare professional, patient, or consumer'. 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.

Medication errors can occur at many steps in patient care, from ordering the medication to the time when the patient is administered the drug. In general, medication errors usually occur at one of these points:

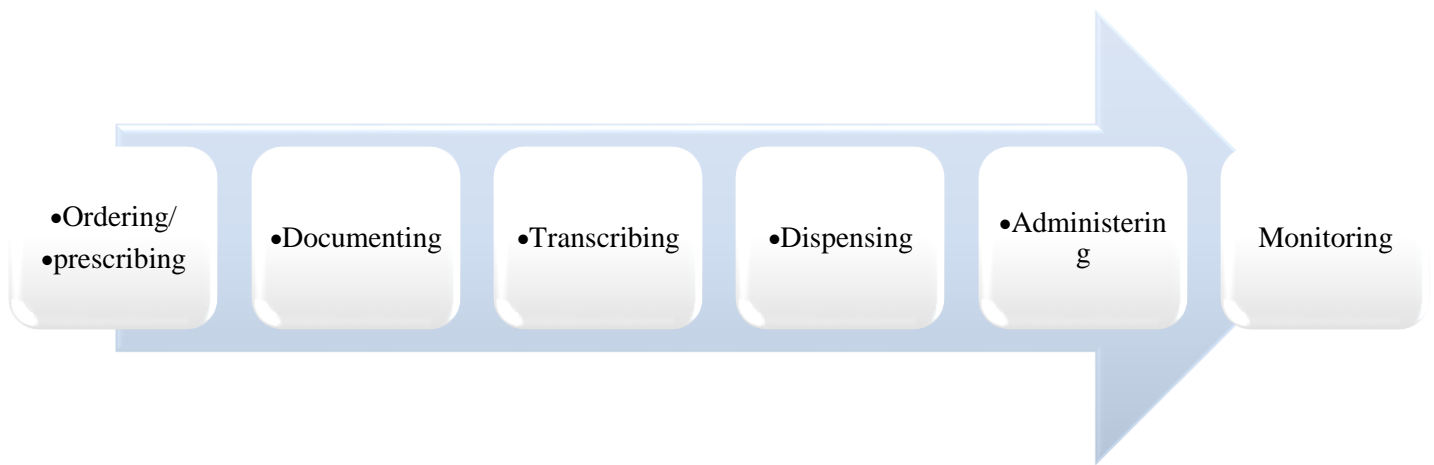| •Ordering/ •prescribing | •Documenting | •Transcribing | •Dispensing | •Administering | Monitoring |

Figure 1: Steps in patient care where medication error can occur.

Medication errors are most common at the ordering or prescribing stage. Typical errors include the healthcare provider writing the wrong medication, the wrong route or dose, or the wrong frequency.

Types of Medication Errors

Errors can occur at any step along the way, from prescribing to the ultimate provision of the drug to the patient. Common causes of medication error include incorrect diagnosis, prescribing errors, dose miscalculations, poor drug distribution practices, drug and drug device related problems, incorrect drug administration, failed communication and lack of patient education. Following are types of erros:

- **Prescribing Error-** A widely recognized cause of error is illegible handwritten prescriptions. Errors in prescribing can occur when an incorrect drug or dose is selected, or when a regimen is too complex.

- **Omission Error** - such as the failure to administer a drug that was prescribed or not administering a drug in a timely manner.

- **Dispensing Error**- The term dispensing error refers to medication errors linked to the pharmacy or to whatever health care professional dispenses the medication. The most common dispensing errors are: dispensing an incorrect medication, dosage strength, dosage form; and failing to identify drug interactions[2].

- **Improper dose/ Wrong dose prescription/wrong dose preparation -** Over-the-counter medications can lead to medication errors because labels may not be sufficiently read or understood, and healthcare providers are often unaware when patients are taking over-the-counter medications.

- **Administration errors**- Errors caused by drug administration can be made by the health care provider or by the patient. Also, giving the drug to the wrong patient, extra dose, or wrong rate[3].

- **Monitoring errors** -such as failing to take into account patient liver and renal function, failing to document allergy or potential for drug interaction, Physician sampling of medications can contribute to medication errors due to the lack of both adequate documentation and drug utilization review[4].

- **Compliance errors** -such as not following protocol or rules established for dispensing and prescribing medications

- **Look Alike Sound Alike (LASA drugs)**- When prescriptions are transmitted orally, sound-alike names may cause error. Similarly, drugs with similar-looking names can be incorrectly dispensed when prescriptions are handwritten[5],[6].

Pharmacy Error Prevention

Many adverse drug events are preventable, as they are often due to human error. Often these errors can be avoided by spending time talking speaking to the patient and double-checking their understanding of the dose, drug allergies, and reviewing any other medications they may be taking. Barriers to successful communication include the inability to reach prescribers, unclear verbal and written orders and time constraints that make it challenging to check drug interactions. When it could be the result of systemic issues or plain human error, medication errors can cause severe physical injury and possible death of patient. These preventable mistakes could also cause severe financial, psychological and emotional stress to the healthcare provider and organization Following are some strategies to prevent or avoid medication error.
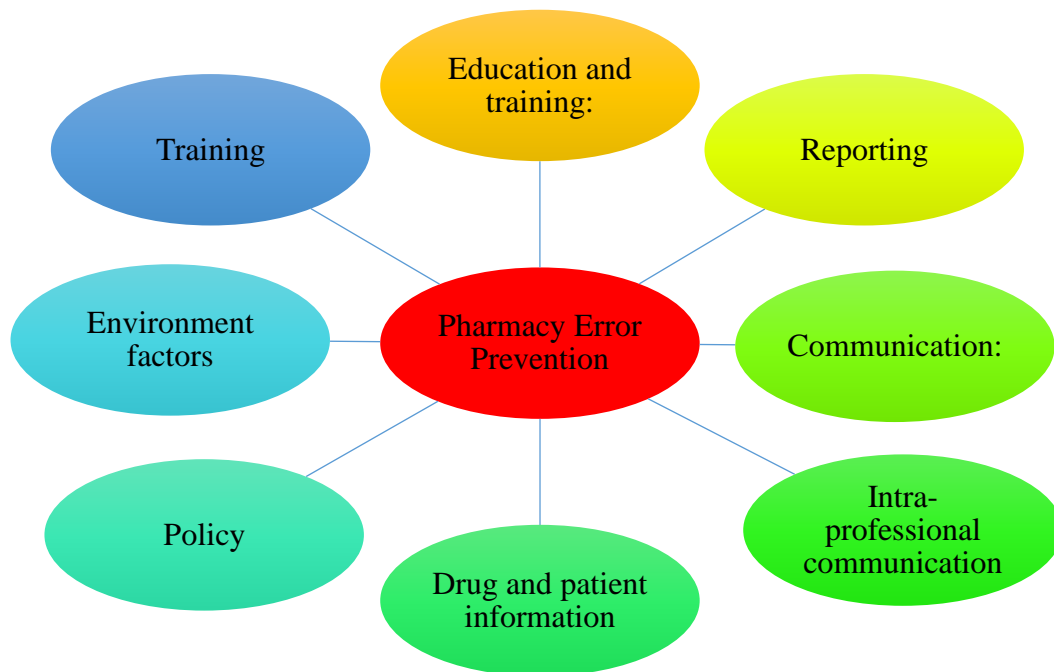

Figure 2: Strategies for prevention of medication errors.

- **Education and training:**

  Health care professionals must provide adequate patient education about the appropriate use of their medications as part of any error prevention program. Proper education empowers the patient to participate in their health care and safeguard against errors.

- **Reporting:** There is a necessity of consistent reporting of the medication errors to minimise medication errors. Health care professionals and consumers have the opportunity to report the occurrence of medication errors to a variety of organizations[7].

- **Communication:** patient counselling by the pharmacist, nurse and physician plays important role in minimising the medication errors. Errors most often occur when communication is unclear regarding: drug name, drug appearance, why the patient is taking the drug, how much and how often to take it, when is the best time to take it, how long to take it, what common side effects could occur, what to do about a missed dose, common interactions with other drugs or foods, and whether this new drug replaces or augments other therapy[6],[8].

- **Intra-professional communication:** all the healthcare professionals need to improve communication among themselves to minimise the medication errors. Poor prescription writing is the commonest cause of medication errors.

- **Drug and patient information:** lack of information about the patient and drugs prescribed is an important cause of medication errors health system should ensure that all healthcare professionals have ready access to necessary patient specific information and general drug information the health system may implement technology that allows patient chart viewing over a computer terminal health system may establish a drug information centre where pharmacists are readily available to answer questions regarding drug therapy

- **Policy:** The policies of the health system should be such that it supports minimum medication errors. Health system should implement such policies that defines the medication error and monitors for correcting such errors policy of reporting medication error should be such that it will improve the health system rather than punishing the employee.

- **Environmental factors:** the environment at the work place should be pleasant high levels of sound low lighting, high temperature or disturbances all these contributes to errors in medication. So it is the responsibility of the health system to maintain pleasant environment and stress free work environment.

- **Training:** all the healthcare professionals must remain updated with the current advances in the technology concerned with the medical, nursing and pharmacy profession. The health system must include the arrangement of training programmes as per all the professions, to minimise the medication errors. Arrangement of quest lectures of expertise in the respective field, audio-visual clips, pamplets are essential for reducing the medication errors.

- **Technology:** health system need to improve quality of care and minimise medication errors by investing maximum in information technology. The various software's are required to be purchased by the institution and proper training must be given to all the concerned health professional to minimise the medication errors.

  - ➢ **Bar Coding -** One way in which electronic technology can improve patient safety and reduce medication errors is through the use of standard machine-readable codes ("bar codes"). Medication bar coding is a tool that can help ensure that the right medication and the right dose are administered to the right patient.

  - ➢ **Electronic Prescription Record** - An electronic prescription record (EPR) contains all the data legally required to fill, label, dispense and/or submit a payment request for a prescription.

Pharmacists use the record as a tool to reduce medication errors by guarding against drug interactions, duplicate therapy and drug contraindications.

➢ **Electronic DUR** -Due to the technology of the electronic prescription record, pharmacists are able to conduct prospective online drug utilization reviews (DUR). The online DUR process allows the pharmacist to conduct a review of the prescription order at the time it is presented for filling and proactively resolve potential drug-patient problems such as drug-drug interactions, over-use, under-use and medication allergies[9].

➢ **Automated Medication Dispensing**- Automated medication dispensing systems are now widely used as a less labor-intensive method of dispensing medications[10].

➢ **Internal Quality Control Procedures** - Most medication dispensing settings have developed quality evaluation procedures. These practices provide workflow evaluation and error reporting analyses, which lead to excellent protection from medication error. These procedures and evaluations have led to several changes in standard practice for ambulatory pharmacy, generally adopted as acceptable professional practice[11],[12],[13],[14].

Conclusion –

In summary, medication errors are an unfortunate part of the health care delivery system. Health care provider attitudes must change in the approach to prevention of these errors. Patient education is an important aspect of any program to prevent medication misadventures. The health care community must recognize that both people and systems contribute to medication errors. The responsibility for the prevention of medical errors rests not only with health care professionals and health care systems but also with the patients themselves. The focus should be on identifying the error-prone aspects of the medication use continuum with the goal of improving system safety and reliability through remedial action.

Technologies, such as computerized order entry, bar-coding and smart pumps and computerized ADE monitoring, will undoubtedly play a key role, and institutions should be thinking seriously about implementing a number of these. Medication error reduction programs are necessary to achieve improvement in patient care and to satisfy the public demand for a safer health care system.

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