

An Overview on Prescription Error

Mrs. Aishwarya Santosh Kaware¹, Mr. Prajwal Vijay Dudhe², Mr. Naresh Rajendra Chavhan³
Dr. Kuldeep Pradhan⁴, Dr. Neha N Rajpurohit⁵, Dr. K. Raja. Rajeshwari⁶
Student, Vardhaman College of Pharmacy, Koli, Karanja (Lad), India^{1,2,3}
Assistant Professor, Vardhaman College of Pharmacy, Koli, Karanja (Lad), India^{4,5}
Principal, M-Pharm & PHD in Pharmaceutics, Vardhaman College of Pharmacy, Koli, Karanja (Lad), India⁶

Abstract: *An overview of prescription errors among patients is studied. A prescription error is defined as a therapeutic process failure that results in or may result in patient damage. Errors with prescriptions states that at least 1.5 million people are harmed annually by one of the most prevalent medical blunders. While there are many benefits of using medicines, as well as there are also risks, which might occur due to prescription errors. One of the most frequent ways that patients suffer is from improper prescription management, which is often the result of prescribing errors. The methods to lower prescription errors are examined in this evidence scan. Finding the cause of prescription errors and raising public awareness are its two main goals to reduce errors. Make errors or inconsistencies in the selection and administration of medications, such as incorrect dosages, wrong route of administration, and unnoticed drug interaction. Prescription errors are more likely to occur in older adults. Errors in prescription drugs raise health care expenses and reduces patient trust in the medical system. Managers and health experts are constantly searching for methods to raise the standard and guarantee the security of healthcare. This document discusses medication errors, which are instances of drug mis adventuring that should be avoided by implementing efficient system controls. These controls should involve pharmacists, doctors, nurses, risk management staff, attorneys, administrators, patients, and other members of the organizational setting in addition to regulatory bodies and the pharmaceutical industry.*

Keywords: prescription errors

I. INTRODUCTION

Drug use is a complex process and there are many drug related challenges at various levels, involving doctors, pharmacists, nurses and patients. Medication misadventure can occur anywhere in the health care system and many errors are preventable and pharmacists have an active role in the appropriate use of drugs.^[1]

Prescription error is a failure in the prescription writing process leading to wrong instruction about identity of the recipient, the identity of the drug, the formulation, dose, route, timing, frequency, and duration of administration.^[2,3]

Studies have demonstrated the high missing of legal or procedural requirements in teaching hospital along with prescription errors such as duplication, wrong strength, wrong dosage form, wrong route, and drug-drug interactions which results in numerous drug related problems such as over-dosage, under-dosage, drugs interactions, drug allergy, and non-compliance. 2-5 Prescribing errors may adversely affect outcomes and sometimes turns to be harmful to the patients^[4,5]

Prescriptions are written by hand or electronically and include the patient's name, address, date, the prescribed treatments, and a signature from the authorized party. They serve as a channel of communication between prescribers and pharmacists or other individuals who fulfill the prescription. Prescribers include several kinds of doctors as well as nurses in some nations. dentists, medical assistants, and practitioners, Prescriptions are also written by optometrists, clinical psychologists, and clinical pharmacists. Prescription errors are common and while many errors are harmless, and a number are potentially dangerous.^[6,7]

II. PRESCRIPTION ERROR

Prescription errors are errors in treatment plans that cause harm to patients or have the potential to do so. While prescription errors can take many different forms, they frequently involve purchasing inappropriate medications or

pharmaceuticals that may interact with other medications currently taken, as well as wrong dosages and illegible data. A study conducted in the UK to define prescribing errors found that while omissions and deviating from policies or guidelines were not considered prescribing errors, transcription errors, failing to convey crucial information, and using medications or doses that were inappropriate for the particular patient.^[8,9]

III. TYPES OF PRESCRIPTION

Handwritten prescribing



Handwritten prescribing charts were rewritten on a daily basis. Each prescription chart had to be dated and a hospital sticker with the patient's address, date of birth, and hospital number should be attached. In the appropriate section, the prescriber was then required to write the name of the drug, the dose or amount to be administered (for iv infusions), the rate of administration (for infusions), the volume of required diluents, the route and frequency of administration. The prescription was then signed at the bottom with a single signature that covered all of the drug info^[10,11]

Electronic prescribing



E-prescribing is the use of health care technology to improve prescription accuracy, increase patient safety, and reduce costs as well as enable secure, real-time, bi-directional, electronic connectivity between clinicians and pharmacies. This is achieved by providing prescribers with a secure means of electronically accessing health plan formulary, patient eligibility, and medication history at the point of care and securely transmitting the prescription electronically into the pharmacy's computer system. The purpose of this paper is to review the key features in many e-prescribing applications as well as some of the benefits and challenges.^[12,13]

TYPES OF PRESCRIPTION ERROR

- Prescribing error
- Dispensing error
- Documentation error
- Administration error
- Transcription error

IV. CAUSES OF PRESCRIPTION ERRORS

Expired Product

Usually results from using expired products or from storing preparations improperly, which causes degradation.[14]

Incorrect Duration

When medication is taken for a longer or shorter amount of time than recommended, duration mistakes happen.[15]

Incorrect Preparation

This mistake typically happens while compounding or during another kind of pre-administration preparation. Selecting the wrong diluent for reconstitution is one example.[16]

Incorrect Strength

Throughout the course of taking medication, incorrect strength may occur at various stages. The selection of identical bottles or syringes with the wrong strength frequently happens as a result of human mistake. [17,18]

Incorrect Rate

Happens more frequently with drugs that are infused or pushed through an IV. This is especially risky while taking a lot of medications and could have serious negative effects.[19]

Incorrect Timing

Scheduled dose accuracy is difficult to achieve in both home and institutional settings. The issue is that taking certain medications with or without meals can drastically change how well they are absorbed. Therefore, it's critical to regularly follow the specified timings as this could result in either an underdose or an overdose. [20,21]

Incorrect dosage

This error consists of an additional dose, an underdose, and an overdose. Errors of omission occur when a planned medication dose is missed, when a drug is administered by the wrong route, and when an improper or different medication dose is administered than what was ordered. Errors resulting from wrong routes are typically caused by tubing that is adaptable to different connectors or lines of access, or by poor labelling. [22,23]

Incorrect Patient action

When a patient takes medication incorrectly, this happens. Preventing errors of this kind can only be achieved by patient education [24]

Pharmacist

Pharmacists typically make mechanical or judgmental mistakes. Inadequate medication utilization reviews, inappropriate screening, improper patient counseling, missed drug interactions, and improper monitoring are examples of judgmental errors. A mechanical error occurs when a prescription is prepared or dispensed incorrectly, for example, by giving the wrong instructions, delivering the wrong medication or dose, or delivering the wrong amount, strength, or dose. Overload, identical drug names, interruptions, a lack of support staff, not having enough time to counsel patients, and illegible handwriting are the most frequent causes. [25,26]

Prevalence

The prevalence of prescribing faults and prescription errors has been quantified in prospective and retrospective cohort studies. Internal or external reviews of prescriptions, performed mostly by experienced pharmacists, or direct interviews or voluntary reports from prescribers have been used as sources of information. Depending on the reference parameters used, the observed incidence varies greatly. It is usually higher in process-oriented studies, which evaluate the presence in the prescription of potentially harmful errors, than in outcome-oriented studies, which mostly evaluate the incidence of preventable adverse drug effects. Prescription errors account for 70% of medication errors that could potentially result in adverse effects. A mean value of prescribing errors with the potential for adverse effects in patients of about 4 in 1000 prescriptions was recorded in a teaching hospital. Such errors are also frequent in ambulatory settings. However, given the inconsistency of the criteria used to identify errors and the various definitions used, it is not surprising that a recent meta-analysis showed that the range of errors attributable to junior doctors, who are responsible for most prescriptions in hospitals, can vary from 2 to 514 per 1000 prescriptions and from 4.2 to 82% of patients or charts reviewed. [27,28]

Incidence

About 36 200 medication orders were written during the study period, and a prescribing error was identified in 1.5% (95% confidence interval (CI) 1.4 to 1.6). A potentially serious error occurred in 0.4% (95% CI 0.3 to 0.5). Most of the

errors (54%) were associated with choice of dose. Error rates were significantly different for different stages of patient stay ($p < 0.0001$) with a higher error rate for medication orders written during the inpatient stay than for those written on admission or discharge. While the majority of all errors (61%) originated in medication order writing, most serious errors (58%) originated in the prescribing decision. [29,30]

V. CONCLUSION

Based on this study, it was observed that prescription errors occurred in a considerable number and regarding important variables, involving all healthcare professionals working in patient care. There were about 135 prescribing errors identified each week, of which 34 were potentially serious knowing where and when errors are most likely to occur will be helpful in designing initiatives to reduce them. The study has highlighted the necessity of monitoring the prescription writing and reduce the practice of inappropriate prescribing through provision of appropriate unbiased information to healthcare professional.

ACKNOWLEDGEMENT

Every successful work is backed by sincerity and hard work. During this tenure of our work, we are able to gain a lot of theoretical and practical knowledge. Our project work would not have been possible without the wonderful support of my respected guide Dr. Kuldeep Pradhan, Dr. Neha-N-Rajpurohit and my classmates. Thank you for continuous support, motivation, enthusiasm, guidance, keep interest and inspiration. We are very grateful to those people who have helped me in every way during my project work on "An Overview On Prescription Error". We are thankful to Principal of Vardhaman College of Pharmacy, Koli Karanja (Lad), for providing facilities to undertake this work and also thankful to Dr. Varsha G. Rathod Mam Hon'ble President and Dr. Manoj Jain sir Hon'ble secretary for providing facilities to undertake this work and we also like to thank all my respected teachers for sharing their knowledge and cooperating with us as well as for motivating us throughout our work

REFERENCES

- [1]. Alhossan, A., Alhuqbani, W., Abogosh, A., Alkhezi, O., Alessa, M. And Ahmad, A., 2023. Inpatient Pharmacist Interventions In Reducing Prescription-Related Medication Errors In Intensive-Care Unit (Icu) In Riyadh, Saudi Arabia. *Farmacia*, 71(2), pp.404-410.
- [2]. Alqarni, S.A., Althobaiti, S.A., Althagafi, S.M., Almutairi, F.M., Alotaibi, A.A., Al Harthi, R.S., Alamri, A.S. and Aljueed, M.M., 2023. A Review Of The Public Healthcare System In Saudi Arabia. *Migration Letters*, 20(S12), pp.1356-1370.
- [3]. Alshahrani, F., Marriott, J.F. and Cox, A.R., 2021. A qualitative study of prescribing errors among multi-professional prescribers within an e-prescribing system. *International journal of clinical pharmacy*, 43(4), pp.884-892.
- [4]. Annisa, A.T., Yasin, N.M. and Kristina, S.A., 2023. The Role Of The E-Prescribing System In Healthcare: A Systematic Review. *Jurnal Farmasi Sains dan Praktis*, pp.40-48.
- [5]. Cheptanari-Birta, N., Brumarel, M., Safta, V., Spinei, L. and Adauji, S., 2022. The analysis of prescriptions and distribution of medicines in the prevention of medication errors in community pharmacies. *Farmacia*, 70(4), pp.760-766.
- [6]. Devin, J., Cullinan, S., Looi, C. and Cleary, B.J., 2022. Identification of prescribing errors in an electronic health record using a retract-and-reorder tool: A pilot study. *Journal of Patient Safety*, 18(7), pp.e1076-e1082.
- [7]. Kumar, M., Sahni, N., Shafiq, N. and Yaddanapudi, L.N., 2022. Medication prescription errors in the intensive care unit: prospective observational study. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*, 26(5), p.555.
- [8]. Amiri Jabalbareh, F., Dabaghzadeh, F. and Oghabian, Z., 2020. Role of pharmacists in reducing antibiotic prescribing errors in an emergency department. *Journal of Pharmacy Practice and Research*, 50(1), pp.42- 47.
- [9]. Ding, T.F., Ge, M.F., Xiong, C., Liu, Z.W. and Ling, G., 2023. Prescribed-time formation tracking of second-order multi-agent networks with directed graphs. *Automatica*, 152, p.110997.

- [10]. Gregory, H., Cantley, M., Calhoun, C., Hall, G.A., Matuskowitz, A.J. and Weant, K.A., 2021. Incidence of prescription errors in patients discharged from the emergency department. *The American Journal of Emergency Medicine*, 46, pp.266-270.
- [11]. Gugnani, A., Kushwaha, N., Uniyal, R., Shobhit, N., Vyas, N., Roopini, R., Bharath Kaarthic, R., Guru Krishna, N., Sai Saravanan, M., Mothieswaran, D. and Sonia, K., 2023. A Cross-Sectional Study of Investigating the Errors in Prescription and Drug Prescribing Pattern among General Community. *Journal of Advanced Zoology*, 44.
- [12]. Imlach, F., McKinlay, E., Kennedy, J., Morris, C., Pledger, M., Cumming, J. and McBride-Henry, K., 2021. E-prescribing and access to prescription medicines during lockdown: experience of patients in Aotearoa/New Zealand. *BMC Family Practice*, 22, pp.1-12.
- [13]. Khan, K.A., 2020. Medication incidents associated with outpatient computerized prescribing systems. *Asian Journal of Pharmaceutics (AJP)*, 14(03).
- [14]. Mahomedradja, R.F., Schinkel, M., Sigaloff, K.C., Reumerman, M.O., Otten, R.H., Tichelaar, J. and van Agtmael, M.A., 2023. Factors influencing in - hospital prescribing errors: A systematic review. *British journal of clinical pharmacology*, 89(6), pp.1724-1735.
- [15]. Moreno, B., Rivera, S., Avila, M., Gonzalez, A. and Zambrano, M., 2023. Prescription errors and drug interactions in adults hospitalized in an intensive care unit in Barranquilla (Colombia). *Revista Espanola de Salud Publica*, 97, pp.e202304031-e202304031.
- [16]. Mutair, A.A., Alhumaid, S., Shamsan, A., Zaidi, A.R.Z., Mohaini, M.A., Al Mutairi, A., Rabaan, A.A., Awad, M. and Al-Omari, A., 2021. The effective strategies to avoid medication errors and improving reporting systems. *Medicines*, 8(9), p.46.
- [17]. Satir, A., 2023. Prescribing errors in children (Doctoral dissertation, University_of_Basel).
- [18]. Ogbene, L.E., 2023. Drug Prescription Errors And Prevention Techniques From The Perspective Of Nurses, Pharmacists, And Nursing Students. *Multi-Disciplinary Research and Development Journals Int'l*, 1(1), pp.8-8.
- [19]. Osmani, F., Arab-Zozani, M., Shahali, Z. and Lotfi, F., 2023, May. Evaluation of the effectiveness of electronic prescription in reducing medical and medical errors (systematic review study). In *Annales Pharmaceutiques Françaises* (Vol. 81, No. 3, pp. 433-445). Elsevier Masson.
- [20]. Pulichikkat, R.K. and Joy, M., 2020. Effect of training on reducing prescription errors among junior residents in the medical OPD of a medical college. *International Archives of Integrated Medicine*, 7(7).
- [21]. Riva, S.B.M., da Costa, M.M. and dos Santos, L., 2020. Evaluation of medication errors in electronic medical prescriptions and proposal for correction. *Research on Biomedical Engineering*, 36, pp.59-65.
- [22]. Roberts, J., Jaam, M., Paudyal, V. and Hadi, M.A., 2023. Minimizing prescribing errors: A phenomenological exploration of the views and experiences of independent prescribing pharmacists. *British Journal of Clinical Pharmacology*, 89(9), pp.2747-2756.
- [23]. Roberts, J., Jaam, M., Paudyal, V. and Hadi, M.A., 2023. Minimizing prescribing errors: A phenomenological exploration of the views and experiences of independent prescribing pharmacists. *British Journal of Clinical Pharmacology*, 89(9), pp.2747-2756.
- [24]. Anzan, M., Alwhaibi, M., Almetwazi, M. and Alhawassi, T.M., 2021. Prescribing errors and associated factors in discharge prescriptions in the emergency department: A prospective cross-sectional study. *PLoS One*, 16(1), p.e0245321
- [25]. Shrestha, B., 2023. Evaluation Of Prescription Errors In Teaching Hospital. *Journal of Universal College of Medical Sciences*, 11(3).
- [26]. Simegn, W., Weldegerima, B., Seid, M., Zewdie, A., Wondimsiegn, D., Abyu, C., Kasahun, A.E., Seid, A.M., Sisay, G. and Yeshaw, Y., 2022. Assessment of prescribing errors reported by community pharmacy professionals. *Journal of pharmaceutical policy and practice*, 15(1), p.62.

- [27]. Suclupe, S., Martinez - Zapata, M.J., Mancebo, J., Font - Vaquer, A., Castillo - Masa, A.M., Viñolas, I., Morón, and Robleda, G., 2020. Medication errors in prescription and administration in critically ill patients. *Journal of advanced nursing*, 76(5), pp.1192-1200.
- [28]. Vivekanandan, K., Geethalakshmi, S., Harikrishnan, N. and Bhavya, E., 2022. A Study of Prescription Pattern and Prescription Errors in Patients Referred at Multi Speciality Hospital in Chennai. *International Journal of Health Sciences*, (III), pp.1721-1730.
- [29]. Williams, J., Malden, S., Heeney, C., Bouamrane, M., Holder, M., Perera, U., Bates, D.W. and Sheikh, A., 2022. Optimizing hospital electronic prescribing systems: a systematic scoping review. *Journal of patient safety*, 18(2), pp.e547-e562.
- [30]. Yang, J. and Zheng, L., 2022. Drug and therapeutics committee interventions in managing irrational drug use and antimicrobial stewardship in China. *Frontiers in Pharmacology*, 13, p.829408.