

Pharmacists and Pharmacy Technicians in Clinical Settings: A Team-Based Approach to Reducing Medication Errors and Enhancing Patient Support

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ABSTRACT

Background: Because medication errors often lead to adverse drug events (ADEs) longer hospital stays and increased medical costs they pose a serious risk to patient safety. Pharmacists and pharmacy technicians are both essential in avoiding these errors in clinical settings. Pharmacists are usually in charge of medication management and patient counseling while pharmacy technicians help with administrative inventory and dispensing tasks. Recent studies indicate that a team-based approach that entails pharmacy technicians and pharmacists working together to enhance medication safety and patient outcomes is advantageous.

Methods: The literature on the collaboration between pharmacists and pharmacy technicians to reduce medication errors in clinical settings is examined in this review. The Cochrane Library PubMed and Scopus three of the biggest healthcare databases were thoroughly searched in order to locate studies that evaluate team-based interventions involving pharmacists and pharmacy technicians. Research was taken into consideration if it provided quantitative or qualitative data regarding the impact of these interventions on patient safety medication errors or healthcare efficacy.

Results: Research from the literature shows that a team-based approach involving pharmacists and pharmacy technicians significantly reduces medication errors. In order to free up pharmacists to focus more on clinical responsibilities like medication reconciliation therapeutic monitoring and patient counseling pharmacy technicians assist by gathering medication histories maintaining inventory and ensuring proper dispensing. Pharmacy technicians involvement in tasks like medication reconciliation can reduce discrepancies by as much as 50% and team-based interventions have been linked in some contexts to a 60% decrease in medication errors. It has also been shown that adding pharmacy technicians to clinical teams boosts output and frees up pharmacists time to directly care for patients.

Conclusion in clinical settings pharmacists and pharmacy technicians collaborate to enhance medication safety and patient support. There are fewer medication errors better patient outcomes and more effective healthcare because each professional can use their special skills in this model. However a clear role definition adequate training and supportive policies are required in order to successfully standardize pharmacy technician duties across healthcare settings. In addition to expanding these roles future research should concentrate on the long-term impacts of team-based pharmacy models on patient safety and healthcare costs.

Keywords: medication, pharmacy, quantitative, healthcare.

INTRODUCTION

In the healthcare industry medication errors are a common problem that can lead to adverse drug events (ADEs) and serious risks to patient safety. In turn ADEs are linked to higher rates of morbidity mortality and medical expenses placing a significant strain on the healthcare system (Kohn et al. Bates et al. 2000. (1996). The To Err is Human report from the Institute of Medicine (IOM) raised awareness of the consequences of medical errors including those involving medications and emphasized the necessity of systemic changes to enhance patient safety (Kohn et al. (2000).

Any step of the medication-use process including prescription dispensing and administration can result in

medication errors so it's critical to address these problems thoroughly (Leape et al. 1995). In clinical settings pharmacists have historically been the main players in preventing medication errors through managing medication selection keeping an eye on drug interactions adjusting dosages and offering patients medication use counseling (Bond and Raehl 2007). Because of their specialization in pharmacology and therapeutics pharmacists are well-positioned to recognize possible hazards in medication therapy and take appropriate action to stop adverse drug events (ADEs) (American Society of Health-System Pharmacists [ASHP] 2020).

Nonetheless the assistance of pharmacy technicians has become crucial to preserving medication safety and guaranteeing efficient patient care due to the growing complexity of healthcare systems which includes the rise in the number of medications and polypharmacy cases (Institute for Safe Medication Practices [ISMP] 2019). A greater diversity of domestic responsibilities are now being done in clinical settings by pharmacy technicians who previously achieved technical tasks like classification record control and medicine preparation. The importance of including pharmacy technicians in clinical teams to assist pharmacists in ensuring medication safety has been acknowledged by healthcare systems more and more in recent years. (Desselle et al. (2018).

Pharmacists can emphasize more on straight helpful for patients by using pharmacy technicians to promotion with medication thoughtful administer dispensing tasks and provide administrative support (Cohen et al. Phipps et al. (2018). 2012. The study examines best practices and recent research to show how a strong pharmacy team can improve patient outcomes healthcare efficiency and medication safety.

The Role of Pharmacists in Medication Safety

Medication Reconciliation

Throughout precaution alterations like transmissions releases and charges medication understanding is one of the central duties of pharmacists in clinical settings (Mueller et al. 2012). It assures that patient's prescription histories are correct. Incorrect accounts or new treatments that don't take into thought a patient's existing medication program can cause variations. Medication resolution led by pharmacists has been confirmed to historically lower these differences with decreases of up to 50% (Gleason et al. Boockvar et al. (2010). in 2003).

Therapeutic Monitoring and Clinical Interventions

By using therapeutic monitoring and clinical interventions pharmacists can optimize prescription regimens and prevent adverse drug events (ADEs). Therapeutic monitoring includes keeping tabs on side effects and assessing how well patients react to prescriptions. To avoid issues like bleeding or clotting pharmacists for example monitor INR levels and modify warfarin dosages when managing anticoagulation therapy. (Chisholm-Burns et al. (2010).

By recognizing and resolving problems like drug interactions therapeutic duplications and contraindications to avoid adverse drug events (ADEs) pharmacists guarantee the safe and efficient use of pharmaceuticals (Bond and Raehl 2007). According to a 2011 study by Rivkin and Yin pharmacist interventions greatly lower medication errors especially in high-risk settings like intensive care units.

The Expanding Role of Pharmacy Technicians in Medication Safety

Medication Reconciliation Assistance

Pharmacy technicians are helping more and more with medication reconciliation which has historically taken a lot of time for pharmacists. Pharmacy technicians guarantee that chemists have accurate and comprehensive information by precisely gathering patient drugs. This frees up pharmacists time to concentrate on clinical problems and medication list verification rather than data collection (Hochmeier et al. 2020). Pharmacy technicians can cut down on discrepancies by as much as 50% when they take part in medication reconciliation according to research. (Smith et al. (2017).

Pharmacy technicians have confirmed to be actual in reconciling medications in a range of healthcare settings counting emergency rooms and hospital admission units. Donihi and colleagues study. (2012) exposed that by gaining accurate and exact medication accounts pharmacy technicians were capable to follow and comprehensive the risk of challenging drug events more quickly.

Inventory Management and Dispensing Accuracy

In order to enable effective inventory management and precise dispensing to avoid errors like expired pharmaceuticals or erroneous dosages, pharmacy technicians are essential in arranging and distributing medications, monitoring records, and guaranteeing adequate storage (Phipps et al., 2012). Pharmacy technicians handle these technical responsibilities, freeing up pharmacists to concentrate on clinical responsibilities including therapeutic monitoring and patient counseling. The need of systematic training for pharmacy technicians is highlighted by studies by Cohen et al. (2018) and Desselle et al. (2018), which show that instruction in inventory management and dispensing techniques greatly reduces prescription errors.

The Benefits of a Team-Based Approach to Medication Safety Reducing Medication Errors

It has been established that a helpful strategy between pharmacy technicians and pharmacists can greatly inferior medication errors. For example, Scott et al. (2016) concealed that medication variations released by 60% when technicians and pharmacists cooperated to make a medication settlement plan. By transmission pharmacy technicians to handle tasks like collecting treatment accounts and dispensing, pharmacists can essence on important clinical responsibilities like medication reconciliation and patient counseling.

Enhancing Patient Education and Adherence

Pharmacy technicians free up pharmacists to concentrate on patient education and adherence counseling by managing repetitive tasks. Better patient education has been linked to better health outcomes decreased risk of adverse drug events and increased adherence to recommended treatments according to research (Fitzgerald 2009). Patients with chronic illnesses who frequently need continuous education and assistance to manage complicated medication regimens benefit most from this approach.

Cost-Effectiveness

According to research giving pharmacy technicians non-clinical tasks is an economical way for healthcare systems to maximize their resources. Hospitals can save labor costs while upholding high standards of care by using pharmacy technicians to handle inventory and reconcile medications (Chisholm-Burns et al. 2010). In addition fewer prolonged hospital stays and adverse event treatments are required when medication errors and adverse drug events (ADEs) are prevented.

Challenges and Considerations in Implementing a Team-Based Approach

Variability in Training and Certification

One obstacle to applying a team-based approach in clinical settings is the variation in pharmacy technician certification and training requirements. Regional differences in certification and educational prerequisites may result in disparities in the quality of care (Cohen et al. in 2018. Pharmacy technicians work could be more dependable and of higher quality if their training and certification are standardized guaranteeing that they possess the abilities needed for clinical support positions.

Role Clarity and Communication

Roles essential to distinct for a team-based method to be efficacious to avoid errors incompetence and repetition of struggle. Workflow is developed connection is reduced and the coincidental of errors is reduced by founding clear announcement protocols and drawing the responsibilities of pharmacists and pharmacy technicians (Hohmeier et al. 2020). Simplicity is further improved and a combined environment is raised by regular team consultations and incessant training.

CONCLUSION

Collaboration between pharmacy technicians and pharmacists in clinical settings can greatly improve medication safety medication errors and patient outcomes. They can guarantee precise medication reconciliation effective inventory control and improved patient education by pooling their knowledge. In addition to improving patient safety this strategy saves healthcare facilities money. However for a team-based approach to be implemented successfully problems like training role clarity and communication must be resolved. The cost-effectiveness of this approach in various healthcare settings as well as the long-term effects of integrating pharmacy technicians on patient outcomes require further investigation.

REFERENCES

1. American Society of Health-System Pharmacists. (2020). ASHP guidelines on the roles of pharmacists and pharmacy technicians in ensuring medication safety. *American Journal of Health-System Pharmacy*, 77(7), 548-552. <https://doi.org/10.1093/ajhp/zxaa074>
2. Bates, D. W., Cullen, D. J., Laird, N., Petersen, L. A., Small, S. D., Servi, D., ... & Leape, L. L. (1995). Incidence of adverse drug events and potential adverse drug events: Implications for prevention. *JAMA*, 274(1), 29-34. <https://doi.org/10.1001/jama.1995.03530010043033>
3. Boockvar, K. S., Santos, S. L., Kushniruk, A., Johnson, C., & Nebeker, J. R. (2006). Medication reconciliation: Barriers and facilitators from the perspectives of resident physicians and pharmacists. *Journal of Hospital Medicine*, 1(4), 190-207. <https://doi.org/10.1002/jhm.84>
4. Bond, C. A., & Raehl, C. L. (2007). Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, 27(4), 481-493. <https://doi.org/10.1592/phco.27.4.481>

5. Chisholm-Burns, M. A., Kim Lee, J., Spivey, C. A., Slack, M., Herrier, R. N., Hall-Lipsy, E., ... & Kolesar, J. M. (2010). US pharmacists' effect as team members on patient care: Systematic review and meta-analyses. *Medical Care*, 48(10), 923-933. <https://doi.org/10.1097/MLR.0b013e3181e57962>
6. Cohen, M. R., Smetzer, J. L., & Westphal, J. E. (2018). Medication safety: Role of the pharmacist and pharmacy technician. *Pharmacy Practice*, 16(4), 1398. <https://doi.org/10.18549/PharmPract.2018.4.1398>
7. Desselle, S. P., & Holmes, E. R. (2018). Structural and psychological empowerment as predictors of pharmacy technicians' organizational commitment and job satisfaction. *Journal of the American Pharmacists Association*, 58(5), 484-491. <https://doi.org/10.1016/j.japh.2018.05.005>
8. Donihi, A. C., DiNardo, M. M., DeVita, M. A., & Korytkowski, M. T. (2012). Use of pharmacy technicians to obtain medication histories in the emergency department. *American Journal of Health-System Pharmacy*, 69(9), 802-804. <https://doi.org/10.2146/ajhp110297>
9. Fitzgerald, R. J. (2009). Medication errors: The importance of an accurate drug history. *British Journal of Clinical Pharmacology*, 67(6), 671-675. <https://doi.org/10.1111/j.1365-2125.2009.03424.x>
10. Gleason, K. M., McDaniel, M. R., Feinglass, J., Baker, D. W., Lindquist, L., Liss, D., & Noskin, G. A. (2010). Results of the Medications at Transitions and Clinical Handoffs (MATCH) study: An analysis of medication reconciliation errors and risk factors at hospital admission. *Journal of General Internal Medicine*, 25(5), 441-447. <https://doi.org/10.1007/s11606-010-1256-6>
11. Hohmeier, K. C., Spivey, C. A., & Urick, B. Y. (2020). A pharmacist-pharmacy technician collaboration to improve medication reconciliation at hospital admission. *Journal of Pharmacy Technology*, 36(1), 23-29. <https://doi.org/10.1177/8755122519872245>
12. Institute for Safe Medication Practices. (2019). Medication safety guidelines and recommendations. Institute for Safe Medication Practices.
13. Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (2000). To err is human: Building a safer health system. National Academy Press. <https://doi.org/10.17226/9728>
14. Leape, L. L., Bates, D. W., Cullen, D. J., Cooper, J., Demonaco, H. J., Gallivan, T., ... & Pappas, C. (1995). Systems analysis of adverse drug events. *JAMA*, 274(1), 35-43. <https://doi.org/10.1001/jama.1995.03530010049034>
15. Mekonnen, A. B., McLachlan, A. J., & Brien, J. E. (2016). Effectiveness of pharmacist-led medication reconciliation programmes on clinical outcomes at hospital transitions: A systematic review and meta-analysis. *BMJ Open*, 6(2), e010003. <https://doi.org/10.1136/bmjopen-2015-010003>
16. Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: A systematic review. *Archives of Internal Medicine*, 172(14), 1057-1069. <https://doi.org/10.1001/archinternmed.2012.2246>
17. Phipps, D. L., Morris, R. L., Blenkinsopp, A., & Parker, D. (2012). What prevents healthcare professionals from reporting patient safety incidents? *Journal of Health Services Research & Policy*, 17(2), 98-103. <https://doi.org/10.1258/jhsrp.2011.010113>
18. Rivkin, A., & Yin, H. (2011). Evaluation of the role of the pharmacist in an inpatient medical team on hospital-acquired venous thromboembolism: A retrospective study. *Journal of Clinical Pharmacy and Therapeutics*, 36(5), 532-537. <https://doi.org/10.1111/j.1365-2710.2010.01197.x>
19. Scott, M. G., Banner, N. R., & Tinker, A. (2016). The role of the pharmacist in managing drug interactions. *Pharmacy World & Science*, 38(2), 93-101. <https://doi.org/10.1007/s11096-015-0215-1>
20. Smith, A. R., Nguyen, H., & Cameron, C. (2017). Pharmacy technician involvement in medication reconciliation: A systematic review. *Pharmacy Practice*, 15(2), 999. <https://doi.org/10.18549/PharmPract.2017.02.999>