

Time Critical Medicine Sticker for Inpatients with Parkinson's Disease

E. Killeen, G. Suresh, M. Reardon.

Geriatric Medicine Department, Wexford General Hospital, Newtown Rd., Carricklawn, Co.
Wexford, Ireland.

Abstract

Aims

Inpatients with Parkinson's Disease (PD) are at risk of medication errors due to individualised 'Time Critical Medication' (TCM) regimes. We aimed to assess and improve TCM safety.

Methods

Prospective medication chart review of inpatients with PD. Medication errors reported to Quality and Risk (Q&R) reviewed. TCM sticker (€0.03 each) implemented for medication charts. Impact assessed using anonymised staff survey and re-review of medication charts.

Results

Six inpatients with PD, on >1 TCM. Six (100%) had >1 medication error. Four (67%) had >1 TCM dose delayed/missed. One fasting patient missed TCM for 36 hours. One TCM not administered for six days. Twenty-two staff were surveyed. Twenty-one (95%) thought the sticker improves TCM awareness and is a helpful reminder to give TCMs at the correct time. It is a clear visual aid, especially if fasting. Seven inpatients re-reviewed. Five (72%) had TCM sticker. TCM timings were clear for six (86%). Four (57%) had missed doses, two (28%) had delayed doses.

Conclusion

Inpatients with PD experience medication errors. A low-cost TCM sticker improved staff awareness and timely TCM administration.

Introduction

Parkinson's disease (PD) is a progressive neurological disease and people with PD can have complex care needs¹⁻³. Management of PD mainly occurs in an outpatient setting through specialist clinics. People with PD often have specific individualised medication requirements

such as strict timing⁴⁻⁷. Challenges therefore can arise when people with PD are admitted as inpatients to hospital.

Certain medications in PD are 'time-critical', which means that in order to minimise symptoms of PD they should not be delayed⁷. Incorrect timing, frequency, and dosing are the most common errors in hospitalised patients⁸. These errors increase the risk of adverse events, including uncontrolled symptoms of PD, confusion, falls, difficulty walking, and communicating^{4,6,9,10}. These adverse medication events are associated with increased length of stay, delayed recovery, and worse outcomes^{11,12}. Improving patient safety contributes to improved healthcare efficiency, reduced healthcare costs, and improved patient outcomes¹³.

The authors are members of the local Medication Safety committee in a level 3 hospital in Ireland. This hospital uses paper-based medical records including medication charts. Suboptimal PD medication prescribing and administration for inpatients with PD was noted; a TCM sticker was introduced to address this. This mixed-methods quality improvement project was undertaken in two cycles using the Plan, Do, Study, Act method¹⁴. In an era of increasing digitalisation, this project highlights how a simple, low-cost sticker can improve care and safety of inpatients with PD.

Methods

Cycle 1: Prospective review of medication charts for inpatients with PD was conducted on 13/5/25. Retrospective data was also obtained from the Quality and Risk (Q&R) Department of all medication errors reported between October 2024 and March 2025.

Cycle 2: The authors designed and implemented a 'Time Critical Medication' sticker for use on medication charts. The stickers are placed below TCMs by pharmacists, nurses or doctors, ideally from the point of admission to hospital. Each sticker costs €0.03. An anonymised staff survey was conducted on 19/6/25 to assess the interventions impact. Prospective medication chart review also conducted of inpatients with PD.

Approval was obtained through the Q&R department. All data was anonymised and stored securely.

Results

Cycle 1: Medication Record Review

Of 161 inpatients, six (4%) inpatients had PD. Four (67%) patients were on one type of PD medication. Two (33%) patients were on four different medications.

Written timings of medication were unclear for four (66%) patients. Time of administration was unclear in 100% of medicine charts.

Six (100%) of patients had at least one medication error. Four (67%) patients missed more than one dose of their TCM. Four (67%) patients had delayed TCM administration. One (16%) patient was in ED for 14 hours with only one dose of their TCM prescribed and administered. One (16%) patient admitted to ICU was fasting and missed their TCM for 36 hours.

Reported medication errors

Of 89 medication errors reported to the Q&R Department over a six-month period, only one (1.2%) related to PD medication, however it was a significant error. A patient's regular TCM was omitted when their medication chart was rewritten. As such, they did not receive this medication for six days as an inpatient.

Cycle 2: Staff survey following TCM sticker implementation

Hospital staff surveyed included nurses (n=8, 36%), clinical nurse managers (n=6, 27%), doctors (n=6, 27%), and pharmacists (n= 2, 9%).

Twenty-one (95%) respondents thought the sticker was helpful. Twenty-one (95%) agreed that the sticker improved their awareness that a patient is taking a TCM. Staff commented that the bright yellow colour served as a clear visual aid and reminder. One staff member commented that it also served as a prompt to liaise with team members about preventing missed/delayed doses if a patient was fasting. Twenty-one (95%) agreed that the sticker was a helpful reminder to give medications at the correct time.

Medication Chart Review

Seven medication charts of inpatients with PD were reviewed. Five (72%) had the TCM sticker. TCM timings were clear for six (86%). Four (57%) had missed doses, and two (28%) had delayed doses.

Discussion

Inpatients with PD are at risk of medication errors, as highlighted in the first cycle of our study. Our local medication safety committee introduced a low-cost 'TCM' sticker. This improved staff awareness and prompted timely administration of TCMs, although ongoing education is still required to improve uptake of TCM sticker use and further reduce missed/delayed doses. This highlights how in an era of increasing digitalisation and technology aids, simple interventions in paper-based clinical areas can have meaningful impact on patient safety.

Acknowledgements:

All staff who participated in our anonymous survey.

Declarations of Conflicts of Interest:

None declared.

Corresponding Author:

Emily Killeen,
Geriatric Medicine Department,
Wexford General Hospital,
Newtown Rd.,
Carricklawn,
Co. Wexford,
Ireland.

E-Mail: emily.killeen@hotmail.com

References:

1. Parkinson's Ireland. What is Parkinson's Disease? 2024 [Available from: [https://www.parkinsons.ie/understanding-parkinsons/what-is-parkinsons/#:~:text=Parkinson's%20Disease%20\(Parkinson's\)%20is%20a%20progressive%20neurological%20disorder%2C%20and,with%20medication%20for%20many%20years.](https://www.parkinsons.ie/understanding-parkinsons/what-is-parkinsons/#:~:text=Parkinson's%20Disease%20(Parkinson's)%20is%20a%20progressive%20neurological%20disorder%2C%20and,with%20medication%20for%20many%20years.)].
2. National Clinical Programme for Neurology. Model of Care 2016 [Available from: <https://www.hse.ie/eng/services/publications/clinical-strategy-and-programmes/neurology-model-of-care.pdf>].
3. Soileau MJ, Furr-stimming EE. Inpatient Management of Parkinson's Disease Practical Neurology 2014 [Available from: <https://practicalneurology.com/articles/2014-oct/inpatient-management-of-parkinsons-disease>].
4. Ellis DM, Dowdell EB, Romero de Slavy J, Hummel LL, Kropkowski LR, Vernon GM, et al. Supporting Parkinson's disease medication safety for nurses in the acute care setting

through an educational intervention study. *Journal of Nursing Scholarship* [Internet]. 2023; 55(6):[1106-15 pp.]. Available from:

<http://proxy.library.rcsi.ie/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cul&AN=173396835&site=ehost-live>.

5. Boudreaux A, Schell RF, Nelson SD, Phibbs F, Stroh J, Depp AF. Improving Medication Management for Inpatients with a Secondary Diagnosis of Parkinson Disease. *AJN American Journal of Nursing* [Internet]. 2024; 124(5):[50-7 pp.]. Available from: <http://proxy.library.rcsi.ie/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cul&AN=176931130&site=ehost-live>.
6. Ramirez-Zamora A, Tsuboi T. Hospital Management of Parkinson Disease Patients. *Clin Geriatr Med* [Internet]. 2020 Feb; 36(1):[173-81 pp.].
7. Yu JRT, Sokola BS, Walter BL. Optimization of inpatient medication administration among persons with Parkinson's disease: recommendations on pharmacy technology and workflow. *Front Pharmacol* [Internet]. 2023 [cited The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. PMC10682362]; 14:[1254757 p.].
8. Viudez-Martínez A, Ramírez-López A, López-Nieto J, Climent-Grana E, Riera G. Antiparkinsonian Medication Reconciliation as a Strategy to Improve Safety by Preventing Medication Errors. *Mov Disord Clin Pract* [Internet]. 2023 Jul PMC10354616]; 10(7):[1090-8 pp.].
9. Donizak J, McCabe C. Pharmacological management of patients with Parkinson's disease in the acute hospital setting: a review. *British Journal of Neuroscience Nursing* [Internet]. 2017; 13(5):[220-5 pp.]. Available from: <http://proxy.library.rcsi.ie/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cul&AN=126027152&site=ehost-live>.
10. Parkinson's Foundation. Hospitalization 2024 [Available from: <https://www.parkinson.org/living-with-parkinsons/care-programs/hospitalization#:~:text=Already%20a%20delicate%20balance%2C%20PD,worsen%20PD%20are%20sometimes%20prescribed>].
11. Hospital Care Recommendations [Internet]. 2023. Available from: <https://www.parkinson.org/sites/default/files/documents/hospital-care-recommendations-april2023.pdf>.
12. Foster A. Guidelines for the Acute Management of In-patients with Parkinson's 2019 [Available from: <https://aaamedicines.org.uk/media/pouEIFPD/inpatient-guidelines-for-pd-management.pdf>].
13. World Health Organisation. Patient Safety 2023 [Available from: <https://www.who.int/news-room/fact-sheets/detail/patient-safety>].
14. Taylor MJ, McNicholas C, Nicolay C, Darzi A, Bell D, Reed JE. Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Quality & Safety*. 2014;23(4):290-8.