

Improving the peri-operative management of patients with Parkinson's disease

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Introduction

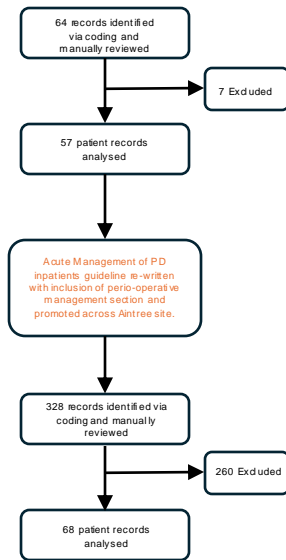
Parkinson's disease (PD) is a progressive neurological condition which affects approximately 153,000 people in the United Kingdom (1). It classically involves a triad of bradykinesia, rigidity and tremor alongside other significant motor and non-motor features (2). Delayed or missed medications can result in unpleasant motor and non-motor fluctuations (3). Inappropriate management of patient medication has been shown to result in longer length of stay, delayed recovery, and worse overall outcomes (4). Patients with PD have a high risk of complications peri-operatively with evidence showing they are best managed via a multidisciplinary approach (5).

The PD team at Aintree University Hospital, part of NHS University Hospitals of Liverpool Group (UHLG), noted that referrals for patients undergoing surgery were low. An initial review of data confirmed that patients undergoing surgery at the site were not having the PD team involved in their care with no patients seen pre-operatively and only 2 patients seen post-operatively.

The acute management of Parkinson's disease for inpatients guidelines were updated to include more detailed advice around the management of patients with PD undergoing surgery. The second cycle of the project reviewed patients cared for after the intervention had occurred.

Methods

Data for patients with PD who underwent a surgical procedure over two twelve-month periods was requested and analysed. This included the year 2019 and July 2022 to June 2023. Patient records were identified via coding. Each individual patient dataset was reviewed using the electronic medical record (dashboard), JAC prescribing and e-exchange software. Reasons for exclusion included day case procedures not requiring admission, incorrect diagnosis of PD, not on oral Parkinson's medications and no surgical procedure being performed.

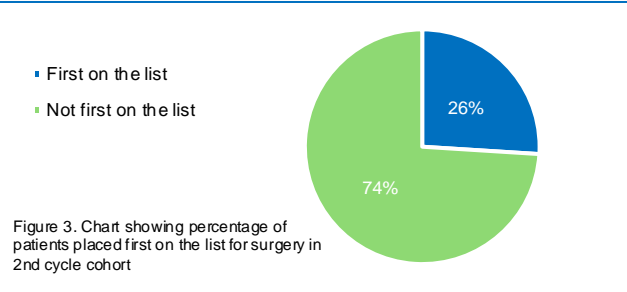
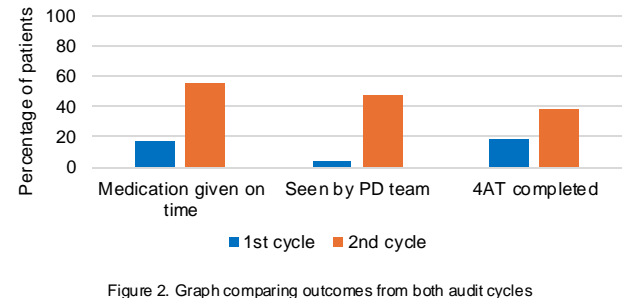
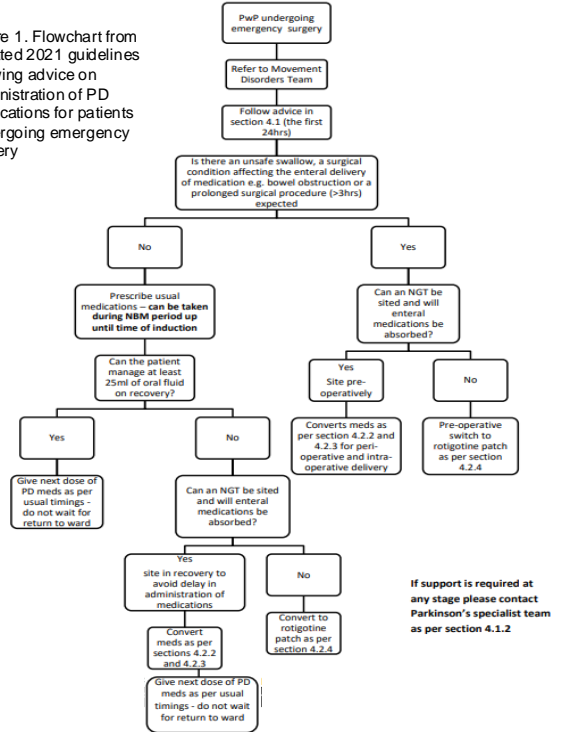


Results

After the guideline was implemented the number of patients reviewed either pre- or post-operatively by the PD team increased from 4 to 47% (Figure 2). In the initial review there were 640 missed or late doses of PD medications, with only 17% of patients consistently receiving their medications on time. This improved to 56% in the second cohort (Figure 2). Cognitive testing via the 4AT was completed for 38% of patients compared to 18% in the initial cohort.

In the second cohort data was collected to review the number of patients with PD who were put first on the operating list, this occurred in only 26% of patients (figure 3).

Figure 1. Flowchart from updated 2021 guidelines showing advice on administration of PD medications for patients undergoing emergency surgery



Conclusion

The results show an improvement in all aspects of care that were reviewed. The number of patients seen by the PD team, medications given on time, and cognitive tests performed all improved. Despite this there is still room for improvement; medications are still not being given on time, every time. UHLG has undertaken a trust wide time critical medication quality improvement project which we hope will have a positive impact. Further improvement through education of the surgical and anaesthetic teams and a guideline awareness campaign are planned.

References

1. Parkinson's UK. What is Parkinson's disease. 2024. Accessed 09/12/2024. Available at <https://www.parkinsons.org.uk/information-and-support/what-parkinsons>. 2. Kalia LV, Lang AE. Parkinson's disease. Lancet. 2015 Aug 29;386(9996):896-912. doi: 10.1016/S0140-6736(14)61393-3. Epub 2015 Apr 19. PMID: 25904081. 3. Kim A, Kim HJ, Shin CW, Kim A, Kim Y, Jang M, Jung YJ, Lee WW, Park H, Jeon B. Emergence of non-motor fluctuations with reference to motor fluctuations in Parkinson's disease. Parkinsonism Relat Disord. 2018 Sep;54:79-83. doi: 10.1016/j.parkreldis.2018.04.020. Epub 2018 Apr 19. PMID: 29724602. 4. Bakker, M., Johnson, M.E., Corre, L., Mil, D.N., Li, X., Woodman, R.J. and Johnson, J.L., 2022. Identifying rates and risk factors for medication errors during hospitalization in the Australian Parkinson's disease population: A 3-year, multi-center study. Plos one, 17(5), p.e0267969. 5. Lenka A, Mittal SO, Lamotte G, Pagan FL. A Pragmatic Approach to the Perioperative Management of Parkinson's Disease. Canadian Journal of Neurological Sciences / Journal Canadien des Sciences Neurologiques. 2021;48(3):299-307. doi:10.1017/cjn.2020.211

Peri-operative management of patients with Parkinson's disease

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Introduction

Parkinson's disease (PD) is a progressive neurological condition which affects approximately 153,000 people in the United Kingdom (1). It classically involves a triad of bradykinesia, rigidity and tremor alongside other significant motor and non-motor features (2). Delayed or missed medications can result in unpleasant motor and non-motor fluctuations (3). Inappropriate management of patient medication has been shown to result in longer length of stay, delayed recovery, and worse overall outcomes (4). Patients with PD have a high risk of complications peri-operatively with evidence showing they are best managed via a multidisciplinary approach (5).

The PD team at Aintree University Hospital, part of NHS University Hospitals of Liverpool Group, noted that referrals for patients undergoing surgery were low. An initial review of data confirmed that patients undergoing surgery at the site were not having the PD team involved in their care with no patients seen pre-operatively and only 2 patients seen post-operatively. Other aspects of care were found to need improvement; with 47 out of 57 patients having no cognitive assessment, and 640 medication errors.

After the review *The acute management of Parkinson's disease for inpatients* guidelines were updated to include more detailed advice around the management of patients with PD undergoing surgery. The second cycle of the project reviewed patients cared for after the intervention had occurred.

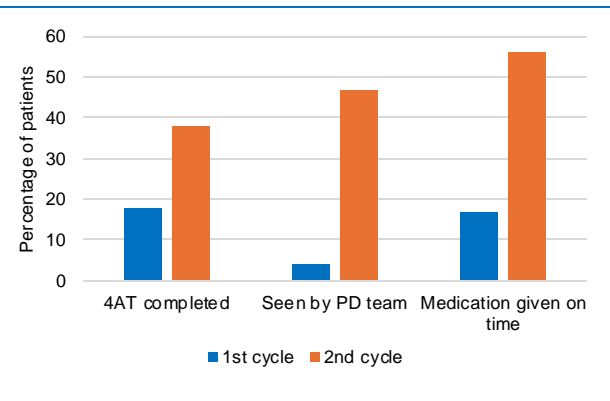


Figure 1. Graph comparing outcomes from both audit cycles

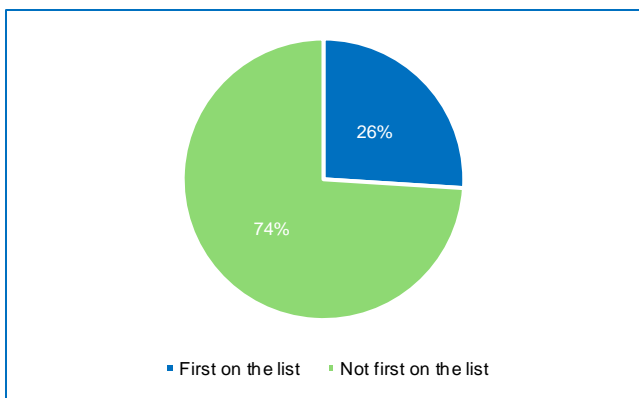


Figure 2. Chart showing percentage of patients placed first on the list for surgery in 2nd cycle cohort

Methods

1st Cycle (2019)
57 patients

Data collected = time and date of procedure, type of procedure, anaesthetic type, administration and timing of medications, PD team review, 4AT performed

Intervention (2021)

Update to PD guidelines available through trust's online system

Presented to anaesthetic team

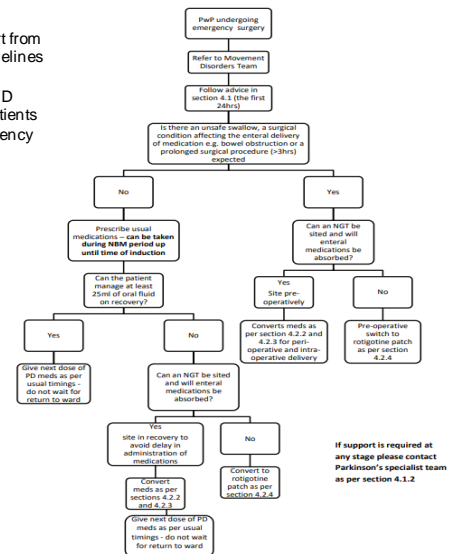
Email circulated to anaesthetic/surgical teams

2nd Cycle (2022/23)
68 patients

Excluded patients = day case, no PD diagnosis, not admitted, no PD medications, no surgical procedure)

Data collected = admission time, emergency vs elective procedure, allocation on list, missed doses, 4AT performed, PD team review

Figure 3. Flowchart from updated 2021 guidelines showing advice on administration of PD medications for patients undergoing emergency surgery



If support is required at any stage please contact Parkinson's specialist team as per section 4.1.2

Results

Sixty-eight patients were included in the final analysis. 56% of patients had their medications given on time compared to 17% from the previous cohort. Cognitive testing via the 4AT was completed for 38% of patients compared to 18% in the previous cohort. Patients seen by the PD team also increased from 4% to 47% (figure 1). Results showed that 26% of patients were documented as first on the operating list (figure 2).

Conclusion

The results show an improvement in all aspects of care that were reviewed. The number of patients seen by the PD team, medications given on time, and cognitive tests performed all improved. Despite this there is still room for improvement; medications are still not being given on time, every time. The trust has undertaken a trust wide time critical medication quality improvement project which we hope will have a positive impact. Further improvement through education of the surgical and anaesthetic teams and a guideline awareness campaign are planned.

References

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The project started in 2019 reviewing the perioperative management of patients with PD. Following this work the University of Liverpool Hospitals Group implemented a new section within the surgical and peri-operative standard operating procedure for the acute management of Parkinson's disease for surgical inpatients as the intervention to improve care. The second cycle of the project reviewed patients cared for after the intervention had occurred.

Methods

Data for patients with PD who underwent a surgical procedure over 2 twelve-month periods was requested and analysed. This included the year 2019 and July 2022 to June 2023. This information included the hospital number (RQ), surgical procedure type, and dates of surgery. Each individual patient dataset was reviewed using Dashboard, JAC prescribing and e-exchange software.

Initial data collection in 2019 identified and analysed information from 57 patients with PD, with the second cycle identifying 68 appropriate patients. Reasons for exclusion included day case procedures not requiring admission, incorrect diagnosis of PD, not on oral Parkinson's medications and no surgical procedure being performed. Data collected included the patients' admission time, type of operation, allocation on the list, whether any doses of medications were missed, whether they had cognitive testing via the 4AT, and whether they received a Parkinson's specialist nurse review.



Results

Sixty-eight patients were included in the final analysis. Results showed 26% of patients were documented as being first on the list. 56% of patients had medications given within 30 minutes of their administration time compared to 17% from the cohort in 2019. Cognitive testing via the 4AT was completed on 26 out of 68 (38%) patients compared to 10 out of 57 (18%) in the 2019 cohort. 32 out of 68 (47%) patients were seen by the PD specialist nurse compared to 2 out of 57 (4%) in 2019.

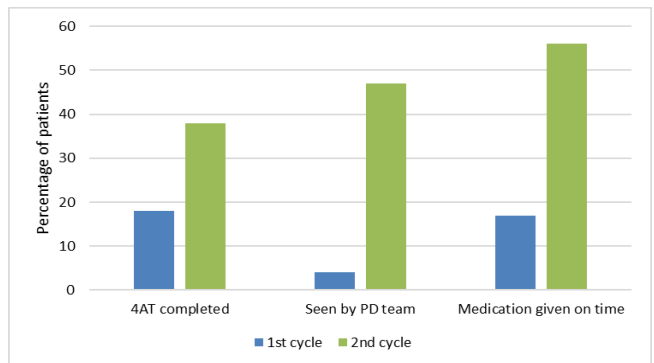


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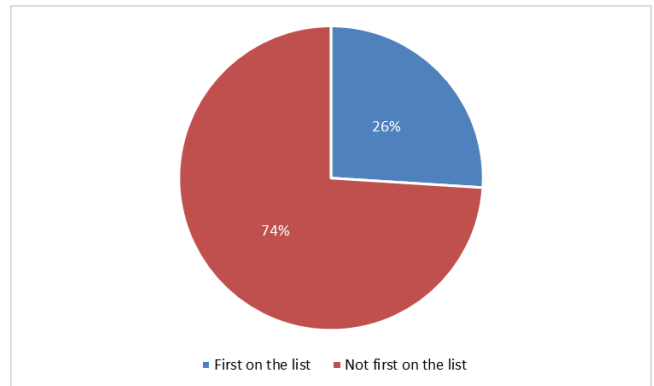
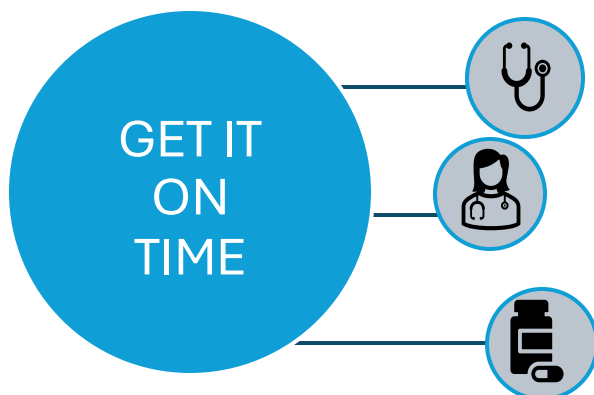


Figure 2. Chart showing percentage of patients placed first on the list for surgery in 2nd cycle cohort

Conclusions

The results show an overall improvement in the areas reviewed during this project. Despite this there is still a large scope for further improvement. Parkinson's disease UK promote getting medications on time every time, unfortunately this needs to be improved. There has been a significant improvement in utilisation of the specialist nurse in the peri-operative period, but this could still be better. Future scope for this project includes increased education for all medical teams and increased awareness of the document available to support PD patients in the perioperative period.



References

1. Parkinson's UK. What is Parkinson's disease. 2024. Accessed 09/12/2024. Available at <https://www.parkinsons.org.uk/information-and-support/what-parkinsons>.
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