

## Management of Parkinson's Disease medication in acutely admitted patients

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### Abstract

This project aimed to identify problems in the management of Parkinson's Disease (PD) medications in those acutely admitted to the medical ward. Errors in prescription of medications are due to difficulties in conversion of formulation of medications to suit different needs, lack of awareness of help available amongst junior doctors and lack of awareness of trust guidance. Drug charts were audited over two weeks on medical wards. Dosing, frequency, formulation, and any difficulties in the administration were noted. A survey of junior doctors regarding their knowledge of PD management was also undertaken. The effects of our interventions (creation of summary guidance made available on wards, advice regarding where to obtain prescription information, and teaching sessions) were evaluated using a survey and audit. There was improved accuracy in PD prescriptions, improved confidence in switching formulation, increased awareness of trust guidance and the consequences of missed doses of PD medications. However there was no improvement in knowledge about appropriate resources used to make correct prescriptions. Increased education and training is required to continue improvement in prescription accuracy and awareness of where to seek help, to improve patient safety.

### Problem

Ashford & St Peter's Hospital NHS Foundation Trust is a District General Hospital in the South of England. It is located in the county of Surrey and has a significant elderly population. There are many patients with Parkinson's disease (PD) and the admission of these patients to hospital presents a number of challenges.

Administration of PD medications needs to be carried out at a particular time and suboptimal delivery may result in motor and non-motor complications (1). This is consistent with the recent National Patient Safety Agency (NPSA) report (2). A significant proportion of inpatients across the nine medical wards audited at the hospital were prescribed the right dosage and frequency of Parkinson Disease (PD) medication over a two-week period. However, the timing of PD medication administration were in certain cases incorrect, for example, one patient's Co-Beneldopa 50/200mg dose was prescribed at 12:00 on their drug chart, but only given at 15:00. For another patient, their Rotigotine patch 4mg/24hrs was not given as it was unavailable and Sinemet 62.5mg prescribed on the drug chart was not given as the patient had become nil by mouth and no parenteral alternative had been prescribed.

The possible reasons for incorrect administration of PD drugs include: existing guidelines not being well publicised or not being easily accessible via the Trust intranet; on acute admission, the most appropriate sources of information for drug doses and timings may not be easily available (e.g. GP); the patient may be confused and unable to provide this information.

On discussion with nursing staff, we found that staff may forget specific times to administer medication due to multitasking. Additionally, there are often delays with the provision and delivery of drugs to the admitting ward on first admission, which may be attributed to the reasons above.

Despite the presence of a ward pharmacist who may be able to clarify questions concerning types of PD medications available and their subsequent action, queries requiring specific clinical expertise in the acutely admitted medical patient with PD are often delayed due to the lack of an in-hospital specialist nurse to whom questions may be referred, and the PD specialist physician may not be available to answer queries immediately.

The inexperience of junior doctors and lack of awareness of help available may also impact on quality of care. The majority of doctors surveyed were unaware of existing PD guidelines, and were not confident in converting PD medication from oral to non-oral formulation. Understandably, this delays any necessary conversions until after a specialist review has happened.

### Background

PD patients are regular health care service users. Highlighted in the campaign by Parkinson's UK, these patients usually come into hospital for primarily non-Parkinson's issues, and struggle to get medication on time (1). As inpatients, omitted medication doses may adversely affect patient experiences, and increase duration of hospital stay. A recent NPSA report (3) stated that omitted or delayed PD medications has led to reduced symptom control. Our project aims to look at the current practice in hospital, uncover challenges staff face with PD drug formulation and administration and find ways in which to improve it.

### Baseline

We analysed PD medication delivery to patients on general medical wards over two weeks. We reviewed drug charts as well as doctors notes available on the wards to find out PD medications prescribed and delivered, sources used by junior doctors to prescribe and how

change in a patient's clinical condition altered prescription of PD medication. They were followed up daily and medication changes were tracked. We recorded drug formulation, frequency and time, and compared them to their previous regime obtained from a number of sources. These sources included recent discharge summaries, clinical letters, telephone conversations with patients' GPs regarding their PD medication and in-person interviews with patient and relatives. The sources used varied from patient to patient depending on the availability of information. For example, in the event that the patient or relative could not provide information regarding PD medication, a recent discharge summary or clinical letter was used. If the latter did not provide sufficient information, the GP was contacted. Of the 13 PD patients identified, two were newly-diagnosed and therefore excluded from analysis. Of the remaining 11 patients, there were 28 prescriptions for PD medications. Three prescriptions were newly-started, and we could not compare two other prescriptions as old notes were not available (together 18%). Of the remaining 23 prescriptions, 12 (43%) were accurate to drug type, frequency, and time. 11 (39%) were correct drug types and frequency, but not time. This is illustrated in Fig.1. Amongst this cohort of patients, we identified 2 nil-by-mouth (NBM) patients for which non-oral routes of PD medication were administered correctly, but it was unclear how the non-oral route conversions were calculated. We surveyed 32 junior doctors (FY1 and SHOs) to assess the challenges they faced with the acutely admitted PD patient. We discussed with the pharmacists what they considered to be good sources to obtain dose and frequency information, and designated the patients' GP and the patients themselves to be good sources, whilst old TTOs and the pharmacy were less appropriate as the information may be out-of-date or not available. We also assessed whether junior doctors knew the consequences of missed Parkinson's medications: 91% recognised reduced mobility, 81% recognised increased falls and 75% recognised increased anxiety. We asked whether they were confident to change the formulation of medications, for example from oral to naso-gastric tube or parenteral forms. Only 25% were confident to do so. Only 13% of the doctors were aware of the existence of trust guidance. We also elicited the opinions of nursing staff regarding the barriers to effective delivery of PD management. Nursing staff expressed that it was often difficult to give PD medications at the right time due to multitasking and having to remember specific timings of PD medication delivery. Delay in doctors converting oral to non-oral formulations when patients become nil by mouth was also cited as a reason for delayed PD delivery in addition to practical difficulties such as time taken for PD medication to be delivered to the ward once it had been ordered following patient admission.

See supplementary file: [userfiles-Figure 1.docx](#)

## Design

Our interventions included:

1. Discussion with ward-based medical teams and a poster on where to obtain up-to-date information on timings of medications
2. Enlisting help from ward pharmacists to ensure medications were administered correctly

3. Summarising, publicising, and distributing an updated Trust guideline. To create this summary guideline, we reviewed the existing guidelines and simplified the conversion of oral to nasogastric and parenteral formulation. We also included hints and tips on general PD management.

## Strategy

To promote our project, PD summary guideline and highlight patient safety within the context of PD management, we have presented our work during a foundation (FY1) teaching session and at the hospital Grand Round. Given the amount of time we had to carry out this quality improvement project, we were only able to undertake a single PDSA cycle. Whilst our interventions demonstrated improvements in the majority of areas we looked at, there is plenty of scope for improvement and subsequent PDSA cycles using our interventions will hopefully yield even better results.

## Post-Measurement

Following our intervention, we repeated our audit after two months. Of the 14 patients with PD identified, two were omitted from analysis due to new diagnosis of PD. Of the remaining 12 patients, there were 33 prescriptions, 27 of which were accurately prescribed for time and frequency (82%), three that were inaccurate for time (9%) and three that we were unable to compare (9%). This is illustrated in Fig.2. We repeated our survey of junior doctors (F1-ST2) from the same cohort. Of the 24 junior doctors 79% would use the GP as a resource to prescribe the correct PD medication. However, only 62.5% would consider the patient to be a suitable resource. Despite our flyers posted across medical wards, detailing appropriate sources of information as a tool for junior doctors to guide correct prescribing, a large proportion would still use the old TTO (75%) and pharmacy (62.5%) to prescribe PD medication. In terms of resources used to prescribe medications at the right time, 71% of those surveyed cited pharmacy, 67% cited the patient, and 50% willing to use GP or the old TTO as a resource. The majority of junior doctors surveyed identified the potential consequences of failure to prescribe PD medications (96% increased falls, 100% reduced mobility, and 88% increased anxiety). 42% were aware of the existence of current PD management guidelines. 42% of doctors were confident to convert formulation of medication from oral to other forms. The accuracy of PD prescriptions from round one and two improved from 43% to 82%. This may reflect increased doctors' awareness of the importance of prescribing at the right time and the right dose. Multiple factors may have contributed to this: our multifaceted interventions, early involvement of the specialist PD consultant, and increased vigilance surrounding PD medication management by pharmacists and nursing staff.

See supplementary file: [userfiles-Figure 2.docx](#)

## Lessons and Limitations

We have learnt a number of things from carrying out this quality improvement project. i. Healthcare professionals have a limited

knowledge base around Parkinson's disease, which is considered a sub-specialist area and often treated as such. The ramifications of incorrect management from the perspective of giving a Parkinson's patient their medication later than it is due are severe and often not fully appreciated.

ii. Despite the introduction of interventions to help junior doctors identify the best sources from which to gain medication information for Parkinson's patients, sub-optimal sources were still being identified with and used. Our work needs to go through some further PDSA cycles to establish an intervention which makes it easy for junior doctors to obtain this information as well as ensuring that it is sustainable.

iii. Although we demonstrated an improvement in prescription of medications, change takes time to embed within an organisation.

iv. Junior doctors may choose the path of least resistance, i.e. do things in the most convenient way possible for them, which may not always be best for the patient.

v. Conversion of oral to non-oral routes for medications was something which healthcare staff found particularly difficult despite having a guideline. A potential solution may be to have an online tool which facilitates this.

vi. Inpatient management needs a multi-disciplinary team and without it, patients may come to harm.

## Conclusion

This project focused on the medical aspects of PD medication management: prescriptions, the frequencies and formulations of the different medications, awareness of where to seek help, and the consequences of missing medications. It has not looked at other aspects, such as improving availability of the various formulations of medications, and the delivery of medications by nursing staff at the right time.

Our survey indicates that despite our interventions, junior doctors continue to rely on suboptimal sources of information for type and timing of PD medications. We have shown an improvement in the awareness of trust guidance, and confidence in conversion of oral to non-oral PD medication formulations. However, the overall proportions aware of guidance and confident to switch formulations remain low. There has been an improvement in the awareness of the consequences of medication omission. However, the awareness of lesser-known psychological consequences remains lower than physical consequences.

## References

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