Parkinson’s disease (PD) is the second most common neurodegenerative disorder, characterised by bradykinesia, resting tremor and rigidity and is also associated with non-motor symptoms including dementia and visual hallucinations. The pathological hallmarks are known to be a progressive loss of dopaminergic neurones in the substantia nigra pars compacta and the presence of Lewy bodies within the midbrain. More recently, this understanding has led to progress in treating PD surgically, in the form of deep brain stimulation of the globus pallidus interna or subthalamic nucleus which is indicated for patients with poor response to pharmacological therapy. For the most part, however, PD is treated symptomatically with medications that act by increasing dopaminergic function namely dopamine precursors (levodopa), dopamine receptor agonists
(pramipexole) and monoamine oxidase B inhibitors (selegiline). Whilst these drugs are commonly used in PD, patients have significant variations in response and side-effects, resulting in individualised treatment regimes being common.

Treatment is usually initiated and followed up through hospital outpatient clinics, general practice, and often supported by PD Nurse Specialists. In this context, PD nurses provide many effective services including education, home visits, monitoring medication and liaising with other health professionals as part of a multidisciplinary team (MDT). They have been shown to significantly improve patients’ sense of wellbeing at no additional healthcare cost and appear to be vital in preventing hospital admission. However, it should be noted that this kind of care is absent from current standard hospital environments.

PD patients are also especially vulnerable because of their specific dosing schedules, which can be fundamental to proper control of the condition.
Medication

Compliance is vital for successful treatment. Due to “on-off” phenomena, patients may be taking levodopa anywhere from once a day to every 2 hours. Some patients may also vary their schedule day-to-day depending on how they feel, having become fine-tuned to their PD over time. This, however, does not synchronise with the drug dosing schedules in most hospitals. Literature suggests PD patients are not receiving their medications on time, some studies showing 74% had their medications stopped inappropriately, with 71% missing a dose. In 64% of these cases no reason was documented. Such disruption of routine can begin a vicious cycle, as the patient becomes increasingly symptomatic (longer off periods), and thus less able to ambulate independently, which subsequently worsens the PD. This can be significantly distressing for both patients and carers.

In addition, patients can also receive medications in hospital which are contraindicated in PD, those that act by inhibiting dopaminergic function. In one study antiemetics and antipsychotics, such as metoclopramide and prochlorperazine, were prescribed to 41% of
patients. The antiemetic domperidone and the antipsychotics quetiapine and clozapine are preferred in PD patients.³

More recently, perioperative PD care has received much attention. It is common practice to keep pre-operative patients “nil-by-mouth” to reduce their risk of aspiration. As a result pre-operative oral doses of anti-parkinsonian medications are commonly missed and patients may have to wait several hours before their next dose (including any unexpected delays in theatre schedule, length of operation and time in recovery). Not only does this negatively impact post-operative rehabilitation, it also puts patients at a greater risk of post-operative complications including confusion, and falls. It may be beneficial to continue medications up until the point of surgery and place patients earlier on theatre lists. When surgery is lengthy, intra-operative medication has also been used, by way of nasogastric tube or non-oral dopamine replacement therapy (subcutaneous apomorphine or transdermal rotigotine).³ Brennan and colleagues have devised a flowchart for the non-specialist to use (figure 1) in cases of emergency surgery when a specialist cannot be contacted.⁴
How can inpatient care be improved?

The task of improving inpatient care needs to be tackled on a number of levels. Primarily, change should be spearheaded by governing bodies (e.g. NICE or SIGN) and hospitals, with the production of formal guidelines. These should outline the best practice for inpatient PD care – producing a ‘standard’ which can undergo regular audit.
From the very point of admission, staff should be made aware of the PD. To this end, a ‘PD card’ has been suggested. This alerts healthcare professionals and outlines the patient’s additional needs. Parkinson’s UK has a number of valuable resources aimed at improving inpatient care. A checklist can be downloaded as part of the ‘Get it on time’ campaign, which highlights the responsibilities of pharmacists, nurses and physicians in ensuring medication is taken when required. They encourage inpatient “self-administration” of “own medication.” This is a possible solution for the medication related problems faced by patients. Unfortunately, however, this may be met with resistance from hospital staff and uptake of this solution has been minimal when available.

Where possible, PD patients should be admitted to a neurology ward, where staff are more educated concerning their needs. Considering their increased risk, a fall assessment on all PD patients should also be undertaken and involving a neurologist early in the inpatient care as part of a MDT will help in effective management and it has been shown that improved outcomes (UPDRS score, mood and length of
stay) are associated with early neurology consultation preoperatively.6

The most common acute events during a hospital stay in PD patients are infection, confusion and pressure ulcers.1 Hence education surrounding safe swallowing techniques (chin-tuck swallowing) or placement of a nasogastric tube may prevent aspiration related infection. Confusion should be investigated promptly including searching for infection (e.g. UTI) and undertaking medication review. With regards to medication in post-operative patients, a compromise should be reached between pain control and the risk of confusion. Pressure ulcers can be prevented by early and regular mobilization, which is much easier to achieve if medications are given on time and not withheld preoperatively.

Routine is important in PD. Good sleep hygiene should be maintained by avoiding daytime sleep and minimising disruption at night to reduce confusion. Furthermore carers should be encouraged to stay with patients for as long as possible and help orientate them.

The discharge planning of PD patients should begin at the earliest possible time and involve both the patient and carer. Discharge will
depend on their current level of mobility, availability of carers, plan for follow-up by specialist and suitable place of discharge. After hospital admission PD patients are more likely to be discharged to a nursing facility than home. Comorbid conditions and medications should be reviewed and optimised to prevent readmission. Any changes to medication should be provided in writing and communicated to the patient’s GP and PD specialist.

**Can hospitalisation be prevented?**

With the evidence showing significant room for improvement in inpatient PD care there is a greater impetus to prevent admission. Admission avoidance has been investigated in a few small studies and appears to be related to PD complications, preventable in up to 30%. Therefore earlier complication recognition and prevention should be the goal.

The principles of preventing elderly admission should be emphasized, including management of comorbid conditions and preventative interventions such as influenza vaccination. Simple interventions such as treating constipation, providing advice on fall prevention and correcting visual deficits may prevent admission.
Increasing access to specialist PD clinics may also reduce admissions. Having an “open-door” policy to known PD patients was shown to reduce the annual hospital admissions by half and decrease the length of stay in one study. Here “fine-tuning” of medications in the community was speculated as the reason for reduced motor and psychiatric complications. In the same vein, greater access to day hospitals may help prevent hospitalisation allowing multi-professional assessment in the community. Some day hospitals also feature specialist clinics for falls and PD. However, these solutions are dependent on local resources.

To prevent rehospitalisation the utmost should be done to optimise patients before discharge. Each patient should ideally receive neurology review (or have a follow-up soon after discharge); see a physiotherapist, occupational therapist and contact should be established with the patient’s GP and nurse specialist.

In the latter stages of the disease, addressing issues of palliation often sways the trend towards hospital admission. This can involve creating an advanced care plan including a lasting power of attorney and improved access to community palliative care teams.
Ultimately, there is an overwhelming body of evidence pointing to suboptimal hospital care of PD patients. Blame should not be placed on any particular party but on a system which fails to accommodate this patient group. With an ageing population and the resulting greater burden of PD, great strides must be taken to improve the current state of play in inpatient PD care. There is a strong need for formal guidelines to set a standard for care and for greater awareness of the needs of PD patients amongst a wider range of healthcare professionals.


