Parkinson's Disease Nurse Specialists and the King's College Hospital model of care

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Abstract

Parkinson's is the second most common neurodegenerative disorder. Characterised by both motor and non-motor symptoms, it affects the young as well as the old. Offering treatment with minimal disruption as well as providing an easily accessible support network is vital for the quality of life of people living with Parkinson's, particularly younger people. King's College Hospital offers full specialist care for people with Parkinson's. At the heart of this is the Parkinson's Disease Nurse Specialist (PDNS), who provides continuous care both within the health-care setting and in people's homes. The PDNS also liaises with members of the multidisciplinary team. This article reviews the challenges faced when treating people with Parkinson's and shows how the model set up by King's College Hospital has overcome these obstacles. It is hoped that more centres in the UK and Europe will adopt this model, ensuring that all people with Parkinson's receive the best care possible.

Key Words Apomorphine, King's College Hospital, multidisciplinary team, Parkinson's, Parkinson's Disease Nurse Specialist, young onset

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The role of the Parkinson's Disease Nurse Specialist (PDNS) has evolved to undertake activities once considered for doctors only. This role extension is supported by advanced education in Parkinson's and responds to the needs of people living with Parkinson's and the NHS. With PDNSs having greater autonomy, it is natural that they challenge existing practice, in particular practice that does not meet the needs of those with Parkinson's, that is resource heavy and that does not fit with the objectives of a patient-focused service. The King's College Hospital Movement Disorders Service quickly recognised the value of the PDNS and their capacity to develop existing services alongside the Movement Disorders Team. The aim of this article is to provide a brief overview of Parkinson's and to introduce the role of the PDNS, describing how they work at King's and highlighting their importance in treating people with Parkinson's. It is hoped that better services for people with Parkinson's will result in improved clinical and psychosocial outcomes.

Parkinson's

Parkinson's is the second most common neurodegenerative disorder after Alzheimer's (Mehndiratta et al, 2011). The prevalence of Parkinson's in the UK in 2009 was estimated at 27.4 cases per 10000 (Parkinson's UK, 2009), equating to a total of 126893 cases in the UK. By 2020, this is predicted to rise by 26.7%, giving a potential total of 162165 UK cases, or a prevalence rate of 32.1 per 10000 (Parkinson's UK, 2009).

The highest prevalence is in the 60–79 years age group (Parkinson's UK, 2009). However, cases of young onset Parkinson's (YOPD), in people aged 21–40 years, are not uncommon (Gershanik, 2003). Estimates suggest that 1 in 20 people with Parkinson's is under the age of 40 (Parkinson's UK, 2013). Data from a study in Wales found that 5.4% of people with Parkinson's were diagnosed before the age of 50 years, while 31.2% of people with the condition experienced onset before the age of 65 years (Wickremaratchi et al, 2009). These data support the view that Parkinson's is no longer a disorder of the elderly, if indeed it ever was.

Pathophysiology

Parkinson's is a highly complex condition and has been the subject of extensive studies and numerous reviews. Despite increased awareness of onset and course, the medical profession is unable to offer a cure. Several potential causes of Parkinson's have been identified, including genetic predisposition, environmental factors, infections and other external factors such as head injury (Clarke, 2001; Corti et al, 2011). Parkinson's is primarily a disorder of motor control and is characterised by the loss of neurons in the substantia nigra pars compacta, the development of Lewy bodies and the removal of neuromelanin from dead cells by microglia (Clarke, 2001; Davie, 2008). The frontal lobes and cognitive dysfunction have also been implicated in the slowed response speed that is common in Parkinson's (Berry et al, 1999).

Diagnosis

The diagnosis of Parkinson's is made through clinical examination, but there are no tests that consistently

and reliably distinguish Parkinson's from other conditions with similar clinical presentations (Jankovic, 2008). The four key features of Parkinson's are tremor at rest, rigidity, akinesia or bradykinesia, and postural instability (Jankovic, 2008). In addition to these motor features, many people with Parkinson's present with non-motor symptoms such as autonomic dysfunction, sleep disturbance, sensory impairment, swallowing disorders, gastrointestinal disturbances and psychoses (Lyons and Pahwa, 2011). Identification of these non-motor symptoms is often difficult, but plays a key part in the early diagnosis of the condition (Chaudhuri and Schapira, 2009; Wolters, 2009; Chaudhuri et al, 2011).

Early diagnosis and treatment are vital in improving the overall quality of life of people with Parkinson's. This is particularly true of younger people with Parkinson's, given that they are likely to live a large part of their life with an advancing neurological condition and, unlike older people with Parkinson's, will experience complex motor fluctuations earlier and more frequently (Quinn et al, 1987). Such factors contribute significantly to loss of dependence and quality of life, particularly where diagnosis is late and management delayed.

However, diagnosis of idiopathic Parkinson's in the younger person can be challenging (Parkinson's UK, 2009). Several studies have demonstrated that UK GPs have a high diagnostic error rate in typical Parkinson's presentation (Mayor, 2006), and even experienced clinicians face difficulties diagnosing YOPD. Presentation is often different and the age of the person confusing (Quinn et al, 1987). Indeed, 20–30% of diagnosed cases of Parkinson's may in fact be misdiagnoses (Hughes et al, 1992).

Medical management

Life expectancy in people with Parkinson's is lower than in the general population, apart from for those people with Parkinson's who do not develop dementia, who appear to have near-normal population mortalities (Hobson et al, 2010). Significantly lower life expectancy could be associated with individuals who have a worse prognosis and therefore a shorter survival time (Ishihara et al, 2007). Therefore, the responsibilities for the health professional engaged in supporting people with Parkinson's will need to accommodate natural age-related changes, comorbidities, effects of long-term medication regimens and potential cognitive decline. Of significant importance are the often under-recognised non-motor symptoms (Chaudhuri et al, 2009).

The mainstay of treatment is dopamine replacement therapy with levodopa and dopamine agonists. However, long-term treatment with levodopa can lead to debilitating side-effects, including dyskinesia, which can lead to immobility and falls. This is particularly relevant for younger people with Parkinson's (Clarke, 2001), who are more likely to receive long-term treatment.

Synthetic orally-acting dopamine agonists, originally licensed as an adjunct to levodopa and for second-line treatment, are increasingly favoured for first-line use, as clinical opinion is that they produce less severe motor complications with similar quality of life to levodopa (Lees, 2005). However, in some groups they can produce more side-effects than levodopa, particularly in the elderly, where their use is limited compared with younger age groups (Lees, 2005). Inhibitors of the dopamine-degrading enzyme monoamine oxidase B (MAOB), such as selegiline, have also been found to be beneficial (Clarke, 2001; Davie, 2008).

Most people who receive long-term levodopa therapy will experience a shortening of its effectiveness as well as fluctuations in the degree of control of their Parkinson's, as seen by the manifestation of dyskinesia, freezing episodes and unpredictable 'off' periods (Jankovic, 2005). Therapies that address these side-effects include the dopamine receptor agonist apomorphine, the N-methyl-D-aspartate receptor antagonist amantidine, and catechol-O-methyltransferase inhibitors such as entacapone or tolcapone.

Where pharmaceutical management continues to fail despite best efforts, surgery such as deep brain stimulation (DBS) is an option for some people, especially those under the age of 75 years, without significant systemic comorbidity, depression, dementia or obvious structural abnormality on magnetic resonance imaging (Davie, 2008). DBS does not cure Parkinson's but it alleviates some symptoms. Nevertheless, it is not without risk or potential adverse effects, and undertaking this approach to Parkinson's management requires intensive counselling and clinical review by the neurological, neurosurgical and neuropsychiatry teams (Aziz and Yianni, 2003).

Parkinson's management has largely focused on the motor features discussed. However, less obvious but no less troublesome symptoms such as pain and mood changes also require specific treatment. Historically, diagnosis of such phenomena has been poor and they have been attributed to anxiety—itself a non-motor symptom that is often misunderstood as a reactionary response to the diagnosis of Parkinson's. Depression, anxiety and fatigue are missed in more than 50% of people with Parkinson's, and sleep disturbance is missed in 40% (Shulman et al, 2002). These symptoms and others are present before diagnosis and throughout the course of Parkinson's.

The treatment of younger individuals with Parkinson's poses its own difficulties, with many not fitting the standard criteria. Quinn et al (1987) and others recognise that, even though the Parkinson's pathology is the same, people with YOPD can present with an akinetic-rigid form of Parkinson's accompanied by marked dystonia in the lower limbs. Tremor is frequently absent as are the cognitive features sometimes seen in the older person. Unsurprisingly, depression and difficult behaviour patterns emerge and

health-related quality of life issues are a greater concern for the younger person with Parkinson's than the older person (Weintraub et al, 2008). A person with YOPD frequently feels 'conspicuous and out of place in a disease area traditionally associated with advanced age' (Gershanik, 2003). Adjustments to employment, as well as marital and family relationships, although not exclusive to the younger person, are more relevant at this age. Gershanik (2003) also acknowledges the additional stress for young women coping with menstruation and sometimes pregnancy, of which there are few comprehensive studies.

Parkinson's services

What is available

In an attempt to assess the quality of services available to people with Parkinson's, an All Party Parliamentary Group for Parkinson's Disease reviewed available services and access to services in 2009. The review found various shortfalls, including a lack of service leadership at national level, failure to implement a National Service Framework (NSF) for neurological conditions, lack of support for commissioning of services and a lack of expertise available to deliver high-quality care.

On receipt of a Parkinson's diagnosis, a person will see a neurologist or elder care clinician approximately twice a year, often with minimal access to a support network during the intervening periods. This potentially contributes to unplanned hospital admissions, which can be avoidable if there are early and timely interventions both in primary and secondary care (Parkinson's UK, 2011a). A survey conducted by The Cure Parkinson's Trust (2009) found that one third of people with Parkinson's and their carers reported difficulties accessing medical and specialist nursing care when needed. This, coupled with 'poor information provision and signposting', led to 70% of people with Parkinson's leaving their appointments feeling discouraged, pessimistic, frustrated or anxious (The Cure Parkinson's Trust, 2009).

Multidisciplinary teams (MDTs)

Evidence supports the implementation of a multidisciplinary treatment programme in the management of complex neurological conditions (Freeman et al, 1997; Stroke Unit Trialist's Collaboration, 1997). Indeed, multidisciplinary clinical management of Parkinson's has been shown to maintain or even improve motor function (Carne et al, 2005). However, despite available evidence (Carne et al, 2005), many consultants are still reluctant to refer to an MDT.

Parkinson's Disease Nurse Specialists

Introduced two decades ago, PDNSs are specialist nurse practitioners who provide continuous care to people with Parkinson's. The PDNS is a nurse with a minimum of 3 years postgraduate experience, who has completed a diploma in Parkinson's and achieves standards of competency set by the Royal College of Nursing and the Parkinson's Disease Nurse Specialist Association. Individually tailored care includes ongoing evaluation of care implementation and outcomes, personal case management and disease education to empower personal management. This level of care is available at hospital clinics, health centres or in the person's home. The educational side of the role applies not only to people with Parkinson's and their carers or families but also to other health professionals. This is particularly important for health professionals who may only see a few people with Parkinson's each year but who need to maintain standards of practice (Parkinson's UK, 2011b). Such professional partnerships aim to ensure people receive care according to agreed local and national guidelines and NSFs.

The role of a PDNS in Parkinson's treatment

The role of the PDNS has undergone formal evaluation to assess its impact and benefits for patient outcomes and health-care costs. Significant benefits have been reported over standard care in patients' perceptions of their wellbeing when attended by a PDNS (Jarmen et al, 2002). Furthermore, data from Parkinson's UK and others has demonstrated marked cost savings with the introduction of PDNSs (Carter, 2008; Osborne, 2009; Parkinson's UK, 2011b).

Through the provision of nurse-led clinics as well as telephone and e-mail support, a PDNS can free up consultation time, saving individual Primary Care Trusts anything from £17 331 to £97 776 annually in avoided consultant appointments (Parkinson's UK, 2011b). PDNSs can also reduce unplanned hospital admissions, potentially saving a trust more than £80 000 per annum (Parkinson's UK, 2011b). Moreover, savings of £10 000 over 18 months and £3235 per patient on hospital admissions for drug therapy initiations have been reported when PDNSs provide apomorphine response tests in a day hospital or in the community (Parkinson's UK, 2011b). Developing services to suit people with Parkinson's that offer flexibility, safety and better access to therapy drives the change from a 7-day inpatient stay to a 4–8 hour stay. Parkinson's poses a major health economic burden for Europe, with an estimated total annual European cost of €13.9 billion (Olesen et al, 2012). Therefore, although cost saving is not the primary goal, any reduction in costs associated with this condition will be widely felt.

Other benefits offered by PDNSs include education of the ward staff, which again helps to avoid people unnecessarily spending days in hospital—in particular owing to late administration of medication. A PDNS can also work with the discharge teams to ensure support is available once the person with Parkinson's is discharged, thus avoiding hospital readmissions. In

Table 1. Key recommendations for diagnosis and management of Parkinson's*

Recommendation	Comments
Referral to expert for accurate diagnosis	Referral of patients with suspected Parkinson's to a specialist with expertise in differential diagnosis should be quick
Diagnosis and review	Diagnosis should be reviewed regularly, with reassessment if atypical symptoms appear. Acute levodopa or apomorphine response tests should not be used in differential diagnosis
Regular access to specialist nursing care	Patients should have access to clinical monitoring and medication adjustment, a continuing point of contact for support including home visits where necessary, and a reliable source of information on all Parkinson's matters. All of these may be provided by a Parkinson's Disease Nurse Specialist
Access to physiotherapy	The following should be considered: gait and improvement of balance and flexibility, enhancement of aerobic capacity, improvement of movement initiation, improvement of functional independence, provision of advice on safety in the home
Access to occupational therapy	The following should be considered: maintenance of work and family roles, improvement and maintenance of transfer and mobility, improvement of personal self-care activities, environment issues to improve safety and motor function, cognitive assessment
Access to speech and language therapy	The following should be considered: improvement of vocal loudness and pitch range, optimisation of speech intelligibility, maintenance of effective means of communication, maintenance of safe and efficient swallowing
Palliative care	Palliative care should be considered throughout all Parkinson's phases. Free discussion of end-of-life care with a health professional should be available for patients and their carers and family members

*National Institute of Health and Clinical Excellence (2006)

their publication supporting the value of PDNSs, Parkinson's UK report a 10% reduction in unplanned hospital admissions as a result of PDNS input in Pennine Acute Trust (Parkinson's UK, 2011b). Moreover, Harlow Primary Care Trust made a reduction of 69 bed days per year and Derbyshire County Primary Care Trust reduced the cost of bed days from £340 979 to £263 531 per year (Parkinson's UK, 2011b).

The King's College Hospital model

King's College Hospital is one of two internationally accredited National Parkinson Foundation Centres of Excellence in the UK. It provides a service aimed at delivering advanced therapies for complex Parkinson's, including apomorphine, DBS and duodopa. Such therapies require disease- and therapy-specific experience. The overriding aim of the services provided by King's is to encourage self-empowerment for people with Parkinson's through access to person-centred care.

Nurse-led clinics

King's College Hospital holds National Institute for Health and Clinical Excellence (NICE)-approved patient empowerment clinics every 3 months. These clinics provide people with Parkinson's and their carers/families with information on all areas of Parkinson's and its treatment. In addition, quarterly Parkinson's expert patient groups are held, led by people with Parkinson's themselves. These groups contribute to the clinical objective of facilitating patient-centred care, and anecdotal user reports indicate their popularity and value. People with Parkinson's appreciate the opportunity to access information and education when needed as they believe this helps support informed decision making and tools to aid self-management (Kon et al, 2010). Furthermore, the principles of practice are in accordance with the current NICE (2006) guidelines for the diagnosis and management of Parkinson's in primary and secondary care (European Parkinson's Disease Association, 2012 [Au4: What does this citation appear in support of?]; *Table 1*).

The processes in place at King's are also in alignment with the recent Equity and Excellence White Paper produced by the UK Government (DH, 2010a). This paper emphasises the need to put patients at the centre of any care pathway and in charge of making decisions about their care. Personalised care should focus on the health and care needs of the individual patient as well as their carers, encouraging strong joint arrangements and local partnerships. The new NHS Outcomes Framework has set out the outcomes and the corresponding indicators that must be reached as part of the new NHS (DH, 2010b). These include a set of improvement areas for enhancing quality of life for people with long-term conditions and also for ensuring people have a positive experience of care and support. Most of the indicators highlighted in these two domains are met by the King's College Hospital Parkinson's Care Team.

The PDNS is King's main point of contact for people with Parkinson's and other health professionals involved in the care of people with Parkinson's. The Movement Disorders Team aims to provide people with Parkinson's access to expert care whenever they need it, through contact such as e-mail, telephone clinics and therapy support groups. It is important that people with Parkinson's, along with their carers, are able to maintain an agreed programme of care between clinical appointments.

Apomorphine

The dopamine-receptor agonist apomorphine is licensed for the treatment of motor fluctuations ('on-off' phenomena) in people with Parkinson's that are not sufficiently controlled by oral treatment (Datapharm Communications Ltd, 2012a). It can reduce the amount of time spent in the 'off' phase from about 10 hours with oral medication to 3 or 4 hours (Odin et al, 2005). Apomorphine is delivered subcutaneously via an infusion pump or as a bolus injection using a disposable PEN. It provides rapid relief of unpredictable 'off' periods within 5 to 15 minutes (McGee, 2002).

Before maintenance therapy is started, the threshold dose of apomorphine is normally established in a controlled environment, through the administration of test doses. This entails the prescription of domperidone (anti-emetic) at least 2 days before and on the day of the response test (Datapharm Communications Ltd, 2012a). Consecutive doses of apomorphine are administered as per the King's Movement Disorders Protocol (based on agreed national protocols) and preceded and followed by motor assessment. A positive response is classified as a reversal of parkinsonian symptoms within 5 to 10 minutes of injection, with duration of action of around 1 hour and 20% improvement on original baseline assessment scores. In addition, patient-specific problems are considered e.g. dystonia or pain associated with Parkinson's (Odin et al, 2005).

Despite initial success with intermittent injections of apomorphine, some people with Parkinson's will develop worsening 'off' periods or require more than six injections of apomorphine a day. This correlates with the duration of the Parkinson's and the severity of Hoehn and Yahr staging (Frankel et al, 1990). Continuous steady-state dopaminergic stimulation can dramatically reduce the severity and frequency of refractory 'off' periods in people who have become progressively disabled despite optimisation of oral medication (Colzi et al, 1998) (*Box 1*). Continuous subcutaneous administration of apomorphine is a valuable strategy in this patient group and can also be considered in people with Parkinson's with complex symptoms. The development of motor complications in people with more advanced Parkinson's may also be reversed by more continuous stimulation (Stocchi and Olanow, 2004). Anecdotally, King's College Hospital's experience has enabled it to adopt an approach to continuous subcutaneous administration that offers a therapy strategy to people with advanced Parkinson's who might otherwise be refused treatment, e.g. those with brittle Parkinson's, low blood pressure and dyskinesia. The Stocchi and Colzi group have also shown continuous dopaminergic stimulation to be a valuable strategy in advanced, complex Parkinson's (Colzi et al, 1998; Stocchi and Olanow, 2004).

Box 1. Case study: apomorphine success story

King's College Hospital often sees people with young onset Parkinson's. A 38-year-old male (DJ) was referred to King's having had Parkinson's for 14 years. He was married with two young children. His symptoms included excessive salivation, swallowing difficulties, depression, mood fluctuations, difficulty with bladder and bowel function, erectile dysfunction, hypotension with a postural drop, dizzy spells and excessive sweating. He spent over half of the day in an 'off' state resulting in pain, frequent falls and distress at night due to drug-induced paranoia and excessive nocturia. The combination of these symptoms had severely affected his quality of life.

DJ's medication regimen was equivalent to a total levodopa intake of 2750 mg in 24 hours. His Non-Motor Symptoms Questionnaire score was 19/30, his Parkinson's Disease Questionnaire 8 score was 21/32 and his Unified Parkinson's Disease Rating Scale score was 57. Optimal oral therapy consistently failed and therefore a clinical decision was made to prescribe apomorphine treatment.

Upon arrival at the King's clinical unit, DJ was in an 'off' state, severely immobile and anxious. He had started domperidone and withdrawn his oral dopamine agonist 3 days prior to arrival; he continued with levodopa. Pre-initiation assessment was conducted but was difficult owing to DJ's freezing and his inability to walk and stand unsupported.

Owing to the complexity of the symptoms and the potential adverse effects on blood pressure of bolus doses, apomorphine was started via subcutaneous infusion without a response test. The pump started at 0.2 mL/h (1 mg/h); despite being a small dose this enabled DJ to stand independently and regain some motor function. At 0.3 mL/h (1.5 mg/h), DJ could walk around the ward and climb two flights of stairs; at 0.6 mL/h (3 mg/h) he maintained a good quality 'on' state albeit with some dystonia. He did not receive oral levodopa at this stage. A combination of both oral medication and continuous subcutaneous apomorphine enabled DJ to mobilise without dystonia and perform activities of daily living. Within 3 days and following further assessment the flow rate was increased to 0.8 mL/h (4 mg/h), which gave reliable mobility and allowed DJ to self-care; no oral levodopa was required. Later and on discharge, levodopa was reintroduced at 400 mg/day to accommodate individual symptom presentation.

At the 2-week, post-discharge follow up, DJ's Parkinson's was well controlled, with a significant increase in activity, mobility and quality of life and an hourly apomorphine dose of 1.2 ml/h (6 mg/h). He has continued with apomorphine therapy and takes long-acting levodopa at night. He is now able to undertake several activities at home that were once beyond him. Currently, using the apomorphine/levodopa conversion formula (Tomlinson et al, 2010), his total daily levodopa equivalent is 1300 mg.

Reflecting the work of McGee (2002) and Clark (2000), King's manages apomorphine initiation on a day-case basis. It found that this met patient choice, as most people with Parkinson's are concerned about inpatient stays. In an inpatient audit, The National Parkinson's Foundation (2010) found that 71% of people with Parkinson's did not receive prescribed anti-parkinsonian medications, with drugs detrimental to Parkinson's prescribed in 41% and actual administration of these drugs in 22% of the 41%. Parkinson's UK (2010) discovered very similar findings in their audit and stress the seriousness of missed medication, e.g. neuroleptic malignant syndrome but more commonly loss of independence and quality of life. Such initiatives also meet government guidelines to reduce time spent

Figure 1. Model of the multidisciplinary team at King's College Hospital. PDNS, Parkinson's Disease Nurse Specialist

in hospital by people with long-term conditions (DH, 2010b). Minimising length of hospital stays is also in line with the Health and Social Care Bill (DH, 2012a; 2012b).

DBS and duodopa

DBS is currently the favoured approach in the surgical management of Parkinson's (Aziz and Yianni, 2003). It entails electrical neurostimulation of the areas of the brain affected in Parkinson's that control movement, mainly the thalamus, subthalamic nucleus and globus pallidus (National Institute of Neurological Disorders and Stroke, 2012). People with Parkinson's seeking DBS management must fit strict criteria for optimal outcomes. It is best avoided by those with cognitive and psychiatric difficulties, non-dopa-responsive parkinsonism and marked early autonomic features (Aziz and Yianni, 2003).

Duodopa (levodopa) is a gel for continuous intestinal administration. It is indicated for the treatment of advanced levodopa-responsive Parkinson's with severe motor fluctuations and hyperkinesias or dyskinesia when satisfactory results have not been achieved with available combinations of other Parkinson's medications (Datapharm Communications Ltd, 2012b).

Key Points

- Parkinson's is a highly debilitating condition that can be difficult to diagnose and is often poorly managed
- King's College Hospital has adopted a patient-centred model of care that embraces the full potential of Parkinson's Disease Nurse Specialists
- By following the example set by King's College Hospital, more centres throughout the UK and Europe might be able to provide a wider variety of treatment options for people with Parkinson's, encouraging self-empowerment and ultimately improving quality of life for them and their carers/families

Non-pharmacological approaches

People with Parkinson's attending the King's Movement Disorder Centre for support are told that there is no cure and that effective management is not all about drug therapy. McCall (2003) identified problems with diagnosis accuracy, finding appropriate timely information and lack of support. Therefore, following principles of good practice, e.g. early referral reaping better outcomes (Wade et al, 2003), King's has a full complement of therapists who form the MDT focusing on movement disorders. However, without a 100% focus on Parkinson's, the team nominate the PDNS to act as a point of first contact for people with Parkinson's. The model of the MDT at King's is depicted in *Figure 1*. By employing the expertise from the various members of the MDT it is possible to deliver care from the palliative stage through to rehabilitation (Waldron et al, 2011) and to improve mobility after just a short course of therapy input (Wade et al, 2003).

Conclusions

With the help of a PDNS as part of the MDT, it is possible for people with Parkinson's to achieve better health through timely interactions rather than by managing ill health or crisis only. The model set up by King's College Hospital aims to provide benefits to both people with Parkinson's and other health professionals. It is easy to establish once the benefits are realised by the hospital and all members of the team, and it has had proven success. Furthermore, it is not necessarily a specialised service—it can and indeed should be implemented by other centres in the UK and across Europe. To this end, King's aims to move forward in a partnership with people with Parkinson's and health professionals and share its experience.

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Conflicts of interest
JM is a previous employee of Genus Pharmaceuticals.

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