Original research

Service Evaluationof an acute Parkinson's therapy pathway between hospital and home

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Abstract

Background People with Parkinson's disease report that inpatient hospital environments do not replicate their home setup. A therapy pathway was developed integrating early home-based assessment, therapy sessions with photographs of key home areas, enhanced communication with community services and staggered discharge.

Methods Outcome measures (length of stay and readmissions within 14 days) in people with Parkinson's disease on the therapy pathway (*n*=5) were compared to those previously receiving standard care (*n*=5).

Results Mean length of stay was 7.2 days shorter in the intervention group and their discharge Lindop Parkinson's mobility scale score was 39.4% higher. No difference was found in the Modified Barthel Index between the groups. Both groups had the same readmission rates. The pathway was accepted by both people with Parkinson's disease and clinicians.

Conclusions The pathway reduced hospital length of stay and increased mobility in patients with Parkinson's disease. It was accepted by patients and clinicians and was feasible to integrate into current practice. The pathway warrants further evaluation.

Key words

Length of stay, Occupational therapists, Parkinson's disease, Patient discharge, Physical therapists

Introduction

There are between 6 million and 10 million people worldwide living with Parkinson's disease (GBD 2016 Disease and Injury Incidence and Prevalence Collaborators, 2017). As many as 1 million Americans have the condition and there are approximately 145 000 people with Parkinson's disease living in the UK (Marras et al, 2018; Parkinson's UK, 2018). These individuals can often experience long hospital admissions and are frequently not discharged to their own home (Low et al, 2015). With increasing evidence regarding the effectiveness of home-based rehabilitation programmes (Hill et al, 2015) and the drive for integrated care pathways to facilitate the patient journey and improve therapeutic outcomes, the authors decided to develop a Parkinson's therapy pathway.

It has been suggested that home-based rehabilitation programmes may be effective in improving mobility and quality of life and reducing falls and unnecessary hospitalisation for people

with Parkinson's disease (Antonini et al, 2008; Goodwin et al, 2011). Home-based therapeutic interventions have advantages over day-hospital-based rehabilitation. At home, Parkinson's disease patients can practice activities of daily living in their own environment, thus enabling them to develop context-specific strategies (Antonini et al, 2008; Hill et al, 2015). Discussions with people with Parkinson's disease in clinical settings have highlighted their perception that hospital environments, especially acute hospitals, do not replicate their home setup (Antonini et al, 2008; Goodwin et al, 2011). This potentially impacts the effectiveness of rehabilitation and lengthens inpatient stays.

There is a drive in the UK for more integrated care pathways, as evidence suggests such pathways reduce length of hospital stay and improve patient outcomes (Paton et al, 2014). An integrated care pathway is a multidisciplinary outline of anticipated care, placed in an appropriate timeframe, to help a person with a specific condition or set of symptoms move progressively through a clinical experience towards positive outcomes (Schrijvers et al, 2012). In response to this evidence and the reported mismatch between home- and hospital-based settings, a Parkinson's therapy pathway for the acute hospital setting was developed based on previous research and modified so home visits were delivered earlier in admission. The pathway integrated early multidisciplinary home-based assessment and therapy sessions, reproducing the home environment in the hospital setting to facilitate rehabilitation and earlier collaboration with community services, thus improving integration with community services in a more seamless manner. [AQ: Is this correct or did it facilitate rehabilitation and earlier collaboration with community services, improving service integration?]

The aim of this pathway was to bridge transition from the acute hospital setting back to home for people with Parkinson's disease. This report summarises the service evaluation assessing the effects of the Parkinson's therapy pathway on routine clinical outcome measures of functional ability and admission-related parameters and highlights the feasibility of implementing such a pathway within the acute setting.

Methods

The service evaluation took place on an acute neuro-medical ward, as this was the designated unit for specialist Parkinson's care in the UK NHS acute hospital where recruitment occurred. The service evaluation took place with the approval of the local research and development department. The study was not deemed to be research as this was a service evaluationbefore and after the instigation of a new service and all measures were taken as part of routine clinical care. NHS ethical approval was therefore not required. Written consent was obtained from the patients to take photographs of their property as per usual care.

Inclusion criteria were:

- Participant able to transfer (for example, supine to sit, sit to stand, transfer to chair etc.) [AQ: transfer from bed to standing etc?] with one person
- No new respiratory complications or cognitive issues since admission, as determined by physiotherapist and occupational therapist assessment
- A diagnosis of Parkinson's disease according to the UK Brain Bank Criteria as assessed by a neurologist or geriatric care consultant with a specialist interest in the condition.

AQ: did you gain ethical approval? If so please provide full details of who provided the approval and the approval number. If no ethical approval is needed please provide the rationale as to why. Did all participants sign an informed consent form?

Participants were recruited on a consecutive sampling basis, ie every participant who met the inclusion criteria was enrolled until the desired sample size was reached. All participants were inpatients on the ward and were screened for suitability by a senior therapist.

Participants were first recruited to the standard care group and then the intervention group. Both groups consisted of five individuals, three of which were male and two female. Participants' characteristics were recorded (MacMahon and Thomas, 1998) by the main author (*Table 1*). The Hoehn and Yahr Scale for all participants was completed by a specialist Parkinson's disease consultant and the resultant scores were retrieved from the notes by the main author. Modified Barthel Index score and Lindop Parkinson's Mobility Scale score were recorded at admission and on discharge. The Modified Barthel Index was selected as an outcome measure because of its widespread use across the hospital. The findings of the service evaluation were summarised using descriptive statistics (Arain et al, 2010). Outcome measures were the Lindop Parkinson's Mobility Scale, Modified Barthel Index, length of stay, and readmissions within 14 days. [AQ: Weren't the LPMS and Modified Barthel Index scores also outcomes?] All outcome measures were assessed by senior therapists and were unblinded.

Table 1. Participants' characteristics and outcome measures

Characteristic	Control group (*n*=5)	Intervention group (*n*=5)
Mean age, years (range)	74.8 (68–81)	76.6 (66–83)
Hoehn and Yahr Stage (range)	3 (2–4)	3 (2–4)
Thomas and McMahon stage	Complex	Complex
Reason for admission (*n*):		
Falls	1	1
Pneumonia	1	0
Urinary infection	3	4
Mean length of stay, days (range, SD)	22.4 (16–28, 5.1)	15.2 (5–33, 9.4)
Mean Lindop Parkinson's Mobility Scale score (range, SD):		
Admission	10.5 (5–30, 28.8)	12 (10–16, 13.5)
Discharge	13.2 (9–22, 4.8)	18.4 (6–40, 13.9)
Average Modified Barthel Index score (range, SD):		
Admission	20 (15–25, 21.3)	16 (6–25, 23.5)
Discharge	49.8 (30–70, 16.2)	50.6 (24–75, 21.1)

The experiences of clinicians and people with Parkinson's disease using the pathway were collected using hospital patient feedback cards. Where required, participants were supported to complete these by an independent party, eg a family member or staff member not involved in the pathway, to avoid issues of power asymmetry and its impact on the data (Frederick, 2013). Content analysis was performed on the feedback to extract explicit meaning (Elo et al, 2014). [AQ: Correct?]

Both groups received care consisting of ward-based therapy and discharge planning. This comprised participants receiving an initial joint assessment performed by an occupational therapist and physiotherapist, with subsequent daily therapy sessions of up to 45 minutes. Therapy consisted of mobility, transfers and practising activities of daily living, dependant on each participant's need. With participant consent, photographs were used of key home areas to duplicate these setups as closely as possible in the hospital environment to facilitate rehabilitation, targeting mobility,

transfers and activities of daily living in the intervention group. [AQ: Correct, or was this only in the intervention group?] In both groups, intervention commenced within 48 hours of admission once participants were identified as medically suitable by a doctor.

Individuals in the intervention group were not provided with additional therapy sessions but were taken on home assessments as soon as they were deemed medically fit to develop early therapy goals. In addition, one or two home therapy sessions were provided to prepare patients for discharge. [AQ: Is this interpretation correct?] If the participant was already known to one of the community-based therapy teams, a community-based therapist who knew that person was invited to attend the visit. Inpatient rehabilitation goals were set in collaboration with the participants and, where appropriate, their family members and/or care-partner. If people with Parkinson's disease were not already known to a community therapy team, early referrals and liaison with community therapy services were implemented to ensure a smooth transition from hospital to home. Staggered discharge, ie people with Parkinson's disease returning to hospital following an overnight stay at home for additional problem-solving, was used if appropriate to consolidate discharge and reduce anxiety.

Results

The standard care group was recruited first with the intervention group recruited 1 month later after implementation of the integrated care pathway model. Of the initial five participants recruited to the intervention group, one declined to continue as they felt the home visits to be unnecessary. Another participant was recruited to this group the same week. Of the five participants in the intervention group, all had an initial home visit, two had multiple home visits, one had photographs taken of key areas of their home, two had staggered discharges, and all had early liaison with community services.

The baseline characteristics of people in the two groups and their reasons for admission were similar (*Table 1*). Outcome measures were collected in all cases. On average, participants in the standard care group were seen 4.8 times per week, whereas participants in the intervention group were seen 5.0 times per week for ward-based therapy. [AQ: Is this interpretation correct?] There were some notable differences between the groups' outcome measures (*Table 1*). Mean average length of stay for the intervention group was 7.2 days (22%) less than the standard care group: 15.2 days (SD 9.4) versus 22.4 days (SD 5.1), respectively. Two patients (40%) from both groups were readmitted to hospital within 14 days for new medical reasons. There was minimal difference between the Modified Barthel Index scores at discharge for both groups (1.6%, SD 21.1). The intervention group scored 5.2 points (39.4%, SD 13.9) higher than the control group on the LPMS.

Through the feedback cards, intervention participants reported that they liked the pathway. They made comments such as 'it makes a lot of sense' and 'going home earlier helped me feel more confident'. Clinicians expressed that the pathway was logical and straightforward to implement in practice.

Discussion

This service evaluation demonstrated that it was feasible to implement the therapy pathway for people with Parkinson's disease. Specific elements of the individual's home environment were incorporated into hospital therapy and care, eg positioning a patient's bed relative to walls and rails to closely mimic their home setup. This promoted independence on the ward and may have contributed to the intervention group's reduced length of stay. A further explanation for the reduced hospitalisation time could be that details from the home visits better informed hospital-based therapy sessions, leading to greater progress in mobility in particular. The greater number of inpatient

therapy sessions focused on activities of daily living in the usual care group versus more home-based sessions in the intervention group may also have had an impact on length of stay.

The Lindop Parkinson's Mobility Scale showed greater improvement at discharge than the Modified Barthel Index. Pearson et al (2009) demonstrated the Lindop Parkinson's Mobility Scale to have both validity and adequate inter-rater reliability (intraclass correlation coefficient 0.74) as an outcome measure for people with Parkinson's disease. However, both Sainsbury et al (2005) and de Morton et al (2008) have raised concerns about the validity and reliability of the Modified Barthel Index; further, the measure may not have been sensitive enough to detect any change, especially coupled with the small sample size. As this was a service evaluation, it was not powered to indicate a change. Future trials should seek an alternative occupational therapy-specific assessment to the Modified Barthel Index that is deemed suitable for people with Parkinson's disease and reflects their intervention goals.

Not all participants used all elements of the plan, reflecting the fact it was customised to the participant's medical and social situation. The length of stay and the Lindop Parkinson's Mobility Scale showed a trend towards improvement that aligns with evidence from other specialities that have evaluated similar pathways (Miani et al, 2014; Paton et al, 2014). This may be of importance to acute hospitals, where the length of stay is an important driver for quality improvement in services (Gaughan et al, 2012), [AQ: Important driver of what? Change? Investment? Please clarify] and may support the uptake of a Parkinson's therapy pathway in a similar setting.

People with Parkinson's disease and clinicians provided positive feedback relating to the Parkinson's therapy pathway. Participants expressed that the pathway met their needs; all found it acceptable. The clinicians reflected this opinion. They were able to implement the outcome measures within the pathway, likely because these measures are commonly used in practice. [AQ: Is this interpretation correct?] Some concerns were expressed regarding additional draw on resources, eg the provision of additional home visits. Despite challenges regarding increased resources, such as increased therapist contact time and hospital transport, clinicians found the pathway to be feasible to implement in practice with minimal change. They felt that the greater use of resources was outweighed by the benefits of the pathway. The need for increased resources is an important consideration when appropriately scaling and implementing up such a pathway effectively (Indig et al, 2017).

Limitations

All participants in this study were in the complex stage of Parkinson's disease, as defined by MacMahon and Thomas staging (MacMahon and Thomas, 1998). This reflects the disease severity commonly requiring hospital admission but may limit the applicability of findings to other stages of the disease. Furthermore, this recruitment bias could have been enhanced by the consecutive sampling strategy used (Hedt and Pagano, 2011). While the consecutive sampling strategy was feasible in practice, future trials should use randomisation with stratification/minimisation for disease severity and assessor blinding element to reduce bias (Karanicolas et al, 2010).

While the shorter length of hospital stay tentatively indicates that the pathway has positive benefits for people with Parkinson's disease, this conclusion is limited by the service evaluation design and small sample sizes involved. Future exploration of the possible benefits of the pathway will require more robustly designed trials with larger sample sizes and assessor-blinding to reduce bias. A larger future trial would provide a more accurate estimate of effect and the sample size needed. An effect size of 0.84 using Cohen's d test was seen in the length of stay. To detect this effect size in a future trial (power=80% and α=0.05) would require 178 participants. This will provide a challenge for future study planning and may require the involvement of multiple sites to achieve results in a realistic timeframe.

Conclusions

The findings of this service evaluation suggest that a Parkinson's therapy pathway for the acute hospital setting could reduce length of hospital stay for patients and lead to improvements in Parkinson's disease-specific outcome measures. However, the study's limitations must be acknowledged when developing future trials, particularly with regards to outcome measurements and sampling strategy. Future research should aim to develop this study into a feasibility trial, analysing a larger patient population over a longer time period and including more rigorous collection and analysis of the opinions of people with Parkinson's disease and clinicians regarding the ease of pathway implementation and its perceived effectiveness.

Key points

- It is feasible to implement the Parkinson's therapy pathway in acute hospitals.
- A shorter average length of stay was found for patients on the pathway versus standard care.
- The pathway was acceptable to people with Parkinson's disease and clinicians.
- A Parkinson's therapy pathway could offer opportunities for inpatient therapy programmes to meet the needs of people with Parkinson's disease in a more personalised manner.

Declaration of conflicting interests

The authors have no conflict of interest to report.

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