Measuring and Improving quality of inpatient care for Parkinson’s disease in Sunderland Royal Hospital: the CQUIN PD report  
Dec 2014

Executive summary

Parkinson’s disease is a common and complex neurodegenerative condition. There are significant shortfalls in quality of care for inpatients with Parkinson’s disease who are admitted non-electively. Staff at Sunderland Royal Hospital set up a multidisciplinary team including physicians, specialist nurses, pharmacists, expert patients and members of Parkinson’s UK aiming to identify clinically meaningful indicators of high quality care and identify ways to improve care. This group worked with local commissioners to develop the CQUIN project for Parkinson’s disease. Targets chosen included timeliness of medications and early specialist inpatient review. An electronic system was developed to robustly and prospectively identify all patients with PD admitted as emergencies and monitor timeliness of medication administration. The data demonstrate a sustained improvement in quality of care in this frail and complex inpatient group. The value of the work of Parkinson’s disease specialist nurses and the effectiveness of dedicated wards for Parkinson’s disease patients have been demonstrated. The project was cost neutral to the hospital Trust. The project has improved the awareness of hospital staff about Parkinson’s disease patients and their complex needs. We conclude that it is possible to demonstrably improve quality of care in patients with complex long term neurological conditions.

Introduction

Why does Parkinson’s disease matter?

Parkinson’s disease is a common long term neurological condition with an estimated 120,000 sufferers in the UK. This number is projected to double by 2030. The direct health care cost of PD has been estimated at around $303 000 per patient.

It is recognised that neurological long term conditions are a difficult area in which to identify and measure robust indicators of quality of care. NSF for Long term
conditions 2011 has identified several indicators of quality of care which include prompt treatment and access to high quality emergency inpatient care.

Hospital admissions have increased substantially over the last decade. Non elective admissions for Parkinson’s disease patients are frequent and usually avoidable. Studies have shown around 7% of admissions relate to PD. Most are clearly avoidable eg due to UTI, pneumonia, medication side effects or BP related problems. Patients with Parkinson’s disease have longer lengths of stay than those without this condition.

Parkinson’s UK have raised a number of concerns regarding the quality of care provided to patients with Parkinson’s disease (PD) when they are admitted to hospital. Many such hospitalised patients are on complex drug regimes which do not fit in with the timings of hospital drug rounds, meaning that they are rarely given their drugs at the correct time. As well as leading to discomfort, pain, and loss of independence and dignity, the associated muscle stiffness and loss of mobility also leads to poor nutritional status and other potentially life threatening medical complications including pneumonia and pressure ulcers.

Surveys have repeatedly shown that PD patients are frightened of being admitted to hospital as they often experience medication delays and many hospital staff may not understand that patients’ degree of disability can fluctuate throughout the day.

Drug regimes are often complex and patients frequently have neuropsychiatric problems notably dementia.

This has led to Parkinson’s UK’s “Get it on Time” campaign and the importance of this issue was reinforced in a recent parliamentary question. This highlighted that between 20 March 2014 (when new data reporting was introduced) and 21 July 2014, 617 incidents involving Parkinson’s disease medications in hospitals were reported through the National Reporting and Learning System (equivalent to about 5 incidents every day). Whilst 506 of these resulted in no harm, 94 incidences resulted in low harm and 17 resulted in moderate harm. NPSA 009 highlights this issue.

A recent national survey of consultant geriatricians, neurologists and Parkinson’s disease nurses showed that 61% were not confident that medications were given on time.

A recent YouGov survey found that 47% of patients did not have regular access to the medication that they needed and 59% of these people felt that it led to a significant impact on their health. This was a great source of distress to many, with 69% reporting that it led directly to increased anxiety and fear of further admissions.

Parkinson’s UK has stressed the importance of Parkinson’s disease nurse specialist (PDNS) inpatient review because ensuring that medications are prescribed and administered accurately and by working with multidisciplinary and discharge teams, patients can be safely discharged at an earlier date. Data from three PCTs (Harlow, Pennine, Derby) show that such nurses can save PCTs an average £147,021 per year.
Patients with Parkinson’s disease often have complex needs and are on complex drug regimes that neither untrained nursing/medical ward staff or general practitioners can be expected to deal without support. In order to help prevent hospital admissions and readmissions Parkinson’s disease nurse specialists also need to be able to provide a readily accessible telephone advice line for patients and their carers.

What is CQUIN?

CQUIN stands for Commissioning for Quality and Innovation and is a nationally led framework to improve the quality of health services in the context of strong financial management. Quality indicators are decided for each project and 0.5% of the total value of the entire health care service budget is linked to CQUIN, meaning that this income is only given if trusts can demonstrate that they have met the agreed targets. The majority of funds go to national projects including dementia care or veno-thromboembolism prevention which are mandatory for trusts to attain. Around 2% of the total contract however is available for local CQUIN projects agreed between local commissioners and providers. The focus is on “challenging but realistic” targets and a small number of indicators are selected in which high impact changes can be demonstrated. A framework is agreed and trusts are paid for achieving quarterly targets over a period of time usually not exceeding two years. While this system provides a monetary incentive for improving patient care, the fact that the funds are non-recurrent means that any changes that are implemented need to be financially self-sustaining.

The relatively small numbers of patients with Parkinson’s disease and the difficulty of accurate prospective inpatient identification has meant that very few CCGs have been able to develop CQUIN targets for this condition. These were developed in Sunderland as a result of initiatives led by the Parkinson’s patient journey group which is a multidisciplinary team including neurologists, geriatricians, specialist nurses, pharmacists, MDT staff and patients and carers from Parkinson’s UK. The team audited local services in order to define clinical priorities. They also raised the profile of the condition by regional Parkinson’s Roadshows and Board workshops. This successful profile raising exercise led to a number of initiatives to improve inpatient care including the successful bid to conduct CQUIN for emergency admissions with Parkinson’s disease. Targets for measuring high quality clinical care were then agreed with local commissioners from Sunderland CCG.

CQUIN targets

Following discussions with the Sunderland clinical commissioning group (CCG) the following CQUIN targets were agreed, but after a benchmarking exercise only the first two were taken forward (see below).
1) The percentage of patients with PD seen by a member of the Parkinson’s team within 1 working day of an emergency admission to hospital

2) The percentage of doses of PD medication administered within 30 minutes of the prescribed time

3) The percentage of patients and carers receiving telephone advice within one working day of contacting the Parkinson’s nurse led helpine.

The scheme was arranged to run during financial years 2013/14 and 2014/15. The two year period was split into eight quarters, the first one encompassing April-June 2013. At the time of writing (November 2014) year 2, quarter 3 is currently underway.

Agreed financing of CQUIN project

The agreed income for the successful completion of this CQUIN was approximately £342,000 PA, with approximately £85,500 being paid for meeting each quarterly pair of targets. There proved to be significant delays in establishing the IT systems required to extract the data to be shared with the CCG. This therefore led to a delay in agreeing targets for each metric. Based on the benchmark data provided we were tasked with reviewing 60% and 65% of all PD emergency admissions within one working day of admission during year 2 quarter 3 and quarter 4 respectively. We were also tasked with ensuring that 75% and 80% of all PD medication doses were administered within one hour of the prescribed time during year 2 quarter 3 and quarter 4 respectively.

Because well over 90% of all telephone calls to PDNSs were returned within 1 working day this target was not taken forward, to allow greater focus on those elements of care with greater potential for improvement.

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<tr>
<th>Percentage calls returned within one working day</th>
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Table 1: The percentage of telephone calls to the PDNS helpline returned within one working day between April and September 2013

**Methods**

**CQUIN team**

Once the above targets were set, a CQUIN team was established comprising consultants in neurology and elderly care, pharmacists, specialist nurses, matron for neurology and elderly care, a trust performance manager and a member of staff from the IT department. The team met on a monthly basis to generate action plans and review performance. Below is a summary of the actions undertaken to achieve the above aims.
Target 1: Emergency admissions seen within one working day

Prior to working towards the CQUIN targets, emergency admissions with PD were only reviewed by a member of the Parkinson’s disease team if a referral was made by a member of the clinical team looking after the patient. This number represented only a small fraction of the patients admitted with PD.

A benchmarking exercise showed that using ICD codes for either inpatients or OP with PD did not identify the majority of admissions with PD as the data quality was poor. This exercise demonstrated that the most effective way to identify PD admissions was via pharmacy prescribing information. Therefore in order to identify all hospital in-patients with PD the trust IT department developed a web based spreadsheet that interrogated the electronic prescribing software in order to generate a list of every patient in the hospital taking Parkinson’s disease specific medication. This was generated twice daily by a PDNS and all patients were reviewed on the ward.

This led to a substantial improvement when compared to simply reviewing patients after they had been referred to the service. However, patient identification relies on the patient’s PD medication being prescribed on the electronic prescription system and it was subsequently found that a number of patients were being identified too late to correct drug prescribing errors.

The trust patient record software allows patients to be tagged with clinical information and specific diagnoses and so a prospective system of tagging the electronic record of all patients with a diagnosis of Parkinson’s disease was undertaken. Patients were identified for tagging through the system described above and with reference to a separate nursing database that had already been established to aid with previous audits and studies.

When a list of all current inpatients with a tagged diagnosis of Parkinson’s disease were combined with those prescribed Parkinson’s disease medication, a more comprehensive list was available and patients were less likely to be missed.

A number of patients with other diagnoses such as restless legs syndrome were also identified (false positive) and these were excluded from further analysis.

The Parkinson’s disease team comprises of 1.6 whole time equivalent specialist nurses, one consultant in elderly medicine and two consultant neurologists. The great majority of in-patient reviews were carried out by the nurse team. No additional funding or capacity within their job plans was provided.

The CQUIN team designed a Parkinson’s disease inpatient assessment template which required the assessor to enter information relating to the reason for admission, issues relating to medication administration, free text for clinical advice and a plan for patient transfer or follow up.

A member of the PD team aimed to assess all PD inpatients within 24 hours of admission. Their priorities were to ensure that medication was correctly prescribed
and to liaise with and educate ward nursing and pharmacy staff to ensure that doses were administered correctly. Their role was also to consider if the patient’s drug regime needed optimisation and to ensure that multidisciplinary and discharge support was appropriately arranged. The inpatient assessment template was completed in all cases reviewed. Patients found to have other conditions eg restless legs syndrome were excluded from further analysis.

The number of emergency admissions with Parkinson’s disease was established prospectively by the method detailed above. The electronic patient record was then examined by a performance analyst to determine the number of those patients reviewed by a member of the Parkinsons’ disease team within 24 hours. For those patients who were not seen within 24 hours, the reason for non review was documented.

**Target 2: Parkinson’s disease medications administered within 30 minutes of prescribed time**

**Specialist PD ward**

For a number of years at Sunderland Royal Hospital, all emergency medical admissions with PD have, where practicable, been transferred to a dedicated care of the elderly ward run by a consultant physician with expertise in PD. This ward has been allocated a pharmacist with a special interest in PD to develop and oversee the measures required for patients to get their medications on time which include awareness raising among nurses, education, overseeing drug rounds and the use of nurse held timers.

**Drug administration on regular wards - raising the profile of PD patients**

The accurate administration of Parkinson’s medication to patients on non-specialist medical wards and on surgical wards, where many patients are kept nil by mouth, remains a challenge and so a number of measures were instituted to address this. Each ward was provided with an education pack containing contact details for the PDNSs, an educational DVD produced by Parkinson’s UK and posters to display. These were supplemented with an email to all trust staff nurses. The Parkinson’s disease specialist nurses arranged a number of formal educational sessions where they taught the importance of the need for Parkinson’s patients to receive their medications on time.

**Data analysis**

The electronic prescribing data was interrogated by a member of staff in the trust IT department and, at a ward level, the number of monthly doses of Parkinson’s disease medication was identified along with the number of doses that were documented as being administered within 30 minutes of the prescribed time.reasons for non or delayed administration of doses was identified.
Results

Emergency admissions seen within one working day of admission

Due to unforeseen technical issues, accurate data detailing the number of Parkinson’s disease admissions only became available from February 2014. The number of monthly admissions ranged from 17 to 42 (figure 1). Accurate means of identifying inpatients with a diagnosis of Parkinson’s disease on a daily basis only became available from March 2014, and from then on between 34% and 76% were assessed within one working day. In year 2, quarter 1 42% of all admissions were seen within one working day of admission and in year 2 quarter 2 this figure was 60% (figure 2). At the time of writing, we are half way through quarter 3 and the current figure is 56%.

Parkinson’s disease medications administered within 30 minutes of prescribed time

From June 2013 to September 2014 between 52% and 69% of all Parkinson’s disease medications were administered within 1 hour of the prescribed time. When assessed on a quarterly basis, this figure rises from 57% from year 1 quarter 2 to 67% at year 2 quarter 1 before falling to 61% at year 2 quarter 3. From April 2014 this data became available on a ward by ward basis. During this 6 month period, some non specialist wards only achieved 34%. However it was found that during the same period, on the dedicated PD ward, between 72% and 84% were administered within 30 minutes of the prescribed time. 33% of the total number of PD medication doses were administered on the PD ward.

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Table 1: The percentage of PD medication doses given on time between April and September 2014 on the PD specialist ward compared with the averaged time throughout the remainder of the hospital

Financial reimbursement

Significant technical issues led to late agreement on the performance targets. We were able to demonstrate a quarter on quarter improvement and were awarded the full payment for all quarters prior to this.

Examples of improvement in care as a result of early specialist review

Examples of drugs not being given due to delays in prescription charts being transcribed or due to lack of stock on wards were not infrequently reported.
The drug rotigotine which is used to treat PD was omitted and instead the antidementia drug rivastigmine was prescribed on one occasion. Fortunately the specialist nurse rectified the error before any doses were given. This would have otherwise led to the wrong medication being given, and a sudden potentially very harmful reduction in PD medications for this patient.

Another patient was found to be moribund with an aspiration pneumonia requiring immediate ICCU attention which was not identified until the patient was reviewed by the PD nurse.

**Discussion**

With limited specialist Parkinson’s disease nurse capacity in a busy district general hospital, we have demonstrated a significant sustained improvement in the care of patients with PD admitted as an emergency to Sunderland Royal Hospital.

By developing an IT based system to alert our PDNSs to the admission of the vast majority of patients with PD, we have gone from providing a limited reactive service to an extensive pro-active service. From the point of first data capture in February 2014 to September 2014, the proportion of PD patients reviewed within 24 hours of admission has increased from 12% to 76%. There has, however, been a significant month to month variability with less than 40% of patients being reviewed within 24 hours in March, May, June and August. With only two (less than whole time) PDNSs it has proven difficult to review all inpatients as quickly as we would like, particularly when one PDNS is absent. The above data, however, do not capture the fact that almost all PD patients are now reviewed early in their hospital admission, even when this is not within the first 24 hours.

We have demonstrated a steady improvement in the number of doses of PD medication delivered within 30 minutes of the prescribed time. Data from the most recent quarter has shown a slight decline in performance and the reasons for this are unclear. Our data highlight the importance of the existence of a specialist elderly medicine ward with medical, pharmaceutical and nursing expertise in PD. In our hospital approximately 40% of PD medications are administered on this ward and up to 84% of these are administered within thirty minutes of the prescribed time. Achieving this level of success on general wards where the knowledge and experience of PD can be limited remains a challenge, but by adopting a number of methods championed by Parkinson’s UK we have educated our staff and raised awareness of this important issue, leading to significant improvements.

The trust electronic prescription system (MEDITECH V6) proved to be the foundation for this quality improvement initiative; without this data we would have been unable to rapidly identify patients admitted with PD and there would be no efficient method to audit drug administration times. This project required close collaboration with both the trust IT department in order to make the necessary modifications to the electronic patient record, and with a trust performance manager who had a crucial
role in analysing data, leading on the development of team action planning and negotiating targets with the CCG.

The enhanced IT infrastructure, including the development of a specific PD inpatient assessment tool will greatly facilitate our ability to analyse admission numbers, lengths of stay and the timely involvement of the PD team. The whole dataset is analysed rather than a sample taken from it as is usually the case with conventional audits. We are confident that this will enable us to demonstrate the ongoing effectiveness of our team approach to improving the quality of care and minimising the length of stay to both hospital management and clinical commissioners.

The data confirms the significant numbers of patients admitted with PD as well as the variability in quality of care across different ward areas. It also shows the high volume of calls to the PDNS telephone helpline. It confirms previous research suggesting that specialist wards run by staff experienced in caring for Parkinson’s patients can improve quality of care.

The data collected during this programme has for the first time objectively demonstrated the large amount of work performed by our PDNSs and has also shown that with only 1.6 whole time equivalent staff it is difficult to consistently provide the level of care that we aspire to. The data proves that the vast majority of patient calls are answered within 1 working day (94%).

The data shows that when PDNS capacity is reduced there is often a substantial fall in quality of care for PD inpatients, thus objectively demonstrating their value.

We feel this project has helped show that the perception of PD as an illness that is relentlessly progressive and untreatable is erroneous and self perpetuating.

**Future plans**

With the future recruitment of a further PDNS we are confident that we will be able to consistently review the majority of PD patients within 24 hours of their admission. It will also help us to work towards a seven day PDNS service and will ensure that those patients admitted over the weekend will receive the same standard of care.

Measures are currently underway to include a brief training tool produced by Parkinson’s UK in the mandatory training of all staff nurses in the trust. This outlines important elements of Parkinson’s disease, emphasising the significance of motor fluctuations and the importance of receiving medications on time.

Self administration of medications by PD patients is one way to significantly improve the timings of drug administration. We plan to work with trust management to overcome the logistical barriers currently in place at our hospital that currently prevent this from being widely available.

More work is needed to look into the effects on admission and readmission rates of PD patients.
Over time, the various wards and departments within the trust have been made aware of the importance of PD patients receiving their medications on time. The clear prospective electronic data allows ward pharmacists and nursing staff to work together to identify the areas where improvement is needed. We now feel that the time is right to put in place a rigorous system of critical incident reporting when medication is not administered in a timely fashion. This will be managed by ward managers with quarterly reports fed back via CG system. By having already established a systematic method of educating and supporting ward staff we are confident that this measure will lead to further improvements while not being interpreted simply as criticism of their performance.

When patients are reviewed in Outpatients clinic they are now issued with a medication card available from Parkinsons UK allowing a simple transcription of their drug regime for ease of use if they are ever admitted to hospital. They can show this to the hospital staff on admission and this will help reduce potential drug prescribing errors.

We log all calls made to the Parkinson’s disease nurse helpline. This log could be enhanced to provide more information on length of call, complexity and outcome (referrals; admission/prevention of readmission). This will provide further evidence to help target specialist nurse time where it is most effective. It also allows the collection of data on certain subgroups of patients eg those with neuropsychiatric problems to allow more effective liaison with Mental Health Services.

We believe that our CQUIN initiative could be replicated in other hospitals even those without an integrated IT system. An administrative assistant would be able to manually collate admission data, informing the specialist Parkinson’s team of each new admission.

Various clinical indicators have been postulated as affecting prognosis in Parkinson’s disease eg swallowing impairment and weight loss. The system we have in place means that we can begin to analyse which of these factors do have an effect on clinical outcome. This will allow the identification of a subgroup of patients who may benefit from extra support eg Palliative care input.

Conclusions

City Hospitals Sunderland, together with the local CCG, has developed an innovative CQUIN in a challenging field of endeavour and considerable success has been achieved in a patient group in which it has traditionally been difficult to measure quality of care. The involvement in this CQUIN initiative has considerably raised the profile of the PD service and helped us secure funding for an additional PDNS. Our success has been based on close teamwork between medical, nursing, pharmaceutical, managerial and IT staff and has required no additional investment of resources. We now have firm plans in place that we hope will allow us to meet
our future CQUIN targets and will enable us to continue to deliver an excellent inpatient service to our PD patients in the long term.

We conclude from this data that it is possible to measure and improve the care of this frail often elderly inpatient group, even in a busy district general hospital with limited financial resources.

We hope that this type of data will allow robust business cases for increased capacity of PD services by showing measurable improvements in activity and quality of care. It also allows Trusts the opportunity to raise the standard of care across all wards by sharing best practice of the high performing units.

We hope that the success of this project will lead to more CCGs setting up CQUIN projects to raise the profile and improve the care of other patient groups with long term neurological conditions eg epilepsy.
Our thanks to the CQUIN team

Lisa Renton. Victoria Rumis – Specialist Parkinson’s nurse team
Dr Uma Nath (Neurology), Dr Adam Cassidy (Neurology), Dr Richard Telford (CoTE)
Su Lindsay, Matron CHST
Rod Beard, Pharmacist CHST
Julie Jones Performance Manager Support CHST
Jonathan Young, IT support, CHST
Ann Fox, Director of Nursing, Sunderland CCG
City Hospitals Sunderland Executive Board
Figure 1: % of emergency admissions seen within 1 working day by month during 2014

Figure 2: % of emergency admissions seen within 1 working day by quarter during 2014
Figure 3: % PD medications administered within 30 minutes of the prescribed time by month from June 2013 to Sept 2014

Figure 4: % of PD medications administered within 30 minutes of the prescribed time by quarter
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