Quality Improvement Project

Improving Compliance with NICE Guidelines on Parkinson's Disease: A Quality Improvement Study

Riaz Agha[1], Eric Edison[2], Christian Fielder Camm[3], Lisa Cheng[1], Pushpaj Gajendragadkar[1], Colin Borland[1]

[1]Department of Medicine, Hinchingbrooke Health Care NHS Trust, Hinchingbrooke Hospital, Hinchingbrooke Park, Huntingdon, Cambridgeshire, PE29 6NT, United Kingdom; [2]UCL Medical School, University College London, Gower Street, London, WC1E 6BT, United Kingdom; [3]New College, Oxford, OX1 3BN, United Kingdom

Correspondence to: Eric Edison, UCL Medical School, University College London, Gower Street, London WC1E 6BT, United Kingdom
Tel.: 07939436729; Email: Eric.edison89@gmail.com

Article history

Received: 30 June 2012
Accepted: 3 August 2012
Available online: 9 August 2012

Provenance and Peer Review

Unsolicited and externally peer-reviewed

Keywords

Quality Improvement
Parkinson's disease
Checklist
NICE Guidelines

Abstract

Parkinson's disease can progressively affect daily function and multidisciplinary teamwork is essential to provide high quality care. The National Institute of Health and Clinical Excellence (NICE) issued guidelines regarding diagnosis, follow-up, and multidisciplinary care. This quality improvement project sought to measure and improve the compliance of service provision against the guidelines.

In total, 3 audit cycles were completed. Each audit involved reviewing notes of patients attending a Parkinson's disease outpatient clinic against the PD NICE guidelines audit criteria. The first and second audits showed compliance was high for the criteria relating to initial diagnosis and referral but poor for those criteria relating to multidisciplinary referral.

A *pro forma* stamp was recommended to be placed in the notes at each regular Parkinson's outpatient review by a specified date (October 2009), with re-audit occurring in June 2011 as part of the official hospital audit plan.

Compliance to the NICE criteria improved to 100% on all criteria measured. However, it was evident from the notes that the *pro forma* that had been recommended by the previous audit had been in use but was not at present. In fact the *pro forma* had been so successful that the clinicians had made each of the criteria a routine part of their consultations and so did not need to rely on it.

Use of a checklist can have a lasting improvement on compliance with NICE guidelines, even if the intervention itself is transient.

Context

One in 500 people in the UK suffer from Parkinson's disease (PD) a progressive neurodegenerative disorder involving the death of dopaminergic cells in the substantia nigra with deposition of Lewy bodies.[1] PD is predominantly a motor disorder and diagnosis is normally a clinical one based on tremor, stiffness, and bradykinesia – although isotope brain imaging may help.[2] Nevertheless, as the disease progresses to later and more complex stages, almost half of the Parkinson's disease patients experience non-motor symptoms such as neuropsychiatric problems, and autonomic disturbances. The condition may eventually cause considerable disability. Thus, valuable inputs from a multidisciplinary team of physicians, PD specialist nurses, physiotherapists, occupational therapists, social workers, GPs, carers, speech and language therapists, and the palliative care team are essential to providing well-rounded care for PD patients.

Outline of problem

The National Institute of Health and Clinical Excellence (NICE) issued guidance stating that diagnosis and follow-up should be undertaken in secondary care, with referral occurring within 6 weeks of a suspected PD patient presenting to their GP, and regular follow-up every 6 to 12 months.[2] This is partly because of the expert knowledge required to prescribe and titrate anti-parkinsonian medication. Therefore, the onus is on secondary care practitioners not only to make a diagnosis and optimise pharmacological treatment, but to co-ordinate holistic multidisciplinary care. These requirements are also laid out in the NICE guidelines. The National Cost Impact Report anticipates that improving access to these services could lead to reduced emergency admissions and outpatient attendances, thus providing savings that can offset the cost of improving care. However, savings will arise only if the improvements in access are fully implemented.[3] The Department of Health requires National Health Service (NHS) organisations to work towards implementing NICE guidelines with compliance being monitored by the Care Quality Commission. Previous work has shown that clinicians often find it difficult to adhere to guidelines, partly due to the myriad of high quality guidelines available.[4] Guideline publication does improve referral behaviour.[5,6] However, lasting optimisation of referral behaviour can be achieved with the use of simple, transient, interventions.[7] It has been proposed that checklists are an appropriate, simple, intervention

to improve guideline adherence.[8] This quality improvement project sought to improve the compliance of current service provision against the guidelines.

This audit took place within Hinchingbrooke Health Care NHS Trust, based in Huntingdon with an annual income of around £63 million and 256 beds. More than 161,000 people in Huntingdonshire and surrounding areas rely on the hospital for a range of services. In 2007/08, there were 7,045 general medical inpatient admissions and 3,839 outpatient attendances. The Care Quality Commission rated the hospital as 'good' for quality of services, but weak for use of resources in its 2007/8 Annual Health Check.[9]

Table 1 PD NICE guideline audit criteria (modified from Appendix D of NICE CG35).[2]

Criterion	Exception
1. 100% of people with suspected Parkinson's disease are seen within 6 weeks of GP referral.	None
2. 100% of people with Parkinson's disease are reviewed at 6- to 12-month intervals.	None
3. 0% of people with suspected PD are offered acute levodopa- and/or apomorphine-challenge tests for the differential diagnosis of parkinsonian syndromes.	None
4. 100% of people with Parkinson's disease have access to a Parkinson's disease nurse specialist or other professional capable of providing: • Clinical monitoring and medication adjustment. • A continuing point of contact for support, including home visits, when appropriate. • A reliable source of information about clinical and social matters of concern to people with PD and their carers.	None
5. For 100% of people with Parkinson's disease, at diagnosis and each regular review, physiotherapy is available and appropriate referral is activated. This is recorded in the patient's notes.	None
6. For 100% of people with Parkinson's disease, at diagnosis and each regular review, occupational therapy is available and appropriate referral is activated. This is recorded in the patient's notes.	None
7. For 100% of people with Parkinson's disease, at diagnosis and each regular review, speech and language therapy is available and appropriate referral is activated. This is recorded in the patient's notes.	None
8. 100% of people with PD should be given opportunities to discuss and ask questions about their palliative care requirements with appropriate healthcare professionals.	None

Key measures of improvement

Improvement was measured by comparing patient notes against the PD NICE guidelines audit criteria (Table 1). For each criterion, the percentage of notes that demonstrated compliance was calculated.

Process of gathering information about the problem

In total, three audits were completed. Each audit involved reviewing the notes of all patients attending a PD outpatient clinic. Only patients with a definitive clinical diagnosis of PD were included. The first audit reviewed 20 patients' notes in April 2007, whilst the second and third audits reviewed 13 each, in April 2009 and June 2011 respectively. Data were collected from the consultations themselves, and also from reviewing the medical notes of the patients.

Analysis and interpretation

In the first audit, compliance was high for the first four criteria, but low for criteria five to eight. The latter criteria identify referral behaviour and multi-disciplinary teamwork after the initial diagnosis.

As no improvements were seen between the first and second audits, specific intervention was recommended after the second audit was completed. Compliance on some items was actually worse in the second audit, whilst compliance

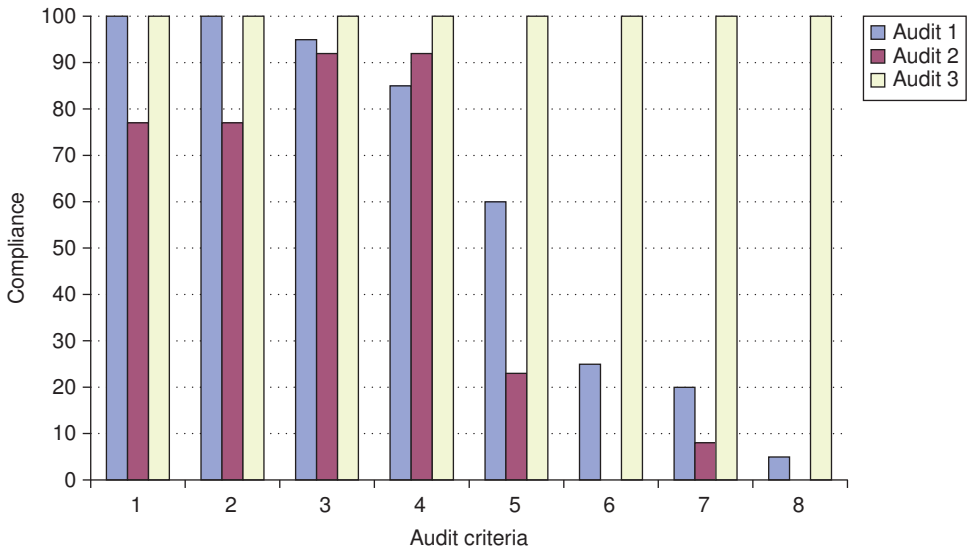

Fig 1 A comparison of compliance against audit criteria between audits 1, 2 and 3.

Table 2 A comparison of compliance against audit criteria between audits 2 and 3.

Criterion	Audit 2	Audit 3	P-value
1. 100% of people with suspected Parkinson's disease are seen within 6 weeks of GP referral.	77% 10/13	100% 5 / 5	0.5221
2. 100% of people with Parkinson's disease are reviewed at 6- to 12 month intervals.	77% 10/13	100% 13/13	0.2200
3. 0% of people with suspected PD are offered acute levodopa- and/or apomorphine-challenge tests for the differential diagnosis of parkinsonian syndromes.	92% 12/13	100% 10/10	1
4. 100% of people with Parkinson's disease have access to a Parkinson's disease nurse specialist or other professional capable of providing: • Clinical monitoring and medication adjustment • A continuing point of contact for support, including home visits, when appropriate • A reliable source of information about clinical and social matters of concern to people with PD and their carers.	92% 12/13	100% 13/13	1
5. For 100% of people with Parkinson's disease, at diagnosis and each regular review, physiotherapy is available and appropriate referral is activated. This is recorded in the patient's notes.	23% 3/13	100% 13/13	<0.0001
6. For 100% of people with Parkinson's disease, at diagnosis and each regular review, occupational therapy is available and appropriate referral is activated. This is recorded in the patient's notes.	0% 0/13	100% 13/13	<0.0001
7. For 100% of people with Parkinson's disease, at diagnosis and each regular review, speech and language therapy is available and appropriate referral is activated. This is recorded in the patient's notes.	8% 1/13	100% 13/13	<0.0001
8. 100% of people with PD should be given opportunities to discuss and ask questions about their palliative care requirements with appropriate healthcare professionals.	0% 0/13	100% 13/13	<0.0001

remained high in other criteria (Figure 1). This highlighted the need for standardisation and a simple method to improve documentation.

Strategy and implementation of change

A checklist or *pro forma* is recognised as an appropriate simple intervention to improve guideline adherence.[8] Following the results for the first two audit cycles, a *pro forma* stamp or sheet was recommended to be placed in the notes at each regular Parkinson's outpatient review. The team liaised with the audit department of the hospital to implement this by a specified date (October 2009), with re-audit occurring in June 2011 as part of the official hospital audit plan. The *pro forma* consisted of a stamp of a table similar to Table 1. This was simple and quick to complete and identified key guidelines – addressing the fact that clinicians can be overwhelmed by multiple guideline sources.[4] This stamp was placed in patient notes when they attended the outpatient clinic.

Data was confidential, complied with the Data Protection Act 1998, and the audit was advised by the clinical audit department of the hospital. No ethical issues were identified.

Effects of change

Compliance to the NICE criteria improved to 100% after introduction of the *pro forma* in 2009, between audit 2 and 3 (Figure 1 and Table 2). In the third audit, complete data were not available for criteria 1 and 3, limiting their sample size to 5 and 10 respectively. This is because the sample included patients that had originally been diagnosed at another institution and since moved to the catchment area served by Hinchingbrooke Hospital. Thus, the data regarding the original referral and diagnosis could not be obtained for these patients and hence the sample size for these criteria has been amended accordingly.

Interestingly, during the third audit in 2011, it was evident from the notes that the *pro forma* that had been recommended by the previous audit had been in use but was not at present. It seemed from this audit that the *pro forma* had been so successful that the clinicians had made each of the criteria a routine part of their consultations, and so did not need to rely on it.

Data from this study was submitted to the National Audit on Parkinson's Disease run by Parkinson's UK (http://www.parkinsons.org.uk/for_professionals/resources/audit.aspx).

Discussion (Lessons learnt, messages for others, next steps)

Compliance with NICE guidelines on care for patients with Parkinson's disease was improved to 100% after introduction of a *pro forma* to document communication with members of a multidisciplinary team. The *pro forma* was introduced in 2009, but by 2011 (when the third audit was completed) it was no longer in use. Instead it had been so successful in raising awareness that it was no longer in routine use and each of the criteria were being documented clearly, independently of use of the *pro forma*. This study was completed in an

average sized district general hospital, representative of other hospitals across the United Kingdom. Furthermore, these interventions were simple and cheap to implement with excellent outcomes.

Audits 1 and 2 demonstrated that compliance with items 1–4 was good before any direct intervention was made, whilst compliance with items 5–8 was poor and variable. Criteria 1–4 describe events around the time of referral to secondary care and initial diagnosis. The latter criteria describe referral to multidisciplinary team members after the initial diagnosis: physiotherapy, occupational therapy, speech and language therapy, and palliative care. Therefore, it seems that patients were receiving optimal generic care at the time of diagnosis. However, during follow-up, not enough attention was paid to the holistic individual care of the patient, and involvement of the relevant multidisciplinary team members as necessary. Thus, the most appropriate intervention was one that reminded clinicians to offer these additional services at each subsequent outpatient appointment. After initially using the *pro forma* as intended, offering these services become part of the normal schedule of routine outpatient follow-up, and the *pro forma* was no longer needed.

A follow-up audit is needed to assess whether observed gains weaken over time without the use of the *pro forma* or whether this intervention functioned as an interim measure to enforce practices that are now routine. One may hypothesise that the current staff would continue to refer appropriately to other teams once this behaviour has been established but that new staff may not. Perhaps new staff should be encouraged to use the *pro forma* until they are familiar with the four teams that must be considered at each routine follow-up.

Improved compliance with the NICE guidelines should lead to better symptom control and possibly reduce admissions and outpatient attendances, as suggested by the national cost-impact report.[9] Future work should address directly whether the increased short-term cost of more accessible multi-disciplinary care does indeed reduce admission, outpatient attendances, and costs in the medium- and long-term.

It is also important to assess the impact this improved guideline compliance has on patient satisfaction – an increasingly important metric with the impending introduction of patient reported outcome measures in the UK. This has been demonstrated in other chronic conditions, such as diabetes, where patient pathways that integrate multidisciplinary teamwork are associated with better clinical outcomes, patient satisfaction, and cost.[10] Team working has obvious benefits, as recognised by patients and healthcare professionals. However, there are certain drawbacks that have been identified including confusion about who is ultimately responsible for aspects of patient care.[11] Randomised controlled trials assessing impact of multi-disciplinary care in Parkinson's Disease have been equivocal,[12–14] although preliminary data from on-going randomised controlled trials is more promising.[15,16] Other methods, such as observational studies, have demonstrated clear benefits to quality of life in terms of mobility, functional status, and psychological wellbeing.[17]

Post et al. identified four key barriers to PD multidisciplinary 'teamworking' in the Netherlands: insufficient expertise among health professionals, poor interdisciplinary collaboration, inadequate communication (both across participating professionals and between professionals and patients), and a lack of financial support for a multidisciplinary team approach. To overcome these barriers, they have led the reorganisation of services in the Netherlands in a system called ParkinsonNet.[18] It has been hypothesised that these barriers would be present in other countries. However, this study in the UK was effective with a simple and cheap intervention, suggesting that PD multidisciplinary services in the UK are readily available if the appropriate referrals are offered to patients.

A growing body of work has focussed on guidelines themselves. The multitude of available high quality guidelines has made standardisation increasingly important, and there are on-going efforts to do so.[4] Such guidelines must be accessible to patients, as well as doctors, who can be empowered to request optimal treatment.[19] This is relevant to this study, where patients should be made aware of the availability of occupational therapy, physiotherapy, and speech and language therapy; not only at diagnosis but at each subsequent follow-up. Patient information leaflets should be readily available and should include information on the multidisciplinary services on offer and specify that their needs can change over time. Guideline publication and dissemination to professionals does improve the level of appropriate referrals.[5,6] However, another study echoed ours by showing that a simple transient intervention (in this case, feedback on inappropriate referrals) was effective in producing lasting changes to optimise referral behaviour, in line with guidelines, months after the intervention had been completed.[7]

Much of the literature concerning checklists is written about the implementation of the WHO surgical checklist and emergency medicine checklists.[20] Although these scenarios are clearly different to outpatient care, there are common themes concerning their implementation. One study found that there were 11 key barriers to implementation of the surgical checklist. Those relevant outside the operating room include: time-consuming, a perception that the process is lacking value, and ambiguously worded items on the checklist.[21] At centres that were particularly poor at implementation, staff were not involved in the implementation of the checklist and did not see its value. Other industries such as aviation, that have decades of experience in producing high quality checklists, demonstrate that front-line staff 'buy-in' should be engendered through involvement in checklist implementation, rather than having it forced upon them.[22] The checklist used was simple and time efficient; clinicians were happy to use it until the practices became routine such that it was unnecessary. Surgery, aviation, and emergency medicine all involve potentially high-risk acute situations and checklists have developed in this environment. This study shows that they can be similarly useful in an outpatient environment.

The most important limitation of this study was the small sample size of patients, especially in criteria 1 and 3 in the final audit. Nevertheless, the results demonstrated are convincing, with 100% compliance in all items after active intervention. However, compliance with items 1 and 3 was already good and any change seen here would have been modest, regardless of the sample size. Further limitations include the method employed in this study to repeat audits at 3 time points; this precluded the use of blinded scoring. Furthermore, due to the rotation of junior doctors through the department, it was not possible to assess inter-observer bias.

This study highlights a few important principles. First, adherence to guidelines about routine care around the time of diagnosis was good whilst adherence to guidelines involving multi-disciplinary team-working once a diagnosis was established was poor. Secondly, a *pro forma* was a simple, cheap, and effective intervention to encourage adherence to guidelines. Thirdly, this study has demonstrated that a simple intervention may only be needed transiently to change clinical

behaviours, and that these behaviours may remain once that intervention itself has been removed.

Ethical approval

No ethical approval required for this study.

Conflict of interest

No conflicts of interest have been declared by the authors.

Author contribution

RAA: Concept, Design, Critical Revision, Final Approval.
EE: Writing, Critical Revision, Final Approval.
CFC: Critical Revision, Final Approval.
LC: Design, Final Approval.
PG: Design, Final Approval.
CB: Concept, Design, Critical Revision, Final Approval.

Funding

No funding source declared by authors.

1 Vekrellis K, Xilouri M, Emmanouilidou E, Rideout HJ, Stefanis L. Pathological roles of α-synuclein in neurological disorders. Lancet Neurol. 2011 Nov;10(11):1015–25.
2 National Institute for Health and Clinical Excellence (2006) Parkinson's Disease: diagnosis and Management in Primary and Secondary Care. CG035. London: National Institute for Health and Clinical Excellence.
3 National Institute for Health and Clinical Excellence (2006) Parkinson's Disease: National Cost Impact Report. CG035. London: National Institute for Health and Clinical Excellence
4 CQC. Hichingbrooke Hospital. 2012 [online]. <http://www.cqc.org.uk/directory/rqq31. (Accessed 27th April 2012).
5 Julien N, Patricia M, François D. Diabetic care in a network of health professionals in the beaune area. BMJ Quality & Safety. 2010;19:A135–6.
6 Baxter SK, Brumfitt SM. Benefits and losses: a qualitative study exploring healthcare staff perceptions of teamworking. Qual Saf Health Care. 2008 Apr;17(2):127–30.
7 Wade DT, Gage H, Owen C, Trent P, Grossmith C, Kaye J. Multidisciplinary rehabilitation for people with Parkinson's disease: a randomised controlled study. J Neurol Neurosurg Psychiatry. 2003;74:158–62.
8 Wakeham MK. Use of a clinical practice guidelines checklist to reduce intravenous catheter-related infections. Nutr Clin Pract. 2011 Jun;26(3):346–8.
9 Guo L, Jiang Y, Yatsuya H, Yoshida Y, Sakamoto J. Group education with personal rehabilitation for idiopathic Parkinson's disease. Can J Neurol Sci. 2009;36:51–9.
10 Tickle-Degnen L, Ellis T, Saint-Hilaire MH, Thomas CA, Wagenaar RC. Self-management rehabilitation and health-related quality of life in Parkinson's disease: a randomized controlled trial. Mov Disord. 2010;25:194–204
11 Guttman M, Takahasji J, Torti M. Multidisciplinary team provides better outcome in Parkinson's disease patients compared to standard of care. Mov Disord. 2008;21(Suppl 15):S511.
12 van der Marck MA, Bloem BR, Mulleners WM, et al. Rationale and design of the IMPACT study: a cluster controlled trial to evaluate cost-effectiveness of multidisciplinary care in Parkinson's disease. Mov Disord. 2010;25(Suppl 2):S290.
13 Gage H, Storey L. Rehabilitation for Parkinson's disease: a systematic review of available evidence. Clin Rehabil. 2004;18:463–82.
14 Post B, van der Eijk M, Munneke M, Bloem BR. Multidisciplinary care for Parkinson's disease: not if, but how! Postgrad Med J. 2011 Sep;87(1031):575–8.
15 Thomson R. Challenges for an international guidelines collaboration. Qual Saf Health Care. 2004 Dec;13(6):409–10.
16 McColl E. I just want the protocol, doctor! Qual Saf Health Care. 2005 Jun;14(3):155.
17 Clarke A, Blundell N, Forde I, et al. Can guidelines improve referral to elective surgical specialties for adults? A systematic review. Qual Saf Health Care. 2010 Jun;19(3):187–94.
18 Kourkouta S, Darbar UR. An audit of the quality and content of periodontal referrals and the effect of implementing referral criteria. Prim Dent Care. 2006 Jul;13(3):99–106.
19 Elwyn G, Owen D, Roberts L, et al. Influencing referral practice using feedback of adherence to NICE guidelines: a quality improvement report for dyspepsia. Qual Saf Health Care. 2007 Feb;16(1):67–70.
20 Haynes AB, Weiser TG, Berry WR, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med. 2009;360:491–9.
21 Fourcade A, Blache JL, Grenier C, Bourgain JL, Minvielle E. Barriers to staff adoption of a surgical safety checklist. BMJ Qual Saf. 2012 Mar;21(3):191–7.
22 Thomassen Ø, Espeland A, Søfteland E, Lossius HM, Heltne JK, Brattebø G. Implementation of checklists in health care; learning from high-reliability organisations. Scand J Trauma Resusc Emerg Med. 2011 Oct 3;19:53.