Immediate versus delayed short-term integrated palliative care for advanced long-term neurological conditions: the OPTCARE Neuro RCT

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Disclaimer: This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.

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Scientific summary

The OPTCARE Neuro RCT

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Scientific summary

Objectives

The primary objective was to determine the clinical effectiveness and cost-effectiveness of short-term integrated palliative care for people severely affected by long-term neurological conditions compared with standard care alone, according to the primary outcome of reduction in key symptoms at 12 weeks. Secondary objectives were to:

- map current practice and document the services available (and common care pathways) for patients with long-term neurological conditions and their caregivers/families in the areas of the study, to better understand variations in normal practice experienced by the control group
- test the feasibility of offering short-term integrated palliative care and the trial methods across five centres for people severely affected by long-term neurological conditions, and to modify the intervention and trial methods accordingly
- determine the effectiveness of short-term integrated palliative care for people severely affected by long-term neurological conditions compared with standard care in the secondary outcomes – palliative care needs and other symptoms, patient psychological well-being and quality of life, caregiver burden/positivity and quality of life, improvement in patients' and caregivers' satisfaction and communication
- determine the effects of short-term integrated palliative care for people severely affected by long-term neurological conditions on hospital admissions, length of hospital stay, emergency attendance and other service use over the trial period
- determine the cost-effectiveness of short-term integrated palliative care for people severely affected by long-term neurological conditions
- understand how the change process may work and to identify components of the short-term integrated palliative care that are most valued by patients, their families/caregivers and other health-care professionals
- determine how the effects change over time, whether or not earlier referral to palliative care affects the subsequent response to palliative care and when assessment or rereferral might be beneficial.

Methods

A mixed-methods study comprising a pragmatic, randomised controlled, multicentre, fast-track trial, assessment of cost-effectiveness, an embedded qualitative component and mapping to understand standard care.

Mapping and survey methods

Care mapping was conducted in eight centres with neurology and palliative care services in the UK, purposively selected to include our main recruitment centres and other large centres. Questions included catchment and population served, service provision and staffing, and integration and relationships. In addition, neurology and palliative care professionals from six trial centres (London, Nottingham, Liverpool, Cardiff, Brighton and Ashford) were invited to complete an online survey. The surveys consisted of multiple-choice or open-comment questions (13 for neurology or 10 for palliative care). Mapping and survey data were collated, explored and compared.

Randomised trial methods

People living with multiple sclerosis, idiopathic Parkinson's disease, motor neurone disease, multiple system atrophy or progressive supranuclear palsy and their family caregivers were recruited from seven UK centres. Eligible patients were identified by neurology clinicians as having unresolved symptoms and/or complex psychosocial needs. Participants were randomised to receive short-term integrated palliative care immediately (fast-track group) or after a 12-week wait (standard care group). Short-term integrated palliative care was delivered by multiprofessional teams. The primary outcome measure was a combined score of eight symptoms as measured by the Integrated Palliative care Outcome Scale for Neurological conditions (IPOS Neuro-S8) at 12 weeks. Secondary outcomes included patients' other physical and psychological symptoms, quality of life, care satisfaction, caregiver burden, service use and costs, and harms.

Statistical methods

We planned a sample size of 356 patients. This allowed for 17% attrition of the primary outcome at 12 weeks. With two-sided alpha = 0.05 and correlation of 0.40, the study had 80% power for a medium effect size (0.30). Missingness was explored, with a starting assumption of missing at random. Bivariate analyses indicated that missingness was associated with patient capacity, age, performance status and ethnicity. Multiple imputation using chained equations was used to impute missing observations. We used intention-to-treat analysis. The mean scores and mean change scores from baseline to 12 weeks post randomisation and their 95% (for primary outcome IPOS Neuro-S8) or 99.55% confidence intervals (for secondary outcomes) were reported. Statistical significance (0.05/11 = 0.0045) for secondary outcomes was adjusted using Bonferroni correction to control for multiple testing. The robustness of the results was explored in six sensitivity analyses.

Health economic methods

Service use data, including inpatient, community, outpatient, home, palliative, rehabilitation and primary care services, plus tests and diagnostics, were collected using patient report in face-to-face interviews, according to the Client Service Receipt Inventory. Costs were calculated by combining resource use data with unit costs obtained from standard sources, in particular the NHS reference cost data in 2015–16 [Department of Health and Social Care (DHSC). *NHS Reference Costs 2015 to 2016*. 2016. URL: www.gov.uk/government/publications/nhs-reference-costs-2015-to-2016 (accessed 5 December 2019)] or the *Unit Costs of Health and Social Care 2016* (Curtis L, Burns A. *Unit Costs of Health and Social Care 2016*. Canterbury: University of Kent; 2016), when applicable. Cost-effectiveness was assessed by linking data on health and social care service cost differences and two outcome measurements differences: the primary outcome IPOS Neuro-S8 and the EuroQol-5 Dimensions, five-level version. Results were plotted on cost-effectiveness planes. To understand the uncertainty of the results from the incremental cost-effectiveness ratios, replications of differences in health and social care costs and outcomes were produced by bootstrapping 1000 times.

Qualitative methods

This explored which aspects of short-term integrated palliative care were most valued or had the most impact on patients' and caregivers' experiences of care, how the change process of short-term integrated palliative care may be working and how the intervention is delivered in practice. Individual interviews were conducted with participants who received short-term integrated palliative care. Interviews were conducted by researchers and research nurses, trained in and supervised during qualitative interviewing. Focus groups were conducted with health-care staff from the respective

centres to explore perceptions of short-term integrated palliative care, processes of short-term integrated palliative care delivery and the local context of service delivery models for patients with neurological conditions. Eligible participants comprised health professionals involved in delivering the intervention in the respective study centres. When individual attendance at a focus group was not possible (e.g. because of clinical commitments), individual interviews were conducted (either face to face or by telephone) to ensure representation from all centres. All participants provided written informed consent. Interviews and focus groups were digitally recorded, transcribed verbatim and anonymised prior to thematic analysis. NVivo 11 software (QSR International, Warrington, UK) for qualitative analysis was used for data storage, coding, searching and retrieving, and recording analytical thinking.

Patient and public involvement

An independent patient and public involvement group was set up specifically for OPTCARE Neuro (OPTimising CARE for people with advanced long-term Neurological conditions), comprising both patients and caregivers with lived experience of multiple sclerosis, idiopathic Parkinson's disease, multiple system atrophy and motor neurone disease. The group advised on the application for ethics approval and the development of all participant materials, as well as on the delivery of the trial and the interpretation of the findings. A member of our patient and public involvement group was a co-applicant on the grant and was on the Study Steering Committee. We had patient and public involvement representation in the Data Monitoring and Ethics Committee, providing oversight and responsibility for the conduct of the trial. We actively involved our patient and public involvement members in the interpretation of data, particularly the qualitative components of this study. This provided valuable insight to aid understanding of the data and its relevance to addressing patients' needs.

Ethics approval and research governance

The trial was conducted in compliance with the principles of the Declaration of Helsinki (World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA* 2013;**310**:2191–4), the principles of Good Clinical Practice and in accordance with all applicable regulatory requirements. The protocol and related documents were submitted for review and approved by the London South East Research Ethics Committee (14/LO/1765).

Results

Mapping results

Centres varied in the size of their catchment areas (39–5840 square miles), population served (142,000–3,500,000) and service provisions. For example, neurology services varied in the number and type of clinics provided, and palliative care services varied in the settings they covered. The integration between neurology and palliative care teams varied between centres, and even more so between diseases. For multiple sclerosis, integration was limited and most centres had no formal links. In contrast, for motor neurone disease there was established integration and most centres held either joint clinics or had a palliative care presence at multidisciplinary team meetings. In Parkinson's disease-related disorders, integration was mixed, with greater integration reported for multiple system atrophy and progressive supranuclear palsy.

Survey results

The survey received responses from 33 neurology and 26 palliative care professionals (20% response rate). Current levels of collaboration between the two specialties were reported as 'good/excellent' by

36% of neurology professionals and by 58% of palliative care professionals. However, nearly half (45%) of neurology compared with only 12% of palliative care professionals rated current levels as 'poor/none'. Both professional groups felt that the new short-term integrated palliative care service being trialled would improve future collaborations (65–70% in both groups). The most commonly identified barriers for delivery of the short-term integrated palliative care were resources and clinician awareness. A key barrier identified by palliative care professionals was the possible need for longer-term care beyond that offered by the short-term integrated palliative care service.

Randomised trial results

The trial recruited 350 patients (with 229 caregivers), with 176 patients in the immediate short-term integrated palliative care intervention arm and 174 in the standard care control arm. The groups were well balanced, except for patient ethnicity, for which there were more patients with ethnicities other than white in the short-term integrated palliative care group (13%) than in the standard care group (5%). There were no significant differences in deaths, hospitalisation and survival, up to 12 weeks, between the trial arms.

Primary analysis of effectiveness

There were no statistically significant differences between the trial arms for either the primary outcome or any of the secondary outcomes. However, patients receiving short-term integrated palliative care showed a significant improvement, from baseline to 12 weeks, on the primary outcome IPOS Neuro-S8 (–0.78, 95% confidence interval –1.29 to –0.26) and the secondary outcome of 24 physical symptoms (–1.95, 99.55% confidence interval –3.60 to –0.30). This was not seen in the control group, for whom, conversely, care satisfaction significantly lowered from baseline to 12 weeks (–2.89, 99.55% confidence interval –5.19 to –0.59). Subsequent sensitivity analyses reflect these results.

Cost-effectiveness

Health and social care costs (including all inpatient, community, outpatient, home, palliative, rehabilitation and primary care costs, plus tests and diagnostics) decreased from baseline to 12 weeks (by –£1076 in the short-term integrated palliative care group and by –£514 in the standard care group). Overall, it was less costly to provide care for the short-term integrated palliative care group than standard care ($p = 0.12$). From an NHS perspective, differences in costs and outcomes resulted in the dominance of short-term integrated palliative care over standard care: short-term integrated palliative care was less costly and more effective. The incremental cost-effectiveness ratios for EuroQol-5 Dimensions index score and rescaled IPOS Neuro-S8 were –£23,545 and –£1519, respectively. Cost-effectiveness planes for EuroQol-5 Dimensions (quality-adjusted life-year) and IPOS Neuro-S8, showed that, respectively, > 74% and 84% of replications from bootstrapping were in the fourth quadrant, showing that short-term integrated palliative care dominated standard care, having both lower costs and better outcomes.

Qualitative findings

Twenty-six interviews were carried out with 26 patients and 16 caregivers from three trial centres (London, Brighton and Ashford). Two-thirds of patients had multiple sclerosis (18/26). Most had lived with their condition for a considerable time (mean 13.7 years since diagnosis, standard deviation 10.5 years). Caregivers tended to be younger (caregivers' mean age was 58.9 years and patients' mean age was 63.5 years), 10 out of 16 were women and 11 out of 16 were a spouse or partner. Focus groups were conducted with 43 health-care staff involved in delivering short-term integrated palliative care

in six of the study centres. Palliative care team members included consultants in palliative medicine, clinical nurse specialists, occupational therapists, clinical service managers, a chaplain and an administrator. Neurology team members included consultants in neurology and disease-specific clinical nurse specialists.

The value and impact of short-term integrated palliative care, and linkage with key components for delivery, are encompassed in three overarching themes: (1) adapting to losses and building resilience, (2) attending to function, deficits and maintaining stability, and (3) enabling caregivers to care. Overall, the themes illustrate the complexity of living with a long-term neurological condition, the daily work of patients and caregivers to accommodate ongoing losses and adapt to maintain stability in function, and achieve optimal management of disease and symptoms. The strategies used were typically honed over many years. There were rarely 'quick fixes'. What was required was skilled support with attention to the multiple domains of health and person-centred care, to understand priorities and integrated working across health care, and to optimise continuity of care and treatment.

Conclusions

To the best of our knowledge, this is the largest palliative care trial in people with a variety of long-term neurological conditions. Although no significant between-group differences were seen, we found that short-term integrated palliative care provides improvements in patient-reported physical symptoms, at a lower cost and without any harmful effects when compared with standard care. However, further work is needed to refine short-term integrated palliative care and the provision of holistic, palliative care approaches for this patient group, with a particular focus on better integration of existing services, research into ways to alleviate some of the more intractable symptoms, as well as the appropriate timing and criteria for referral of long-term neurological condition patients to specialist palliative care.

Trial registration

This trial is registered as ISRCTN18337380.

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