

Occupational therapy compared with social work assessment for older people. An economic evaluation alongside the Cambridgeshire Elders Occupational Therapy (CAMELOT) trial

Chris Flood¹, Miranda Mugford¹, Sandra Stewart², Ian Harvey³, Fiona Poland², Walter Lloyd-Smith².

1. Health Economics Group, School of Medicine, Health Policy and Practice, University of East Anglia.
2. School of Occupational Therapy and Physiotherapy, University of East Anglia.
3. Population Health Group, School of Medicine, Health Policy and Practice, University of East Anglia

Aims of the study

To compare the outcome of occupational therapy with social worker led services of older people in terms of their independence and service costs.

Design

A community based randomised controlled trial.

Intervention

Eligible older persons in the trial (and their carers) were referred to either an early occupational therapy (OT) assessment (experimental group), or to normal assessment and care through social services and community care. (Control group).

Main outcome measures

The primary aim of the trial was to assess effects of OT assessment on independence. Dependence was measured using the Community Dependency Index (CDI), utility scores were also assessed using the EuroQol (EQ-5D), obtained for each client at baseline, 4 months and 8 months. Resource use data were collected from general practice notes, patients and carers at final follow up.

Participants

321 people aged 65 and over (and their carers) were recruited after being referred to occupational therapy teams for assessment for services to maintain them in the community.

Results

There were no cost or clinical effectiveness differences between the two arms of the trial. Cost effectiveness was also considered using cost-effectiveness acceptability curves.

Conclusions

The lack of difference in clinical and cost-effectiveness could mean that either a social work or an occupational therapy service is successful in making care assessments that enable an older person to remain in their own home. A further interpretation might be that the trial was not powered to show an important difference in resource use, nor did it have long enough follow up to detect important results of different approaches to assessment. Issues for discussion include the best means of reporting this kind of economic evaluation and concerns about follow up periods in old-age related research.

The Department of Health commissioned this research study as part of its Research Policy Programme of work in different aspects of community health service provision. The research was carried out between October 1999 and January 2002. Cambridgeshire Social Services Department and Lifespan Healthcare Trust enabled social work and occupational therapy teams to participate in the study over this period.

Introduction

There are two key themes of promoting non-institutional forms of care and maximising individual independence in the community for elderly people.^{1 2} However, there has been very little research into the most appropriate and most cost effective ways of meeting either of these aims. The need to demonstrate the effectiveness of therapy interventions has also become increasingly important in relation to these changing contexts of care and resource constraints faced by health and social care providers³.

The literature to date addresses dependency and care provision for the disabled and elderly^{4 5}, cost, needs and outcomes in both residential and community settings^{6 7 8} informal carers^{9 10} and the impact of community care on service provision and budgets^{11 12 13}.

¹ NHS Plan (2000) A plan for investment A plan for reform. London Stationary Office, Cm4818-1.

² Department of Health (2001) National Service Framework for Older People. London, Department of Health.

³ Craik, C. (1997) Research: Moving from Debate to Action. *British Journal of Occupational Therapy* 60, 2: 65-66.

⁴ Rosin, A.J. and Sonnenblick, M. (1998) Autonomy versus compulsion in the care of dependent older people. *Health Care in Later Life*, 3(3), 159-170.

⁵ Kent, R.M., Chandler, B.J. and Barnes, M.P. (2000) An epidemiological survey of the health needs of disabled people in a rural community. *Clinical Rehabilitation*, 14(5), 481-90.

⁶ McLaughlan, S. and Wilkin, D. (1982) Levels of provision and of dependency in residential homes for the elderly: implications for planning. *Health Trends*, 14(3), 63-5.

⁷ Forder, J. and Netten, A. (2000) The price of placements in residential and nursing home care: the effects of contracts and competition. *Health Economics*, 9(7), 643-57.

⁸ McMurdo, M.E., Millar, A.M. and Daly, F. (2000) A randomized controlled trial of fall prevention strategies in old peoples' homes. *Gerontology*, 46(2), 83-7.

⁹ Low, J.T., Payne, S. and Roderick, P. (1999) The impact of stroke on informal carers: a literature review. *Social Science and Medicine*, 49(6), 711-25.

¹⁰ Canam, C. and Acorn, S. (1999) Quality of life for family caregivers of people with chronic health problems. *Rehabilitation Nursing*, 24(5), 192-6.

¹¹ Smith, G.C. and Ford, R.G. (1998) Geographical change in residential care provision for the elderly in England, 1988-93. *Health and Place*, 4(1), 15-31.

¹² Walker, M., Orrell, M., Manela, M. Livingston, G and Katona, C. (1998) Do health and use of services differ in residents of sheltered accomodation? A pilot study. *International Journal of Geriatric Psychiatry*, 13(9), 617-24.

Establishing the effectiveness of alternative approaches to care provision provides essential but not sufficient evidence for those concerned with allocation of limited health and social care resources.

Economic evaluation

Existing literature on the costs of care for the elderly frail living in the community has focused on a number of narrow themes, including cost-effectiveness analysis of primary and secondary prevention in the elderly^{14 15 16 17 18 19}. None of these studies addressed the question of cost-effectiveness of different professional groups in the management of the frail elderly in the community.

McNamee et al²⁰ in an extensive RCT in England (N=1055) attempted to quantify the service use and costs of supporting older people. These authors found that average costs per person per week totalled £64.50. Similarly, Miller et al²¹ conducted a pilot study developing cost measures for a home-health nursing intervention, designed to support frail elderly patients. They discussed the difficulty of collecting data from this client group, and

¹³ Kavanagh, S. and Knapp, M. (1999) The impact on general practitioners of the changing balance of care for elderly people living in institutions. *BMJ*, 318(7184), 666.

¹⁴ Tinetti, M. E. Baker, D. I. McAvay, G. Claus, E. B. Garrett, P. Gottschalk, M. Koch, M. L. Trainor, K. Horwitz, R. I. (1994) A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *New England Journal of Medicine*. 331(13), 821-827.

¹⁵ Rich, M. W. Beckham, V. Wittenberg, C. Leven, C. L. Freedland, K. E. Carney, R. M. (1995) A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *New England Journal of Medicine*. 333(18), 1190-1195.

¹⁶ Stuck, A. E. Aronow, H. U. Steiner, A. Alessi, C. A. Blua, C. J. Gold, M. N. Yuhas, K. E. Nisenbaum, R. Rubenstein, L.Z. Beck, J. C. (1995) A trial of annual in-home comprehensive geriatric assessments for elderly people living in the community. *New England Journal of Medicine*. 333(18) :1184-1189.

¹⁷ Smith, R. D. Widiatmoko, D. (1998) The cost-effectiveness of home assessment and modification to reduce falls in the elderly. *Australian & New Zealand Journal of Public Health*. 22(4), 436-40.

¹⁸ Smith, R. D. Fordham, R. J. (2001) Economics of fall prevention programs: evidence and research priorities. *Expert Rev. Pharmacoeconomics Outcomes Res*. 1(1).

¹⁹ Hay, J. LaBree, L. Luo, R. Clark, F. Carlson, M. Mandel, D. Zemke, R. Jackson, J. Azen, S. (2002) Cost-effectiveness of preventive occupational therapy for independent-living older adults. *JAGS*

²⁰ McNamee, P., Gregson, B. A., Buck, D., Bamford, C. H. Bond, J. Wright, K. (1999) Costs of formal care for frail older people in England: the resource implications study of the MRC cognitive function and ageing study. *Social Science and Medicine* 48(3), 331-341.

²¹ Miller, L. L., Hornbrook, M. C. Archbold, P. G. Stewart, B J. (1996) Development of Use and Cost Measures in a Nursing Intervention for Family Caregivers and Frail Elderly Patients. *Research in Nursing & Health*, 19: 273-285.

resulting inaccuracy of the data. In their study they found lower overall costs associated with the intervention group, but the difference was not significant.

Although there are many examples of evaluation of health and social care services, existing guidelines for health economic evaluation have concentrated heavily on evaluation of drug treatments and new technologies in secondary care^{22 23}. Practical guidance on economics studies in primary and social care settings is more limited^{24 25}. The variety of agencies and modes of care involved makes such studies much harder to do. There are relatively few tested research tools in general in economic evaluation, and this is especially true for evaluation in the settings considered in this trial. The trends in health and life expectancy and the potentially large growth in costs of care outside secondary sector, reinforce the need to evaluate innovations in the primary sector.²⁶

The CAMELOT trial was designed to compare occupational therapy (OT) assessment with social work assessment (SW), and to provide data for economic evaluation. As far as possible design followed guidelines for economic evaluation alongside a clinical trial.²⁷

Design of the economic evaluation

The study was designed to compare costs and consequences, using the primary outcome in the trial, the Community Dependency Index (CDI)²⁸ as an indicator of effectiveness, and the EQ-5D health status valuation as an indicator of utility gain. The economic study provided data about costs of care in a group for which costs have not been systematically measured and described. Therefore an important product of the evaluation was cost description.

²² Elixhauser, A., Luce, B.R., Taylor, W.R. (2001) Equity and the economic evaluation of healthcare. *Health Technology Assessment*, 5(3), 35.

²³ Drummond, M.F., O'Brien, B.J., Stoddart, G.L., Torrance, G. W. (1997) *Methods for the economic evaluation of health care programmes*. Oxford University Press.

²⁴ Knapp, M. (1995) *The Economic Evaluation of Mental Health Care*. Arena: Aldershot.

²⁵ McDaid, D. (2001) Estimating the costs of informal care for people with alzheimer's disease: methodological and practical challenges. *Journal article review*. *International Journal of Geriatric Psychiatry*, 16(4), 400-5.

²⁶ Metz, D. (1999) Can the impact of ageing on health care costs be avoided. *Journal of Health Services Research and Policy*, 4 (4), 249-252.

²⁷ Drummond, M.F., O'Brien, B.J., Stoddart, G.L., Torrance, G. W. (1997) *Methods for the economic evaluation of health care programmes*. Oxford University Press.

²⁸ Eakin P and Baird H (1995) The Community Dependency Index. *British Journal of Occupational Therapy* 58,1: 17-22.

The evaluation was linked to the RCT to identify and cost the use of all services provided by social services, NHS and private residential/nursing homes for each subject in each arm of the study, from the date of joining the study for the 8 months they remained in the trial. This was used to provide an analysis of the cost implications of each intervention for both health and social services.

The analysis was designed to take the viewpoints of; 1) The public health and social care sector as a whole. 2) Separate analyses for health and social services sectors. 3) Patients and carers.

The time horizon considered was the period of clinical follow up, that is 8 months from randomisation to either form of assessment.

Outcome measures used for economic evaluation

For the participant, this included: CDI and EQ-5D. The CDI has been specifically designed for occupational therapists to use in community settings across the wide range of disability types found in this context. It was used to measure the individual's dependency levels and to register changes in that level over the time of the study. This easily administered tool has aggregated outcome scores ranging from 0 (fully dependent) to 100 (fully independent). [For the purposes of the HESG discussion the authors assume readers are familiar with the EQ-5D].

Resource measures for cost effectiveness comparisons

The economic study estimated the costs of both formal and informal care for each participant and compared the costs for the groups receiving the OT-led and SW-led assessments.

Costs of formal care were estimated by tracking each participant's use of a range of key items of service provided for health and social care. Services are provided by local authorities, NHS and private care agencies. For each item of service, a unit cost was estimated based on local and, where appropriate, national unit costs. Costs per client were then estimated by summing the use of each service multiplied by its unit costs.

The economic impact of the assessment process on clients and their carers was also tracked using a simple questionnaire based on the relevant modules of the Client Service Receipt Inventory, developed and validated by PSSRU, Canterbury.

Methods for data collection

The trial data collection was designed to collect health gain data from patients themselves and/or carers at baseline and follow-up. At follow-up patients and carers were also asked about their own costs in the previous eight-month period.

Data about health and social service resource use were collected directly from case notes at each of the agencies providing care to trial participants. It was decided that recall by patients and carers of health and social services contacts would not be accurate or complete at the follow up interview.

A data collection proforma recording numbers of client contacts of different types and services provided was designed and modified for each of the following care providers: general practice, social services, community health services, equipment supplies agency & local authority housing department. In each case, the researchers visited the providers and completed proformas from case notes for each patient in the trial known to have used the services.

Methods for valuation

Costs of the services used by each patient were estimated from the quantities of each type of resource used multiplied by the unit cost. Unit costs of each item of service used by each agency were derived using best available data, as shown in Table 1a. For most services the PSSRU ready reckoner²⁹ was used with adjustments for locally known times for contacts or overhead costs.

²⁹ Netton A and Dennett J (2000/1) *The Unit Costs of Community Care*. PSSRU, Canterbury.

Equipment costs were valued based on purchase price, expected lifetimes and straight-line depreciation. Costs were valued at 2001 prices, in UK sterling values. No discounting was used in this analysis as the time period over which costs and outcomes were measured was less than one year.

Methods for analysis

The costs per patient for each sector were aggregated and compared between trial arms, using Excel software.

In total three cost-effectiveness acceptability curves were calculated. This involved establishing the cost per QALY gain using quality of life scores compared at baseline and at the eight month period. These were calculated from participants using the EQ-5D and the CDI. Cost per QALY gains based on the EQ-5D were combined with life expectancy data to create the first cost-effectiveness acceptability curve. There were concerns about the assumption that quality of life scores stay constant across any number of life expectancy years remaining, which of course may not be the case. Hence the second cost-effectiveness acceptability curve was calculated for the gain over the eight month period of the trial, without life expectancy data³⁰ for comparison. The third cost-effectiveness curve was based on a change in quality of life for participants using the Community Dependency Index, as for the previous case. All QALY scores were un-discounted.

Methods for sensitivity analysis

We logged the assumptions and uncertainties in the cost and outcome estimation process (see Table 1a & 1b). Statistical sensitivity analysis was conducted by estimation of confidence intervals for mean difference in cost per patient and plotting cost effectiveness acceptability curves, showing the probability that the intervention is cost effective given different ceiling ratios.

Cost results

The results from the analysis of the economic data from the trial are presented in Table 2. This table shows the estimated mean and median overall cost per trial participant, by

allocated trial arm, and the difference between arms. The table also shows the breakdown of costs per participant into those costs borne by the patient and their carers and those borne by the public sector. The public sector costs are further subdivided by providing authority. Table 2 also has median values as an indication of skewness of the cost data.

The mean total costs of care per participant over the period were £3765 and £3113 for the occupational therapy and social work arms respectively. The difference in mean cost per case is £652 with 95%CI (based on parametric methods)[-£282 to £1587]. There is an apparent increase in mean cost per case for the occupational therapy arm but this is not statistically significant. Although the overall difference is important for economic policy, different agencies will be concerned about the costs for them arising from the implementation of the intervention.

Costs to the public sector, both NHS and Local Authority, represented the majority of the overall social cost, with 84% of mean cost per patient for the occupational therapy arm and 79% for the social work arm.

The overall costs of occupational therapy and social work contacts were significantly different between the trial arms. Not surprisingly, the costs of occupational therapy contacts were higher for the occupational therapy arm of the trial, by £101 per patient on average. This finding is statistically significant, ($p < 0.05$, t-test). In addition the costs of social work contacts were higher for the social work arm of the trial, by £146 per patient on average. Again this finding is statistically significant, ($p < 0.05$, t-test).

The value of equipment and adaptations and home care services was higher in the occupational therapy arm by £581. This finding was statistically significant, ($p < 0.05$, t-test).

Mean secondary health service costs were higher per patient overall in the occupational therapy arm by £103 but with a 95% confidence interval between -£508 and £714, reflecting the high variability between trial participants.

³⁰ Based on life expectancy data from the Eastern Region Public Health Observatory.

Mean primary and community care costs, including all contacts with health professionals in general practice or community NHS care, were higher in the occupational therapy arm by £107. This result was not statistically significant at the 95% confidence level.

Patients and carers' costs represented about 16% and 21% of total costs for the occupational therapy arm and social work arm respectively, and showed a mean difference between arms of £59 more in the social work arm. The difference in patient costs was not statistically different between the two arms whereas the carer costs were, ($p < 0.05$, t-test). This is discussed below.

Quality of life results

The mean QALY gain scores based on the difference between baseline and the eight month final follow up score for each arm were very similar for all outcome measures. This can be demonstrated in Table 3.

Cost effectiveness results

The use of cost-effectiveness acceptability curves allows decision makers to assess the overall probability of cost-effectiveness given a particular threshold. Initially this involves a non-parametric approach in which bootstrap simulations of ICERs are performed many (at least a 1,000 times). This approach is recommended as a statistically valid method for dealing with sampling uncertainty surrounding ICERs^{31 32} as shown in figures 1, 2 and 3. A second parametric cost effectiveness acceptability curve can also be generated based on the net benefit statistic also generated by the bootstrapped procedure. The parametric curve based on net benefit statistic are shown by dotted lines, whilst the non-parametric curve based on the bootstrapped ICERs are shown by a continuous line, as in figures 1, 2 and 3.

The cost effectiveness acceptability curves can be interpreted as the probability of the intervention being cost effective or not by showing the proportion of the estimated joint density falling in the cost-effectiveness half of the plane. This rarely exceeds 50% in any

³¹ A. Briggs, P. Fenn (1998) Confidence Intervals Or Surfaces? Uncertainty On The Cost-Effectiveness Plane. *Health Econ.* 7: 723–740.

of the examples, in fact only just for the QALYs generated by combining life expectancy data and quality of life data. In effect at best this means having to spend sums of up to £14,000 for a QALY gain only to be 50% sure of its cost-effectiveness.

Discussion

The mean and median costs per patient in this study are higher than those previously estimated in a Medical Research Council (MRC) study³³ on ageing. The MRC study cited costs of £64.45 per week which over an eight month period equates to £2062 as compared to the CAMELOT study with costs of £3765 and £3113 for the occupational therapy and social work arms respectively. There were differences in case mix which may account for these higher costs as well as differences in the severity of illness between the two studies. The MRC study had different inclusion criteria. However both CAMELOT and the MRC study had similar aged participants. CAMELOT also included a few services and community health care contacts not explicitly costed in the MRC study, such as costs associated with telephone calls, letter writing, drugs and equipment.

Patients and carers' costs represented about 18% of total costs across both arms (16% and 21% of total costs for the OT arm and SW arm respectively), and showed a difference between the two arms of the trial of £59. Although the difference in carer costs between arms was statistically significant, this may have been the result of different numbers of carers participating in the two arms. At the beginning of the trial there were 64 carers in the OT arm and 49 carers in the SW arm. However, over the period of the trial a number of participants were lost to follow up. The consequence of this for the health economics data was a reduction to 44 and 28 carer participants in the OT and SW arms respectively.

The costs of prescribed drugs was based on a sub-sample of patients. The quantities of prescriptions were complex and frequent. Time constraints for the research meant that only

³² The authors acknowledge the Health Economics Research Centre, University of Oxford and their course, Advanced Methods of Cost-Effectiveness Analysis.

³³ McNamee, P., Gregson, B. A., Buck, D., Bamford, C. H. Bond, J. Wright, K. (1999) Costs of formal care for frail older people in England: the resource implications study of the MRC cognitive function and ageing study. *Social Science and Medicine* 48(3), 331-341.

half of the drug data collected could be analysed. There was no significant difference in the cost between groups. However, further analysis could establish a more precise estimate of the drug costs. It is unlikely to change the results. The low proportion of total health care cost accounted for by the drug costs may reflect the fact that most of the drugs prescribed are generic low cost preparations.

General Practice (GP) costs are currently being reanalysed to include home visits, visits to health centre to see GP, as well as telephone calls, reports and letter writing made by the GP. Initial assessment of these costs shows no difference between arms although primary and community care costs will increase overall.

Mean secondary health service costs were higher per patient overall in the OT arm by £103. Primary and community care costs, including all contacts with health professionals in general practice or community NHS care, were not statistically significantly different with a difference in costs of £107 more in the OT arm.

Home care costs in CAMELOT accounted for approximately 9% of the overall care package if local authority costs, equipment and adaptation costs and NHS primary and secondary costs are considered. This compares to another recent study³⁴ in which home care costs accounted for between 36% and 56% of the total package cost depending on the region within Scotland where the research was conducted. This variation may have arisen due to differences in how a care package is defined and requires closer examination. Almost all service users in the Scottish study had received equipment and adaptations for daily living. The authors cited the effect of delays in the supply of equipment and adaptations, a concern also highlighted by CAMELOT and discussed later under implications of findings.

An American study by Hay and colleagues³⁵ reports an RCT which examined an occupational therapy intervention for the elderly compared to a social activity group and a

³⁴ OVER THE THRESHOLD? An Exploration of Intensive Domiciliary Support for Older People (2002) Curtice, L. A, Petch. Hallam, A. Knapp, M. Scottish Executive Central Research Unit.

³⁵ Hay, J. LaBree, L. Luo, R. Clark, F. Carlson, M. Mandel, D. Zemke, R. Jackson, J. Azen, S. (2002) Cost-effectiveness of preventive occupational therapy for independent-living older adults. JAGS.

non-treatment group. The study sought to evaluate the cost-effectiveness of a nine-month occupational therapy programme which had a focus on preventative health. This study also attempted to measure quality of life for calculating QALYs, although unlike CAMELOT, used the short form health survey rather than the EuroQol. Overall its findings suggest health, social functioning, quality of life benefits and cost-effectiveness improvements not witnessed in the CAMELOT study. The American study finds an incremental cost-effectiveness ratio of below \$10,666 per QALY for the occupational therapy intervention compared to costs per QALY in the control groups combined of over \$21,000. In this sense the study findings appear more favourable than the findings of CAMELOT. However like CAMELOT these findings were not statistically significant due to the large variability in health care costs. Similarities exist between CAMELOT and the American research, with both considering occupational therapy as an intervention for the elderly; both also calculated health care and caregiver costs, quality of life and QALYs. However CAMELOT managed to collect cost data on more than 320 individuals whilst a smaller number of 163 telephone surveys were achieved by Hay et al. One difficulty in comparing the two studies lies with the fact that CAMELOT considers the care arising from an initial assessment carried out by two distinct professional groups, whereas Hay evaluates a 9 week occupational therapy programme. There are also international differences between the UK and the USA with regard to care arrangements and the cost of care. Both studies may also have been limited by a short follow up.

Limitations of CAMELOT

The costs for patients and carers are an approximate and limited estimate of out-of-pocket costs. The costs questionnaire relied on recall, and like other questionnaires for measuring costs was not formally validated. The small numbers of carers in the study have already been mentioned. Costs have been estimated solely in terms of out of pocket expenses. No estimate has been made of additional costs in terms of time and activity. Given the often heavy input of time by volunteer carers this may have been an important omission.

With this study the analyses have been conducted using complete-case analysis. However, further analyses may be necessary where less than 90% of cases were available. In addition some of the costs were based on assumptions. Further work is planned to test

some of these assumptions to find out whether our conclusions are sensitive to any of the assumptions.

There may also be some debate over the choice of outcome measures and whether the EQ-5D is a valid measure for capturing quality of life in the elderly. The sensitivity of the EQ-5D in measuring elderly quality of life has been raised ³⁶. These authors refer to data from a longitudinal trial of long-term care for the elderly arguing that ‘across programme’ methods for measuring quality of life are shown to be less sensitive to changes in elderly peoples’ health states than programme specific methods. The authors suggested that more work should be carried out to compare across programme and programme specific measures of quality of life. There have also been reporting problems using the EQ-5D questionnaire in more elderly respondents, with values for those aged 60 and over, being considerably lower than values for those aged 18-59. ³⁷

A number of recent studies though, have used the EQ-5D as a valid, reliable and responsive means of calculating a utility value across all age ranges including among them, older persons. Examples include measuring the impact of lower urinary tract symptoms on quality of life in men aged 50 years and over (mean age 73 years)³⁸, measuring quality of life in rheumatoid arthritis adults with an age range of 21-87 ³⁹, the measurement of quality of life for patients with Parkinson’s disease (mean age of 73) ⁴⁰. Despite some concerns about the EQ-5D, there is evidence of it being used recently to elicit utility values from elderly populations.

³⁶ Donaldson, C. Atkinson, A. Bond, J. (1998) Should QALYs be programme specific? *Journal of Health Economics*, 7(3), 239-257.

³⁷ Dolan P. (2000) Effect of age on health state valuations. *Journal of Health Services & Research Policy*. 5(1):17-21.

³⁸ Trueman P. Hood SC. Nayak US. Mrazek MF. (1999) Prevalence of lower urinary tract symptoms and self-reported diagnosed 'benign prostatic hyperplasia', and their effect on quality of life in a community-based survey of men in the UK. *BJU International*. 83(4):410-5.

³⁹ Hurst NP. Kind P. Ruta D. Hunter M. Stubbings A. (1997) Measuring health-related quality of life in rheumatoid arthritis: validity, responsiveness and reliability of EuroQol (EQ-5D). *British Journal of Rheumatology*. 36(5): 551-9.

⁴⁰ Schrag A. Selai C. Jahanshahi M. Quinn NP. (2000). The EQ-5D--a generic quality of life measure-is a useful instrument to measure quality of life in patients with Parkinson's disease. *Journal of Neurology, Neurosurgery & Psychiatry*. 69(1):67-73.

Implications of findings for health care provision and policy

It is worth highlighting that occupational therapy effectiveness may have been underestimated for two reasons. Firstly because of delays in being seen initially for assessment and secondly the time taken to complete housing adaptations. Most of adaptations did not get completed during the eight-month period of follow up in the trial.

It was notable that relatively few days were spent in hospital by participants in either trial arm. It is, perhaps, a demonstration of the effectiveness of the community interventions provided by both types of assessment that most of this frail group were able to stay in their own homes towards the end of their lives.

In the cost effectiveness study the absence of statistically significant differences should not lead us to an automatic assumption of adopting a cost-minimisation approach. The outcomes suggest that social work and occupational therapy assessments were equally effective in maintaining older people in the community.

From a policy perspective the lack of difference in clinical and cost-effectiveness means that either a social work or an occupational therapy service is successful in making care assessments for that enable an older person to remain in their own home. It should be noted however that this outcome does not come without a cost. The study by McNamee et al. suggests that the costs of formal care for older people may well be lower than care provided in a person's home. At present, given the shortage of occupational therapists, clients may be disadvantaged where they are referred to the occupational therapist for initial assessment because this is likely to take much longer than if they had been referred to a social worker for assessment. In some cases this delay for an occupational therapy assessment can be up to a year.

Timely assessment might be more fairly accessed if social workers were routinely to undertake initial assessments of the care needs of elderly people in the community, although this in itself would not resolve the problem of early access to an occupational therapy service where this is required.

An important implication of the findings of this trial is that there needs to be better identification of the profile of the older person likely to benefit most from occupational therapy. Better identification of clients more suited to occupational therapy intervention would reduce the waiting lists for occupational therapy services, enable a more rapid response at point of referral, produce more beneficial outcomes to both patient and carer and, perhaps, obviate the need for or reduce the cost of extensive home care packages.

Who benefits from what kind of professional may also need consideration. An example of this is the deployment of Community Psychiatric Nurses (CPNs) versus General Practitioners in the community and is addressed by the Gournay and Brooking trial⁴¹. These authors identified that CPNs were an expensive resource, with their time being largely taken up by the "worried well." The authors concluded that CPNs would be better focused on the care of the more severely ill people in the community. It may be that, similarly, scarce occupational therapy skills could be better directed to groups likely to be more responsive to rehabilitation. An alternative approach, if prime responsibility for allocating community care is to reside with social workers, would be to provide social workers with training that gives a more extensive awareness of health issues relevant to older people. This might improve their ability and confidence in dealing with the needs of this client group. It may be that assessments more closely geared to rehabilitation and attention to health status would need to be undertaken in the older person's home rather than in an office or over the telephone. However, if a higher level of such visits were undertaken by social workers rather than occupational therapists this would considerably increase the costs of the service.

The costs of services in this research project were estimated during a busy period of integration between health and social services. Future service plans should take account of possible changes to service provision and cost following complete integration. Further research needs to be undertaken to identify what impact, if any, a fast track adaptations service has on the ability of frail older people to remain in their own homes.

⁴¹ Gournay, K. and Brooking, J. (1995). The community psychiatric nurse in primary care. *British Journal of Psychiatry* 165, 231-238.

Table 1a. Assumptions database for unit costs (from Netten and Dennett, 2000/01)

Some staffing grades adjusted using local data base called COMWISE	Grade	Unit cost (per hour)
Chiropody	Senior I	£18.00
Dieticians	Not specified	£52.00
District nursing services	B grade	£17.00
District nursing services	D grade	£27.00
District nursing services	E grade	£29.00
District nursing services	E grade	£29.00
District nursing services	G grade	£53.00
Palliative care services	G grade nurse	£53.00
Parkinsons disease nursing	G grade nurse	£53.00
Physiotherapy	Senior 2	£41.00
Social services	Health care support worker	£17.00
Speech & language therapists	Speech therapist	£38.00
Social worker	Not specified	£83.00
Social work	Unqualified support	£49.00
GP	Not specified	£118.00
Social Services Occupational Therapist (OT)	Qualified	£41.00
Social services OT	Unqualified assistant	£13.00
Primary Care OT	Qualified	£41.00
Primary Care OT	Unqualified assistant	£13.00
Hospital costs		
Cost per lab test		£73.00
Cost per outpatient attendance to A&E		£65.00
Cost per hospital day procedure		£93.00
Cost per inpatient day (geriatric)		£132.00
Geriatricians	Consultant	£109.00

Table 1b. Assumptions database for activity (from Netten and Dennett, 2000/01)

Type of activity		Estimated time
1 clinical visit	All groups assuming equal time	1 hour
Detailed report	All groups assuming equal time	½ hour
Record	All groups assuming equal time	5 mins
Consultant /Physio session	All groups assuming equal time	½ hour
Discussion/Case conference	All groups assuming equal time	1 hour
Request for equipment	All groups assuming equal time	½ hour
Phone calls	All groups assuming equal time	15mins

Table 3. Measures of utility based on differences between baseline and eight month follow up data

	EQ-5D and life expectancy data	EQ-5D. Not including life expectancy data	Community Dependency Index. Not including life expectancy data
SW	-0.38	-0.06	3.70
OT	-0.33	-0.05	2.29
Mean difference	0.05	0.01	-1.41

Figure 1 Cost effectiveness acceptability curve based on bootstrapped costs and QALY gains for participants between 0-8 months. QALYs generated by combining life expectancy data and quality of life data derived using EQ-5D.

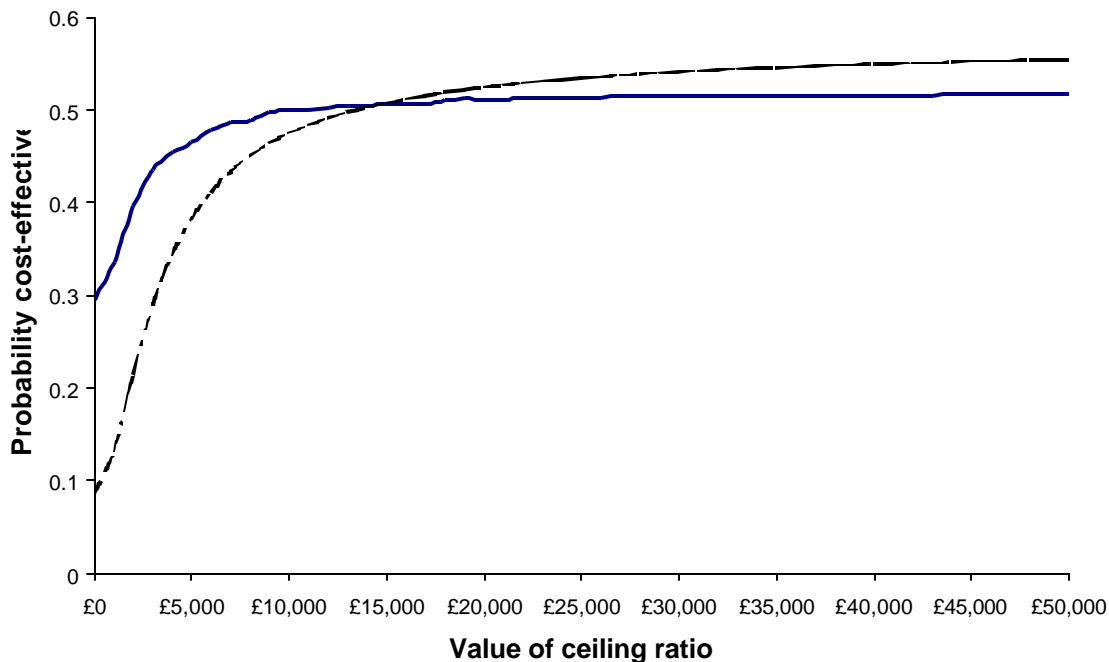


Figure 2 Cost-effectiveness acceptability curve based on bootstrapped costs and QALY gains for participants between 0-8 months (using quality of life data derived from the EQ-5D).

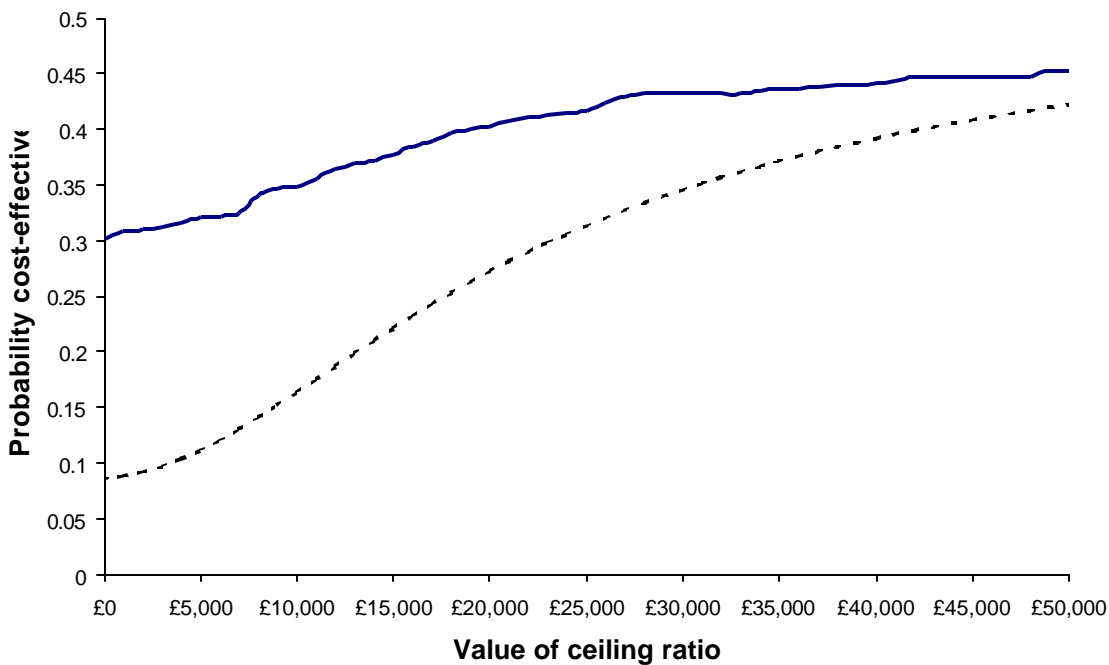


Figure 3 Cost-effectiveness acceptability curve based on bootstrapped costs and QALY gains for participants between 0-8 months (Quality of life data derived from the Community Dependency Index).

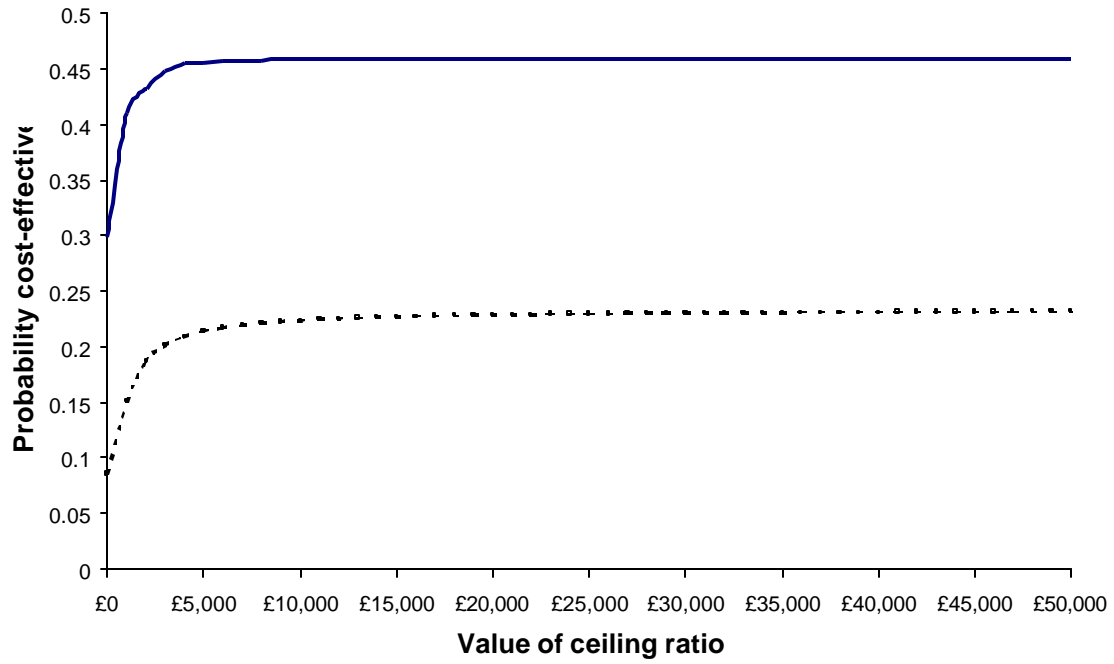


Table 2 Economic findings from the trial

CAMELOT trial: Cost per patient by treatment arm (£ Sterling 2001 prices)

Type of cost	Detail of costs	OT arm				SW arm				Difference in means for OT arm minus SW arm	95% CI	
		Mean	SD	Median	N	Mean	SD	Median	N			
Costs of occupational therapy												
	OT	183	217	133	160	82	198	0	161	101	56	14
Other NHS and LA costs												
<i>Local authority costs</i>												
	SS social work dept	264	497	0	160	411	537	201	161	-146	-259	-3
	Home care	204	555	0	160	239	624	0	161	-35	-164	9
	<i>Total LA care</i>	<i>468</i>	<i>873</i>	<i>29</i>	<i>160</i>	<i>650</i>	<i>925</i>	<i>249</i>	<i>161</i>	<i>-181</i>	<i>-378</i>	<i>1</i>
<i>Joint SS/NHS</i>												
	<i>Total equipment and adaptations</i>	<i>943</i>	<i>2272</i>	<i>148</i>	<i>160</i>	<i>362</i>	<i>1268</i>	<i>0</i>	<i>161</i>	<i>581</i>	<i>178</i>	<i>98</i>
<i>NHS primary and community care costs</i>												
	Prescriptions	59	168	0	160	58	234	0	161	1	-44	4
	G Practice costs	46	72	0	160	45	84	0	161	1	-16	1
	Lab tests	275	402	73	160	261	521	0	161	14	-88	11
	Primary care staffing	208	928	0	160	116	376	0	161	92	-63	24
	<i>Total primary and community costs</i>	<i>588</i>	<i>1024</i>	<i>249</i>	<i>160</i>	<i>481</i>	<i>766</i>	<i>179</i>	<i>161</i>	<i>107</i>	<i>-91</i>	<i>30</i>
<i>NHS secondary level care</i>												
	Hospital inpatient	903	2493	0	160	800	3048	0	161	103	-506	71
	Day procedures	9	70	0	160	1	15	0	161	8	-3	1
	Hospital outpatient	68	110	0	160	73	122	0	161	-5	-30	2
	A&E	11	29	0	160	14	34	0	161	-3	-10	4
	<i>Total secondary care cost</i>	<i>991</i>	<i>2510</i>	<i>60</i>	<i>160</i>	<i>888</i>	<i>3053</i>	<i>55</i>	<i>161</i>	<i>103</i>	<i>-508</i>	<i>71</i>
Private costs												
	Patient's costs	546	1553	125	151	709	2266	105	147	-163	-588	20
	Carer's costs	78	381	0	157	3	14	0	151	75	16	13
	<i>total private costs</i>	<i>591</i>	<i>1562</i>	<i>126</i>	<i>308</i>	<i>650</i>	<i>2173</i>	<i>85</i>	<i>298</i>	<i>-59</i>	<i>-473</i>	<i>33</i>
Total cost per case		3765	3974	2335	160	3113	4555	1446	161	652	-282	15