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## A Systematic Review of the Economic Evidence for Home Support Interventions in Dementia

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### ABSTRACT

**Background:** Recent evidence signals the need for effective forms of home support to people with dementia and their carers. The cost-effectiveness evidence of different approaches to support is scant. **Objectives:** To appraise economic evidence on the cost-effectiveness of home support interventions for dementia to inform future evaluation. **Methods:** A systematic literature review of full and partial economic evaluations was performed using the British National Health Service Economic Evaluation Database supplemented by additional references. Study characteristics and findings, including incremental cost-effectiveness ratios, when available, were summarized narratively. Study quality was appraised using the National Health Service Economic Evaluation Database critical appraisal criteria and independent ratings, agreed by two reviewers. Studies were located on a permutation matrix describing their mix of incremental costs/effects to aid decision making. **Results:** Of the 151 articles retrieved, 14 studies met the inclusion criteria: 8 concerning support to people with dementia and 6 to carers. Five studies were incremental

cost-utility analyses, seven were cost-effectiveness analyses, and two were cost consequences analyses. Five studies expressed incremental cost-effectiveness ratios as cost per quality-adjusted life-year (£6,696–£207,942 per quality-adjusted life-year). In four studies, interventions were dominant over usual care. Two interventions were more costly but more beneficial and were favorable against current acceptability thresholds. **Conclusions:** Occupational therapy, home-based exercise, and a carers' coping intervention emerged as cost-effective approaches for which there was better evidence. These interventions used environmental modifications, behavior management, physical activity, and emotional support as active components. More robust evidence is needed to judge the value of these and other interventions across the dementia care pathway.

**Keywords:** cost measurement, dementia, economic review, home support.

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### Introduction

With population aging, dementia is a significant public health and care challenge. In 2015, it was estimated that there would be 9.9 million new cases of dementia each year worldwide, indicating 1 new case every 3.2 seconds [1]. It was estimated that 46.8 million people were living with dementia worldwide in 2015, which would reach 74.7 million in 2050 [1]. At the current rate of prevalence, there were 850,000 people with dementia in the United Kingdom in 2015, which is forecast to increase to more than 1 million people by 2025 and more than 2 million by 2051 [2]. In 2015, the total estimated worldwide cost of dementia reached US \$818 billion,

which will become a trillion dollar condition by 2018 [1]. At present, the cost of dementia in the United Kingdom is estimated at £26.3 billion per annum [2], leading commentators to term the search for cost-effective ways to improve the care of people with dementia and their families as the “£20 billion question” [3]. Currently, there is no evidence-based method of preventing or curing dementia because it is a chronic, long-term condition associated with high levels of physical as well as cognitive problems and increased risk of death. Nevertheless, the immediate priority remains helping people to live well with dementia [4], through developing interventions likely to ameliorate difficulties and enhance well-being, so-called tertiary prevention [5].

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1098-3015/\$36.00 – see front matter Copyright © 2017, International Society for Pharmacoeconomics and Outcomes Research (ISPOR).

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<http://dx.doi.org/10.1016/j.jval.2017.04.004>

About 60% of people with dementia live at home. Helping them to live well requires home support from various agencies. A range of home support interventions are available, with little clear evidence of effectiveness and cost-effectiveness [6,7]. There is evidence that psychosocial interventions—broad-based approaches offering different ways of supporting people with dementia and their carers to overcome challenges and maintain health—are potentially effective [8,9]. Whether and how these approaches can be effectively translated into routine home support is uncertain [7]. The evidence about how particular components (“active ingredients”) of these interventions could be combined into different models of support is relatively weak. There is uncertainty about the likely costs and effects and value for money of adopting such care and support models for people with dementia. This systematic review therefore critically assesses economic evaluations of home support interventions in dementia, as part of a wider research program to appraise evidence and conduct primary research into the most cost-effective home and personal support arrangements for people with dementia and their carers (National Institute for Health Research [NIHR] in England under its Programme Grants for Applied Research).

## Methods

### Searches and Study Selection

The British National Health Service Economic Evaluation Database (NHS EED) ([www.crd.york.ac.uk/CRDWeb/](http://www.crd.york.ac.uk/CRDWeb/)) was searched for full (when both cost and effectiveness data are available to compare two or more interventions) and partial (when no comparator is used) economic analyses. The NHS EED, commissioned through the English Research and Development program, has been providing access to cost-effectiveness information from studies since 1994, through the Centre for Reviews and Dissemination (CRD) at the University of York. It provided one of the most extensive, specialist repositories of studies in which an economic evaluation of technologies had taken place. The NHS EED contained economic evaluations of health care interventions, along with critical appraisals containing a summary of the effectiveness information on which the economic evidence was based and details of the key elements of the evaluation, summarizing the overall reliability and generalizability of each study. The appraisals were written and independently checked by health economists with in-depth knowledge and experience of economic evaluation methods.

Until the end of March 2015, when central government funding to produce the NHS EED ceased, the database was updated weekly by CRD staff using a robust, sensitive search to identify published economic evaluations [10,11]. Our search, using this database, was not restricted by publication date so as to increase the pool of economic evaluations of home support interventions to be appraised. The full search was completed by January 15, 2015.

The search terms used to identify economic evaluations included in the NHS EED database were as follows:

((dementia OR Alzheimer) AND (therapy OR treatment OR intervention OR nonpharmacological OR psychosocial) OR (home care))

The search strategy was developed and tested by an experienced systematic reviewer before deciding on the final search terms, and this process was informed by the search strategy of a wider evidence synthesis, including a systematic review of non-economic studies of home support in dementia, from the parent research program [12].

Because of the imminent, planned withdrawal of funding for the NHS EED, searches of the database were supplemented by other searches to identify studies that may not have been included. The electronic search was supplemented by a search of the Early detection and timely INTERvention in DEMentia (INTERDEM) Web site (<http://www.interdem.org>) and by a hand-search. INTERDEM is a pan-European network of researchers collaborating in research on and dissemination of early, timely, and quality psychosocial interventions in dementia aimed at improving the quality of life of people with dementia and their supporters across Europe. The reference lists of publications identified in the NHS EED and the INTERDEM were also searched and experts in the field who had previously published economic evaluations in social care and dementia were consulted. These additional search strategies were used to identify studies published between January 2014 and January 2015 and any previous or recent systematic reviews of economic evaluations of nondrug interventions for dementia.

### Inclusion and Exclusion Criteria

Table 1 presents the inclusion and exclusion criteria, using the Population, Interventions, Comparators, Outcomes, and Study Designs framework [13]. Only English language sources were consulted. The main purpose of the review was to discern the cost-effective evidence with respect to the components of several different approaches to dementia home support that had been evaluated. Therefore, studies assessing only resource use, for example, effects on numbers of hospital admissions, were excluded unless unit costs were used to fully cost an intervention.

### Data Extraction

One of the researchers screened the titles and abstracts of all citations retrieved against the inclusion criteria, with a second researcher confirming the inclusion or exclusion of each study. The full texts of these studies were then retrieved and screened against the inclusion criteria, with uncertainties and disagreements resolved through discussion.

After screening, one researcher extracted data using a standardized form [13], with these data checked by a second reviewer. The fields included author, year, country, study objective, intervention and comparator descriptions, methods (analytical approach, measure of health benefit, cost data, analysis of uncertainty), results (participant numbers in intervention/control groups, reported costs and outcomes of the intervention/comparator, incremental cost-effectiveness ratio [ICER]), and conclusions.

### Quality Assessment

Two researchers together determined the extent to which the reported studies complied with the criteria of good practice in economic evaluation by summarizing them against their NHS EED critical appraisals. These criteria were those set out in the CRD NHS EED Handbook [14], which was used to guide those staff undertaking the critical appraisals. The criteria were whether a clear rationale was given for the choice of comparator; whether the methods of modeling techniques and/or statistical analysis were clearly reported and appropriate; whether the estimates of effectiveness, health benefit, and costs were likely to be valid and any sources of bias; and other issues (generalizability, comparison with other studies, selective presentation of results, and whether conclusions were justified).

Nevertheless, because the NHS EED critical appraisals, undertaken by multiple CRD staff, may themselves have varied in quality, two reviewers also rated the studies independently using

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