



Cochrane
Library

Cochrane Database of Systematic Reviews

Occupational therapy for care home residents with stroke (Review)

Fletcher-Smith JC, Walker MF, Cobley CS, Steultjens EMJ, Sackley CM

Fletcher-Smith JC, Walker MF, Cobley CS, Steultjens EMJ, Sackley CM.
Occupational therapy for care home residents with stroke.
Cochrane Database of Systematic Reviews 2013, Issue 6. Art. No.: CD010116.
DOI: 10.1002/14651858.CD010116.pub2.

www.cochranelibrary.com

TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	2
SUMMARY OF FINDINGS FOR THE MAIN COMPARISON	3
BACKGROUND	6
OBJECTIVES	8
METHODS	9
RESULTS	13
Figure 1.	15
Figure 2.	17
DISCUSSION	19
AUTHORS' CONCLUSIONS	20
ACKNOWLEDGEMENTS	20
REFERENCES	20
CHARACTERISTICS OF STUDIES	24
DATA AND ANALYSES	29
Analysis 1.1. Comparison 1 Occupational therapy versus standard care, Outcome 1 Function in ADL at the end of scheduled follow-up (Barthel ADL Index score).	29
Analysis 1.2. Comparison 1 Occupational therapy versus standard care, Outcome 2 Global poor outcome (death or a drop in ADL score) at the end of scheduled follow-up (6 months).	30
Analysis 1.3. Comparison 1 Occupational therapy versus standard care, Outcome 3 Function in ADL at the end of intervention (Barthel ADL Index score).	31
Analysis 1.4. Comparison 1 Occupational therapy versus standard care, Outcome 4 Death at the end of scheduled follow-up.	31
Analysis 1.5. Comparison 1 Occupational therapy versus standard care, Outcome 5 Mobility (Rivermead Mobility Index score) at the end of scheduled follow-up.	32
APPENDICES	32
CONTRIBUTIONS OF AUTHORS	41
DECLARATIONS OF INTEREST	41
SOURCES OF SUPPORT	41
DIFFERENCES BETWEEN PROTOCOL AND REVIEW	41
INDEX TERMS	42

[Intervention Review]

Occupational therapy for care home residents with stroke

Joanna C Fletcher-Smith¹, Marion F Walker¹, Christine S Cobley¹, Esther MJ Steultjens², Catherine M Sackley³

¹Division of Rehabilitation and Ageing, University of Nottingham, Nottingham, UK. ²Research Group Neurorehabilitation, University of Applied Sciences HAN, Nijmegen, Netherlands. ³Faculty of Medicine and Health Sciences, University of East Anglia, Norwich, UK

Contact address: Joanna C Fletcher-Smith, Division of Rehabilitation and Ageing, University of Nottingham, Room B108, Medical School, Queens Medical Centre, Nottingham, NG16 1RS, UK. joanna.fletcher-smith@nottingham.ac.uk.

Editorial group: Cochrane Stroke Group.

Publication status and date: New, published in Issue 6, 2013.

Review content assessed as up-to-date: 16 April 2013.

Citation: Fletcher-Smith JC, Walker MF, Cobley CS, Steultjens EMJ, Sackley CM. Occupational therapy for care home residents with stroke. *Cochrane Database of Systematic Reviews* 2013, Issue 6. Art. No.: CD010116. DOI: 10.1002/14651858.CD010116.pub2.

Copyright © 2013 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Stroke is a worldwide problem and is a leading cause of adult disability, resulting in dependency in activities of daily living (ADL) for around half of stroke survivors. It is estimated that up to 25% of all care home residents in the USA and in the UK have had a stroke. Stroke survivors who reside in care homes are likely to be more physically and cognitively impaired and therefore more dependent than those able to remain in their own home. Overall, 75% of care home residents are classified as severely disabled, and those with stroke are likely to have high levels of immobility, incontinence and confusion, as well as additional co-morbidities. It is not known whether this clinically complex population could benefit from occupational therapy in the same way as community-dwelling stroke survivors. The care home population with stroke differs from the general stroke population living at home, and a review was needed to examine the benefits of occupational therapy provided to this specific group. This review therefore focused on occupational therapy interventions for ADL for stroke survivors residing in care homes.

Objectives

To measure the effects of occupational therapy interventions (provided directly by an occupational therapist or under the supervision of an occupational therapist) targeted at improving, restoring and maintaining independence in ADL among stroke survivors residing in long-term institutional care, termed collectively as 'care homes'. As a secondary objective, we aimed to evaluate occupational therapy interventions for reducing complications such as depression and low mood.

Search methods

We searched the Cochrane Stroke Group Trials Register (August 2012), the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library*, September 2012), MEDLINE (1948 to September 2012), EMBASE (1980 to September 2012), CINAHL (1982 to September 2012) and 10 additional bibliographic databases and six trials registers. We also handsearched seven journals, checked reference lists and obtained further information from individual trialists.

Selection criteria

Randomised controlled trials investigating the impact of an occupational therapy intervention for care home residents with stroke versus standard care.

Data collection and analysis

The lead review author performed all searches. Two review authors then independently assessed all titles and abstracts of studies and selected trials for inclusion, with a third review author resolving any discrepancies. The same two review authors independently extracted data from all included published sources to ensure reliability. Primary outcomes were performance in ADL at the end of scheduled follow-up and death or a poor outcome. Secondary outcomes aimed to reflect the domains targeted by an occupational therapy intervention.

Main results

We included in the review one study involving 118 participants. We found one ongoing study that also met the inclusion criteria for the review, but the data were not yet available.

Authors' conclusions

We found insufficient evidence to support or refute the efficacy of occupational therapy interventions for improving, restoring or maintaining independence in ADL for stroke survivors residing in care homes. The effectiveness of occupational therapy for the population of stroke survivors residing in care homes remains unclear, and further research in this area is warranted.

PLAIN LANGUAGE SUMMARY

Occupational therapy for care home residents with stroke

Stroke is the leading cause of disability worldwide and is prevalent in the care home population. Whilst care home residents with stroke are likely to be more impaired and dependent than those with stroke residing in their own homes, they are less likely to receive ongoing stroke specialist rehabilitation such as occupational therapy. Occupational therapy aims to help people achieve their maximum level of independence in everyday activities. Evidence can be found to support the benefits of occupational therapy for community-dwelling stroke survivors. However, the care home population with stroke differs from the community-dwelling population. For example, they are more likely to have high levels of immobility, incontinence and confusion, along with other co-morbidities. This review of one trial including 118 participants found that evidence is currently insufficient to conclusively state the benefits of occupational therapy for care home residents with stroke. Additional randomised controlled trials that test occupational therapy interventions for care home residents with stroke are needed. One such trial is currently ongoing.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Occupational therapy compared with standard care for care home residents with stroke						
Patient or population: care home residents who have had a stroke Settings: care homes (nursing and residential homes) Intervention: occupational therapy Comparison: standard care						
Outcomes	Illustrative comparative risks (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Standard care	Occupational therapy				
Function in ADL at the end of scheduled follow-up (Barthel ADL Index score) Barthel ADL Index score 6-month follow-up Analysis 1.1	The mean Barthel across the group was 8	Barthel control	The mean Barthel in the intervention group was 2 points higher (mean Barthel of 10) (95% CI -0.11 to 0.90)	118 (1 study)	⊕⊕○○ low	Clustering design effect was accounted for
Global poor outcome Death or a drop in Barthel ADL score 6-month follow-up Analysis 1.2	Medium-risk population		OR 0.34 (0.11 to 1.01)	118 (1 study)	⊕⊕○○ low	Clustering design effect was accounted for
Function in ADL at the end of intervention (Barthel ADL Index score) Barthel ADL Index score 3-month follow-up Analysis 1.3	The mean Barthel across the group was 8	Barthel control	The mean Barthel score in the intervention group was 3 points higher (mean Barthel of 11) (95% CI -0.03 to 0.99)	118 (1 study)	⊕⊕○○ low	Clustering design effect was accounted for

Death Number of deaths from any cause at 6-month follow-up Analysis 1.4	Medium-risk population		OR (0.09 to 0.98)	118 (1 study)	⊕⊕○○ low	Clustering design effect was accounted for
	242 per 1000	485 per 1000 (28 to 239)				
Quality of life	See comment	See comment	Not estimable	0	See comment	Included study did not measure 'quality of life' as an outcome
Mobility Rivermead Mobility Index (RMI) score 6-month follow-up Analysis 1.5	The mean RMI score across the control group was 4.5	The mean RMI score in the intervention group was 0.5 higher (mean RMI of 5) (95% CI -0.36 to 0.64)		118 (1 study)	⊕⊕○○ low	Clustering design effect was accounted for
Mood	See comment	See comment	Not estimable	0	See comment	Included study did not measure 'mood' as an outcome
Global cognition	See comment	See comment	Not estimable	0	See comment	Included study did not measure 'global cognition' as an outcome
Adverse events	See comment	See comment	Not estimable	0	See comment	Adverse events were not reported in the included study
Satisfaction with care	See comment	See comment	Not estimable	0	See comment	Included study did not measure 'satisfaction with care' as an outcome
Health economic outcomes	See comment	See comment	Not estimable	0	See comment	Included study did not measure 'health economic outcomes' as an outcome

CI: confidence interval; OR: odds ratio

GRADE Working Group grades of evidence:

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

BACKGROUND

This review aimed to evaluate occupational therapy interventions directed at reducing dependency in activities of daily living (ADL) for people with stroke residing in care homes.

Description of the condition

Stroke is a worldwide problem. In the UK, stroke is the third main cause of death (National Audit Office 2010) and the largest cause of adult disability (National Audit Office 2005). Every year in England alone, approximately 110,000 people have a stroke (National Audit Office 2010). In the USA, around 795,000 people experience a new or recurrent stroke each year, ranking stroke as the fourth biggest cause of death (American Heart Association 2011). In Australia, stroke is the second biggest killer after heart disease (Australian Bureau of statistics 2008), with an estimated 60,000 new and recurrent strokes each year (National Stroke Foundation 2011a). Worldwide, approximately 15.3 million strokes occur annually, with stroke accounting for around 10% of all deaths (Johnston 2009). Globally, an estimated 30 million people are living with stroke, most of whom have residual disabilities (World Stroke Organization 2011). This makes stroke a leading cause of adult disability worldwide (World Stroke Organization 2011) and a major contributor to the global burden of disease (Warlow 2008). The main encumbrance of stroke is survival with disability, dementia, depression, epilepsy, falls and other such complications (Rothwell 2005). Around 80% of stroke survivors have motor impairment (Langhorne 2009). This may result in residual mobility problems (Jorgensen 1995) and loss of capability in ADL that restricts survivors' ability to resume their previous lifestyle. Around half of those who survive a stroke are left dependent on others for help in everyday activities (National Audit Office 2010), and this may persist for the rest of their lives. Three-quarters of those affected by stroke are older than 65 years of age (National Audit Office 2010). For some stroke survivors, it is possible to return home from hospital with informal support from family or with organised care provided by health and social services. However, in the UK, approximately 10% to 11% of stroke survivors are admitted directly from acute care into a care home setting after stroke (National Audit Office 2010; RCP 2011). The proportion of people with stroke discharged to a care home for the first time after stroke has declined from 13% in 2006 (RCP 2011). The percentage of people newly admitted to care homes is similar between the three nations involved in the National Sentinel Stroke Clinical Audit of the Royal College of Physicians (RCP), with 10% in England, 10% in Wales and 9% in Northern Ireland (RCP 2011). Data for Scotland are not included in the RCP National Sentinel Stroke Clinical Audit. Scotland has been collecting national data about stroke care since 2002 and since 2005 has published this information in the Scottish Stroke Care Audit report (Scottish

Stroke Care Audit Team 2011). However, this report does not contain data on the discharge destinations of stroke survivors.

It is estimated that around 20% to 25% of all care home residents in the USA (Quilliam 2001) and in the UK (National Audit Office 2005) have had a stroke, and stroke is reported to be the second most common cause of disability after dementia in a UK nursing home population (Martin 1998). A US study by the National Heart, Lung and Blood Institute in Boston reported that 26% of ischaemic stroke survivors from the Framingham cohort study, involving 5209 participants from the population of Massachusetts, were institutionalized in a care home with nursing care provided at six months after stroke (Kelly-Hayes 2003). The Australian National Stroke Audit (National Stroke Foundation 2011b) reported that of 3548 people audited, 338 (11%) were discharged to a care home after stroke. Stroke survivors who reside in care homes are more physically and cognitively impaired and therefore more dependent than those living in their own homes (Bowman 2004). A cross-sectional study using a US population-based data set of 53,829 care home residents with stroke described these stroke survivors as a clinically complex population of frail elderly people with a high prevalence of co-morbid conditions (Quilliam 2001).

Description of the intervention

Occupational therapy aims to help people reach their maximum level of function and independence in all aspects of daily living (Legg 2006). Occupational therapists achieve this outcome by enabling individuals to accomplish things that will enhance their ability to participate, or by modifying the environment to better support participation in daily life (World Federation of Occupational Therapists 2010). Occupational therapists define 'occupation' as much more than an individual's chosen career. Occupation refers to every activity that people engage in during everyday life. This review focused on the effectiveness of occupational therapy for increasing independence in ADL. ADL include personal care activities such as washing, dressing, grooming, toileting and feeding, as well as 'extended' ADL leisure activities such as gardening, crafts, reading and other purposeful activities in which people choose to participate. This review focused on occupational therapy interventions for ADL for stroke survivors residing in care homes.

For the purpose of this review, the term 'care home' encompassed homes with and without nursing care and included various public and private institutions, sometimes referred to as 'residential homes', 'nursing homes', 'rest homes', 'old people's homes', or 'long-term care institutions'. We defined a 'care home' using the definition used in two previous reviews (Forster 2009; Ward 2009) as a setting that provides overnight accommodation and communal living facilities for long-term care and provides nursing or personal care, or both, for people with illness, disability or dependence. We included care homes from all funding models (private, charitable, not-for-profit and government-owned).

How the intervention might work

Defining 'occupational therapy' can be complex because the role of an occupational therapist is diverse. The interventions provided by an occupational therapist in a care home setting may vary, but the focus of the intended outcome will be to increase, restore or maintain independence in performing ADL (including self-care tasks and recreational and leisure activities), increase comfort and safety and prevent stroke-related complications. Possible occupational therapy interventions were defined in a systematic review of occupational therapy for people with stroke (Steultjens 2003) and may include:

- the provision of equipment and adaptations to the environment, as well as instruction in the use of assistive devices (Barrett 2001);
- individual resident training of daily living skills such as washing and dressing (Walker 1996);
- individual resident training of sensory-motor functions such as grasp and release (Feys 1998; Kwakkel 1999);
- individual resident training of cognitive functions such as memory and visual scanning (Carter 1983);
- provision of splints to achieve increased range of movement and to reduce contractures in the hand (Langlois 1991); and
- education and training of primary caregivers (care home staff) and family in areas such as correct moving and handling procedures.

Evidence suggests that occupational therapy can specifically target the consequences of stroke by aiming to improve independence in ADL and by improving the ergonomics of the environment. A Cochrane systematic review and meta-analysis of nine trials, involving 1258 participants, of occupational therapy provision to people with stroke in the community, specifically focusing on personal ADL only, showed improved performance and a reduction in the risk of poor outcomes such as death, deterioration or dependency in personal ADL (Legg 2006). For every 100 people who received occupational therapy intervention, 11 (95% confidence interval (CI) 7 to 30) were spared a poor outcome. Although this Cochrane systematic review did not purposely exclude studies with participants who were care home residents, one-third of the trials included in the review and meta-analysis did exclude people who were residents in, or were to be discharged to, a residential or nursing home (Legg 2006). Only one of the nine trials included in the review and meta-analysis (Sackley 2003; Sackley 2004) involved delivering an occupational therapy intervention specifically to care home residents with stroke within a care home setting.

Why it is important to do this review

Three-quarters of strokes occur in people over 65 years old (National Audit Office 2010), and an increase in stroke in members of this age group of the population is predicted over the coming decade, inevitably leading to a rise in demand for

care home placements. Residents of care homes have been reported to have complex healthcare needs, reflecting multiple long-term conditions with significant disability and frailty (British Geriatrics Society 2011). Adverse consequences of stroke may include high dependency in self-care tasks, falls, pain, pressure ulcers and emotional distress (Kelly-Hayes 2003; Langhorne 2000; Sackley 2002). Stroke survivors residing in care homes are likely to be amongst the most disabled, dependent and vulnerable of stroke survivors, yet few care home residents receive rehabilitation (O'Dea 2000; Sackley 2001a).

Despite evidence of the efficacy of occupational therapy in improving independence in personal ADL and preventing deterioration, it has been estimated that as few as 3% of care home residents in the UK have access to occupational therapy services (Barodawala 2001) compared with 93% in the Netherlands (Sprangers 2000). The prevalence of therapy (occupational and physical) in care homes with nursing input across the world was investigated over a decade ago and was reported to be 11% in the USA, 14% in Italy, 23% in Denmark and 30% in Japan, rising to 31% in Iceland (Berg 1997). One plausible reason for this variation in therapy provision may be the variation in the size and facilities of care homes between the different countries. For example, the average care home in the UK contains around 30 beds (Office of Fair Trading 2005), compared with an average of more than 160 beds in the Netherlands (Ribbe 1997). The question of whether we are comparing similar phenomena is critical for international comparisons (US Department of Health and Human Services 1993). If care homes in the Netherlands more closely resemble intermediate care, respite-oriented facilities or rehabilitation wards than typical UK care homes, it would be unfair to draw such comparisons on occupational therapy provision between the two nations. In 1985 the percentage of older persons (older than 65 years of age) living in care homes with nursing care was comparable between Australia (4.4%), Canada (4.2%), the Netherlands (3%), Norway (4.8%) and the USA (4.6%). However, care homes with nursing care varied in their role and function. The percentage of older people residing in care homes without nursing care was less comparable between countries: for example, 0.9% of older people in the USA reside in care homes without nursing care compared with 9% of older people in the Netherlands residing in this type of care home without nursing input (US Department of Health and Human Services 1993).

It is not known whether the same benefits of occupational therapy found amongst community-dwelling stroke survivors (Walker 2004) would be seen in the care home population with stroke who have a high prevalence of immobility, incontinence and confusion (Bowman 2004). Stroke survivors living in care homes (with and without nursing care) are more likely to have co-morbidities such as dementia (38% of residents), arthritis, cardiovascular disease, respiratory disease, deafness, depression, fractures and blindness (Bebbington 2001). Overall, 75% of care home residents are classified as severely disabled (Office of Fair Trading 2005). Assistance

is required with at least one self-care task in 57% of women and 48% of men in UK care homes (Office of Fair Trading 2005). In addition to differences in disability levels, stroke survivors living in care homes differ from those able to remain in their own homes in that they have a very small personal living space (as little as 10 metres² in area) (Hanson 2003), and much of their day is likely to be spent in homogeneous facilities that provide shared toilets and bathrooms and shared living areas such as a communal lounge and dining area (Help the Aged 2007). Most equipment required to complete daily activities is also likely to be shared with other residents rather than being specific to each resident's needs. Care home residents are required to live as part of a small community usually with shared daily routines such as mealtimes and time-tabled activities. In contrast, those with stroke living in their own home are likely to have greater freedom and choice over their daily routine. Clearly the care home population with stroke differs from the stroke population living in their own homes, and a review is needed that examines the benefits of occupational therapy provided to this specific group.

A Cochrane systematic review of rehabilitation for older people in long-term care concluded that provision of physical rehabilitation interventions to long-term care residents is worthwhile and safe, reducing disability with few adverse events (Forster 2009). This was a narrative review as a meta-analysis could not be performed because of the heterogeneity of outcome measures used in the included studies. This review examined physical rehabilitation, defined as 'all interventions which primarily aim to maintain or improve physical function, rather than those relating to personal care or nursing needs'. The authors also excluded interventions that addressed cognitive deficits or mood disorders unless they also aimed to improve the physical state (Forster 2009). No review has examined the efficacy of occupational therapy interventions targeted specifically at improving and maintaining independence in ADL after stroke for those residing in care homes.

The 'My Home Life' document (Help the Aged 2007) states that occupational therapy can improve everyday functioning and quality of life of older people (Sackley 2001a; Sackley 2001b; Sackley 2004), and that the consequences of a lack of occupational therapy services in care homes can lead to unnecessary dependency and high rates of immobility-related complications (Sackley 2004). Despite evidence in support of the benefits of purposeful and meaningful activity (Ballard 2001; Baum 1995; Kiely 2003) (a key philosophy of occupational therapy), historically the level of physical activity and positive stimulation in care home residents has been low (Challis 2000; College of Occupational Therapists 2007; Help the Aged 2006; Nolan 1995). Recent studies report that care home residents spend as much as 63% of their day on non-therapeutic activities, such as sitting passively doing nothing and not interacting with others (Cohon-Mansfield 1992; Huijben-Schoenmakers 2009; Sackley 2006a). In one pilot observational study involving residents from an 18-bed local authority residential home in England (Sackley 2006a), the residents were observed to be "busy do-

ing nothing" with residents sitting (with their eyes open or closed) for 97% of observations. It is known that inactivity and immobility are associated with further deterioration of function (Sackley 2008), and members of the care home population with stroke are more likely to experience additional complications as compared with stroke survivors living in their own homes.

Currently in the UK, there is no requirement for care home staff to have stroke-specific training. A recent review by the Care Quality Commission (CQC 2011) (the independent regulator of health-care and adult social care services in England) reported concerns around levels of staff knowledge and skill in stroke care. This review reported that whilst local stroke pathways (policies setting out how care should be delivered) are in place across England, only 32% of these specifically cover people who have had a stroke and are residing in care homes (CQC 2011). Similarly, the National Clinical Guideline for Stroke (RCP 2008) includes more than 300 recommendations for improving the care of people who have had a stroke in the UK, but only 16 of these relate to the care given to people longer than six months after stroke (National Audit Office 2010). No UK guidelines pertain to the longer-term stroke specialist rehabilitation required to meet the complex needs of those with stroke residing in UK care homes. Similarly, such specific guidelines are absent from the Australian Clinical Guidelines for Stroke Management (National Stroke Foundation 2010). A Scientific Statement from the American Heart Association (Miller 2010) reported on the need to educate nurses and other members of the interdisciplinary team about the potential for recovery in later or more chronic phases of stroke care. In addition, the importance of access to relevant health professionals for those living in care homes has been emphasised (RCP, RCN & BGS 2000).

It could be argued that the care home population has the greatest need for ongoing therapy and rehabilitation post-stroke because they have such high levels of dependency and co-morbidities and low levels of activity, yet an inequitable level of therapy is currently provided compared with therapy provided to those living at home. It is known that commissioners require evidence to support the effectiveness of longer-term rehabilitation therapies if they are to commission the provision of such stroke services, and at present, this evidence is lacking. The purpose of this review is to examine available evidence specifically showing the benefits of occupational therapy interventions aimed towards increasing independence in ADL (including both personal and extended ADL) for people with stroke who are residing in care homes.

OBJECTIVES

To measure the effects of occupational therapy interventions (provided directly by an occupational therapist or under the supervision of an occupational therapist) targeted at improving, restoring and maintaining independence in ADL among stroke survivors residing in long-term institutional care termed collectively as 'care

homes'. As a secondary objective, we sought to evaluate occupational therapy interventions provided to reduce complications such as depression and low mood.

METHODS

Criteria for considering studies for this review

Types of studies

We included all randomised controlled trials (RCTs) or cluster-RCTs that evaluated occupational therapy interventions with the specific aim of facilitating, restoring or maintaining independent function in any ADL (or that aimed to reduce complications) for stroke survivors (or that included a defined subgroup of stroke survivors) who were permanently residing in a care home with or without nursing care. We included studies that compared interventions provided by a qualified occupational therapist or by an occupational therapy assistant under the direction of a qualified occupational therapist versus standard care (i.e. routine care usually received by residents or no intervention). We also included studies that compared occupational therapy interventions targeting ADL with usual care interventions, and studies that compared different types of occupational therapy interventions with each other.

We excluded quasi-randomised trials that used, for example, alternate days of the week as the method of randomisation to eliminate the possibility of systematic bias affecting outcomes (Creswell 2009). When trials were described in a way that implied that they were randomised, and when the demographic details of participants in each group were similar, we included the trial and undertook sensitivity analysis in the presence or absence of these data. We included cross-over studies, but we planned to include only data from the first phase of cross-over studies in the meta-analysis.

Types of participants

We included studies that recruited people with a clinical diagnosis of stroke regardless of age, sex, gender, time since stroke onset or ethnic group, and those with multiple diagnoses, as long as they permanently resided in a care home. We excluded trials of mixed causes in which the percentage of participants with stroke was less than 50%.

We defined *stroke* as a focal neurological deficit caused by cerebrovascular disease (confirmation of the clinical diagnosis using imaging was not compulsory).

Within the European Union, different definitions of long-term care coexist (European Commission 2008). Definitions used by the member states vary in identifying the care recipient and in defining the services provided (European Commission 2008). In

this review we used the term 'care home' to include various public and private institutions caring for the dependent elderly, such as 'residential homes', 'nursing homes', 'rest homes', 'old people's homes' and 'long-term care institutions'. We defined a care home, using the definition used in two previous Cochrane reviews (Forster 2009; Ward 2009), as providing:

- communal living facilities for long-term care;
- overnight accommodation;
- nursing or personal care;
- for people with illness, disability or dependence.

We included care homes from all funding models (private, charitable, not-for-profit and government owned).

Types of interventions

• We included all occupational therapy and therapy-based interventions (delivered on an individual or group basis) provided directly by a qualified occupational therapist, or by an occupational therapy assistant under the direction of a qualified occupational therapist, that aimed to increase or maintain occupational performance and independence, and to improve function in ADL ('personal' ADL or 'extended' ADL, or both).

- We defined *standard care* as the routine care that residents usually received whilst residing in a care home.
- We included only trials that provided occupational therapy as part of a multidisciplinary team intervention, for which the occupational therapy component of the intervention could be clearly identified and extracted from the results.

Types of outcome measures

We aimed to record outcomes that were likely to reflect the domains targeted by occupational therapy interventions.

Primary outcomes

• Performance in ADL at the end of scheduled follow-up (e.g. Barthel ADL Index score (Mahoney 1965), Nottingham extended ADL Index score (Nouri 1987), Edmans ADL Index score (Edmans 1997)). When both personal ADL outcomes and extended ADL outcomes were available, we used personal ADL outcome data.

- Death or a poor outcome. We defined poor outcome as deterioration in ability to perform ADL (a drop in ADL score).

Secondary outcomes

• Performance in ADL at the end of intervention (e.g. Barthel ADL Index score, Nottingham extended ADL Index score, Edmans ADL Index score). When both personal ADL outcomes and extended ADL outcomes were available, we used personal ADL outcome data.

- Death (the number of deaths from any cause).

- Global quality of life (e.g. EuroQoL EQ-5D score (EuroQol Group 1990)).
- Mobility (e.g. Rivermead Mobility Index score (Collen 1991)).
- Mood (e.g. Geriatric Depression Scale score (Yesavage 1982)).
- Global cognition (e.g. attention, memory, perceptual skills, problem solving) (Mini Mental Status Examination (MMSE) score (Folstein 1975)).
- Admission to hospital or other higher-dependency institution.
- Adverse events (e.g. falls, new pressure sores, new contractures).
- Satisfaction with care (Satisfaction with Stroke Care questionnaire SASC-19 (Boter 2003)).
- Health economic outcomes (e.g. EuroQol EQ-5D (EuroQol Group 1990)).

Search methods for identification of studies

See the 'Specialized register' section in the [Cochrane Stroke Group](#) module.

We performed both electronic searches and handsearches. We included trials in all languages and where possible arranged translation of articles published in languages other than English. If translation was not feasible, we included possibly relevant trials in the Characteristics of studies awaiting classification table.

Electronic searches

The primary search resource was the Cochrane Stroke Group Trials Register, which was searched for us in August 2012. In addition, we searched the following bibliographic databases:

- Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library*, September 2012) ([Appendix 1](#)):
 - MEDLINE (1948 to September 2012) ([Appendix 2](#));
 - EMBASE (1980 to September 2012) ([Appendix 3](#));
 - Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982 to September 2012) ([Appendix 4](#));
 - Allied and Complementary Medicine Database (AMED) (1985 to September 2012) ([Appendix 5](#));
 - Occupational therapy database of systematic reviews and randomised controlled trials (OTseeker) (1980 to September 2012) ([Appendix 6](#));
 - PsycINFO (1967 to September 2012) ([Appendix 7](#));
 - Physiotherapy Evidence Database (PEDro) (1952 to September 2012) ([Appendix 8](#));
 - Applied Social Index and Abstracts (ASSIA) (1987 to September 2012) ([Appendix 9](#));
 - NHS Economic Evaluation Database (NHS EED) (1991 to September 2012) ([Appendix 10](#));

- Education Resources Information Center (ERIC) (1966 to September 2012) ([Appendix 11](#));
- Center for International Rehabilitation Research Information and Exchange (CIRRIE) (1990 to September 2012) ([Appendix 12](#));
- Web of Science (all years up to October 2012) ([Appendix 13](#));
- ProQuest Dissertations & Theses A&I (<http://search.proquest.com>).

We also searched the following registers of ongoing and completed trials (September 2012):

- Current Controlled Trials (www.controlled-trials.com);
- Clinical Trials (www.ClinicalTrials.gov);
- EU Clinical Trials Register (www.clinicaltrialsregister.eu);
- Stroke Trials Registry (www.strokecenter.org/trials/);
- WHO International Clinical Trials Registry Platform (www.who.int/ictrp/en/);
- Australian New Zealand Clinical Trials Registry (www.anzctr.org.au/).

We developed the MEDLINE search strategy with the help of the Cochrane Stroke Group Trials Search Co-ordinator and adapted it for the other databases.

Searching other resources

In an effort to identify additional published, unpublished and ongoing trials, we performed the following additional searches.

Reference searching

We used the Science Citation Index Cited Reference Search for forward tracking of important papers. We inspected the reference lists of identified articles that we obtained in full text to look for evidence of additional studies.

Personal contact

We contacted authors of relevant studies to inquire about other sources of relevant information.

Handsearches

We handsearched the following journals that were not already included in the handsearching carried out by The Cochrane Collaboration and were not included in the Cochrane Central Register of Controlled Trials (CENTRAL):

- *American Journal of Occupational Therapy* (1997 to November 2012);
- *Australian Journal of Occupational Therapy* (1980 to November 2012);
- *British Journal of Occupational Therapy* (1980 to November 2012);

- *Canadian Journal of Occupational Therapy* (1996 to November 2012);
- *Clinical Rehabilitation* (January 2012 to November 2012);
- *Occupational Therapy International* (2009 to November 2012);
- *Scandinavian Journal of Occupational Therapy* (1997 to November 2012).

Data collection and analysis

Selection of studies

Two review authors (JCF-S, CSC) independently assessed all titles and abstracts of the records identified by searches of the electronic databases and excluded all studies that clearly did not refer to an RCT or a cluster-RCT of an occupational therapy intervention for care home residents. We obtained the full text of the remaining studies, and the same two review authors independently assessed each study to determine whether it met the pre-defined review selection criteria. These two review authors resolved any disagreements by discussion and, if necessary, in consultation with a third review author (MFW) until they reached a consensus. The review authors were not blinded to the names of study authors, institutions or journals of publication. We report excluded studies and the reasons for exclusion in the [Characteristics of excluded studies](#) table.

Data extraction and management

Data extraction

Two review authors (JCF-S, CSC) independently extracted data from all included published sources to ensure reliability. When necessary, we contacted study authors for clarification. These two review authors discussed any disagreements with the third review author and documented the decisions. We extracted data presented only in graphs and figures whenever possible. We contacted study authors to request missing information or clarification.

Management

We used Review Manager 5.2 ([RevMan 2011](#)) to prepare and maintain the review, to perform meta-analyses of the data and to present the results graphically. The extracted data were independently entered using the Review Manager software and included full citation details of the study, numbers and characteristics of participants (inclusion and exclusion criteria), descriptions of interventions, outcome measures, intention-to-treat analyses, withdrawals and losses to follow-up.

Forms

We extracted data onto standard simple forms that assisted us when we examined the methodological quality of identified studies.

Scale-derived data

We planned to include continuous data from rating scales only if the measuring instrument was (1) a self-report, or (2) completed by an independent rater or relative (not the therapist).

Endpoint versus change data

We planned to use primarily endpoint data and to use change data only if the former data were not available.

Skewed data

Continuous data on clinical and social outcomes often are not normally distributed. To avoid applying parametric tests to non-parametric data, we aimed to apply the following standards to all data before inclusion.

- Standard deviations and means were reported in the article or could be obtained from the authors.
- When a scale started from the finite number zero, the standard deviation, when multiplied by two, was less than the mean (as otherwise, the mean was unlikely to be an appropriate measure of the centre of the distribution) ([Altman 1996](#)).

Endpoint scores on scales often have a finite start and endpoint, and these rules can be applied. When continuous data are presented on a scale that includes a possibility of negative values (such as change data), it is difficult to tell whether or not data are skewed. Skewed data pose less of a problem in looking at means if the sample size is large.

Common measure

To facilitate comparison between trials, we planned to convert variables that could be reported in different metrics, such as days in hospital (mean days per year, per week or per month) to a common metric (e.g. mean days per month).

Conversion of continuous to binary

When possible, we planned to convert outcome measures to dichotomous data. This can be done by identifying cut-off points on rating scales and dividing participants accordingly into 'clinically improved' or 'not clinically improved'. When necessary, we contacted study authors to ask for information.

Direction of graphs

When possible, we intended to enter data in such a way that the area to the left of the line of no effect indicated a favourable outcome for occupational therapy intervention.

'Summary of findings' table

We anticipated including the following outcomes in 'Summary of findings for the main comparison':

- function (also referred to as 'occupational performance') in ADL (personal ADL and/or extended ADL). (When both personal ADL and extended ADL outcomes data were available, we used personal ADL outcomes data.);

- global poor outcome;
- death;
- quality of life;
- mobility;
- mood;
- global cognition;
- adverse events;
- satisfaction with care;
- health economic outcomes.

Assessment of risk of bias in included studies

JCF-S and CSC worked independently to assess risk of bias in accordance with the Cochrane Collaboration's tool for assessing quality and risk of bias (Higgins 2011). This tool addresses evaluation of the following specific components for each trial. We identified the following factors as potentially important for sensitivity analyses but did not use them as exclusion criteria.

- Method of generation of the randomisation sequence.
- Method of concealment to treatment allocation (it was considered adequate if the assignment could not be foreseen).
- Blinding of outcomes assessors, participants and clinicians.
- Completeness of outcomes data (including attrition and exclusions from analysis).
- Presence of an 'intent-to-treat' analysis.
- Selective reporting.
- Other biases (concerns about other biases not addressed in the other domains of the tool).

We then categorised the trials as follows:

- low risk of bias;
- high risk of bias;
- unclear - uncertain risk of bias.

We did not include in the meta-analysis trials with a high risk of bias (defined as at least three out of five components categorised as 'high risk'). If the two review authors (JCF-S, CSC) disagreed, the final decision was made by consensus with the involvement of a third review author (MFW). When inadequate details of the trial were provided, we contacted the study authors to request further information.

Measures of treatment effect

Dichotomous outcomes

For dichotomous outcomes (i.e. death, drop in Barthel ADL Index score), we planned to express the intervention effect as an odds ratio (OR) with 95% confidence interval (CI).

Continuous data

For continuous outcomes (i.e. personal ADL (PADL) score, Quality of Life (QoL), depression score), our intention was to present the mean difference (MD) with corresponding 95% CI.

When studies assessed the same outcome but measured it in different ways (e.g. different questionnaires used to measure performance in PADL), we intended to present the data as standardised mean difference (SMD) with corresponding 95% CI.

Unit of analysis issues

Cluster trials

Analysis and pooling of clustered data can pose problems, as authors often fail to account for intra-class correlation in clustered studies, leading to a 'unit of analysis' error (Divine 1992), whereby P values are low, CIs unduly narrow and statistical significance overestimated. When clustering was not accounted for in primary studies, we planned to present data in a table, in which a (*) symbol would be used to indicate the presence of a probable unit of analysis error. When clustering had been incorporated into the analysis of primary studies, we planned to present the data as if from a non-cluster randomised study, while adjusting for the clustering effect.

We had planned to follow the statistical recommendation used in a previous Cochrane review (Xia 2002): binary data presented in a report should be divided by a 'design effect'. This is calculated using the mean number of participants per cluster (m) and the intra-class correlation coefficient (ICC) [Design effect = 1 + (m - 1) * ICC] (Donner 2002). If the ICC was not reported, it was assumed to be 0.1 (Ukoumunne 1999).

If cluster studies have been appropriately analysed with ICCs and relevant data documented in the report taken into account, synthesis with other studies is possible using the generic inverse variance technique.

Cross-over trials

A concern of cross-over trials was the possibility of carry-over effect. This occurs if an effect of the treatment in the first phase is carried over to the second phase. As a consequence, on entry into the second phase, participants can differ systematically from their initial state. Also, cross-over trials are not considered appropriate if the condition of interest is unstable (Elbourne 2002). These effects are likely in stroke; therefore we intended to use only data from the first phase of cross-over studies.

Studies with multiple treatment groups

When a study involved more than two treatment groups, if relevant, we presented the additional treatment group in comparisons. When the additional treatment groups were not relevant, we did not reproduce the data.

Dealing with missing data

We sought to obtain relevant missing data from the primary investigators. We evaluated important numerical data such as numbers of people screened, numbers of participants randomly assigned, losses to follow-up and withdrawals. For any outcome, when more than 50% of the data was unaccounted for, we did not reproduce the data or use it within the analyses. If more than 50% of participants in one treatment group of a study were lost, but the total loss was less than 50%, we marked such data with an asterisk (*) to indicate that the result may be prone to bias. We also investigated attrition rates. When attrition for a binary outcome was between 0 and 50% and data had not been clearly described, we present the data on a 'once-randomised-always-analyse' basis (intention-to-treat analysis). We assumed that participants leaving a study early had the same rates of negative outcome as those who completed the study, with the exception of the outcome of death. We planned to undertake a sensitivity analysis to test how prone the primary outcomes were to change when 'completed' data were compared with the intention-to-treat analysis. When attrition for a continuous outcome was between 0 and 50% and completer-only data were reported, we reproduced these.

Assessment of heterogeneity

Clinical heterogeneity

Initially we planned to consider all included studies (without seeing comparison data) to judge clinical heterogeneity. We planned to look for clearly outlying situations or participant groups not predicted to arise. If such outlying situations or participant groups arose, all review authors would discuss these.

Methodological heterogeneity

Again, we planned to initially consider all included studies without seeing comparison data, to judge methodological heterogeneity. We would inspect all studies for clearly outlying methods not predicted to arise. When such methodological outliers arose, all review authors would fully discuss these until we reached consensus.

Statistical heterogeneity

Visual inspection

We planned to visually inspect the graphs to investigate the possibility of statistical heterogeneity.

Employing the I² statistic

We planned to investigate heterogeneity between studies by considering the I² method alongside the X² P value. We identified an I² estimate greater than or equal to 50% accompanied by a statistically significant X² statistic as evidence of substantial levels of heterogeneity (Higgins 2011). If we found substantial levels of heterogeneity in the primary outcome, we intended to explore reasons for heterogeneity (subgroup analysis and investigation of heterogeneity).

Assessment of reporting biases

When funnel plots were appropriate and possible, we tested for funnel plot asymmetry.

Data synthesis

The random-effects method incorporates an assumption that the different studies are estimating different, yet related, intervention effects. The random-effects model takes into account differences between studies even if there is no statistically significant heterogeneity. However, a disadvantage of the random-effects model is that it puts added weight onto small studies, which often are the most biased ones. Depending on the direction of effect, these studies can inflate or deflate the effect size. Therefore, we planned to use a fixed-effect model and to carry out sensitivity analysis to determine whether there were differences when a random-effects model was employed.

Subgroup analysis and investigation of heterogeneity

If data were available, we performed subgroup analyses for type of intervention, intensity (dose) and duration of treatment intervention, as well as timing of occupational therapy after stroke (acute: less than six weeks; subacute: six weeks to six months; and chronic: more than six months).

We anticipated carrying out standard tests of statistical heterogeneity and exploring sources of heterogeneity.

Sensitivity analysis

We also planned to carry out sensitivity analyses to determine the effects of omitting trials with a high risk of bias. We intended to base the sensitivity analyses on the method of randomisation, presence of an intention-to-treat analysis and blinding of final assessment.

RESULTS

Description of studies

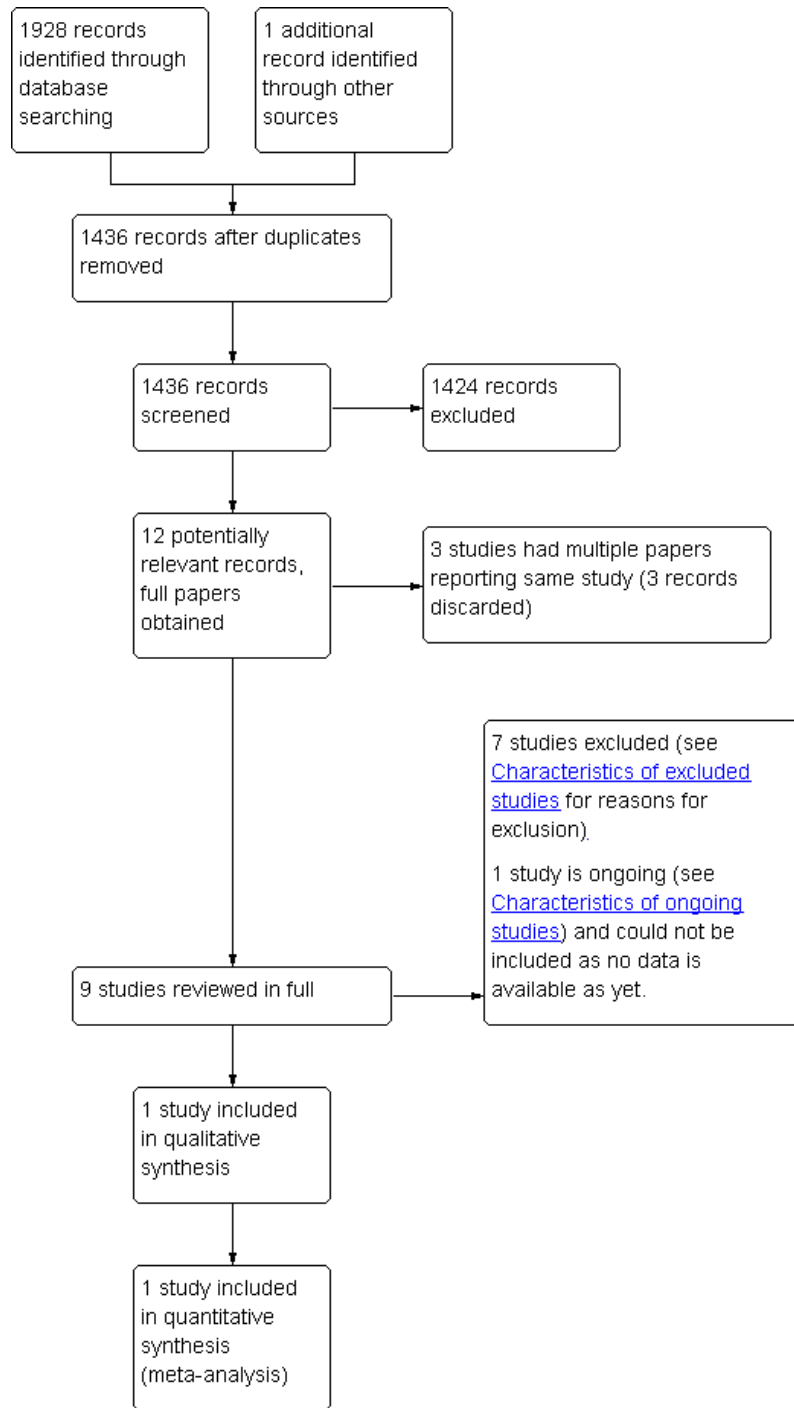
See: [Characteristics of included studies](#); [Characteristics of excluded studies](#); [Characteristics of studies awaiting classification](#); [Characteristics of ongoing studies](#).

Results of the search

The search strategies identified a total of 1929 records. We removed duplicates, resulting in 1436 records for initial screening. Two review authors (JCF-S and CSC) independently screened all 1436 titles and abstracts (when available) for potentially relevant studies. A third review author (MW) screened 14 for which a discrepancy was noted. We obtained copies of 12 articles in full.

Among these 12 articles, three studies had produced multiple articles; therefore we discarded three articles to an 'additional study information' pile. The remaining nine articles represented potential trials for inclusion in the review (Braun 2012; Brittle 2009; Corr 1995; Egan 2007; Frandin 2009; OTCH 2012; RICH-T; Sackley 2006b; Tsaih 2012), of which one was included (Sackley 2006b) and one was an ongoing trial (OTCH 2012). See Figure 1 for the study flow diagram. All included, ongoing and excluded trials were published in English; therefore no translation was required. However, we requested and obtained further details from two study authors to aid our judgement on eligibility for inclusion in the review.

Figure 1. Study flow diagram.



Included studies

One included trial ([Sackley 2006b](#)) was conducted in 2001 and included 118 participants from 12 care homes in Oxfordshire, UK. This pilot study was a cluster-randomised controlled trial with the care home as the unit of randomisation (to avoid the chance of contamination that would be likely to occur if residents were randomly assigned individually). The purpose of the study was to evaluate an occupational therapy intervention to improve self-care independence for residents with stroke-related disability. Further details of the study can be found in the [Characteristics of included studies](#) table. A further ongoing study ([OTCH 2012](#)) appeared to meet the inclusion criteria. However, as no data are yet available for this trial, we would not include it in a meta-analysis, and we will re-consider using it in future updates of this review. Further details of this study can be found in the [Characteristics of ongoing studies](#) table.

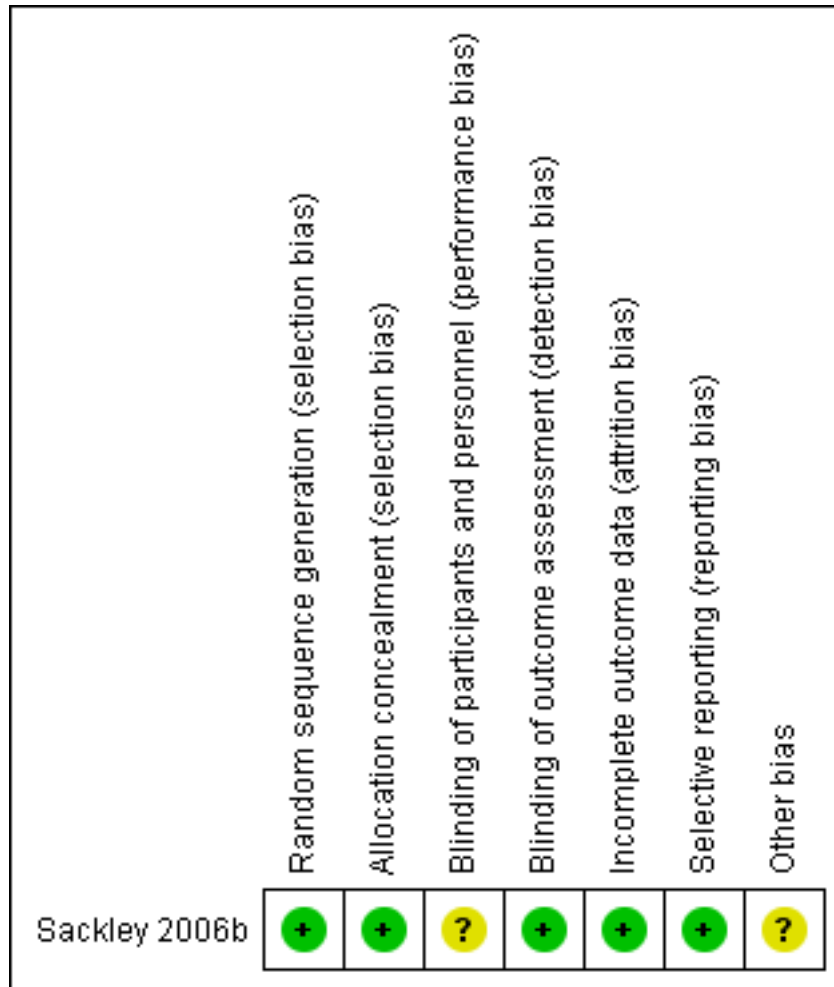
Excluded studies

We excluded seven studies after considering the full articles. We excluded studies in which participants had a mixed cause for residence in a care home and in which stroke accounted for fewer than 50% of participants; and those in which the participants were not care home residents. We also excluded studies if the intervention was not delivered by an occupational therapist, and those that included occupational therapy as part of a multidisciplinary team intervention but where the occupational therapy component of the intervention could not be clearly identified and extracted from the results. Excluded studies are listed in the [Characteristics of excluded studies](#).

Risk of bias in included studies

Two review authors (JCF-S and CSC) rated the methodological quality of the study independently using the bias criteria in the risk of bias table. See [Risk of bias in included studies](#). We present our judgements about each risk of bias item for the included study in [Figure 2](#).

Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.



Allocation

[Sackley 2006b](#) used a clearly concealed randomisation procedure, allocating participants by care home (cluster randomised) to receive or not receive an occupational therapy intervention. Randomisation was carried out independently by a statistician, with care homes grouped into three strata: type of home (residential, nursing or both), funding source (private or local authority) and setting (urban or rural). Computer-generated random numbers were used to randomly allocate care homes to one of the two groups (occupational therapy intervention or standard care control group). Group allocation was revealed only to the treating therapist and not to the outcomes assessor.

Blinding

The outcome assessor was blinded as to the group assignment of participants. Because of the nature of the intervention, allocation concealment from participants, treating therapist or care home staff involved in the study was not possible.

Incomplete outcome data

Participants in [Sackley 2006b](#) were reported to be treated on an 'intention-to-treat' basis. All 'missing' data during the course of the study were related to death of participants, which is to be expected in a frail elderly population.

Selective reporting

The risk of selective reporting bias is unclear. The [Sackley 2006b](#) study team could not supply the review authors with a copy of the original study protocol. The article reported all outcomes that it stated would be provided. However, it was not possible to ensure that the original intention had been to report on these specific outcomes and no additional outcomes.

Other potential sources of bias

Risk of bias is possible when a cluster design is used. However, the [Sackley 2006b](#) study justified the use of a cluster-randomised trial because of the possibility of contamination if individual participants within each care home were randomly assigned. In a care home setting, equipment is often shared, and staff work with a number of residents. Therefore, the intervention provided by the occupational therapist could have easily affected the control participants unwittingly had a cluster-randomised design not been used.

Effects of interventions

See: [Summary of findings for the main comparison](#)

We included only one study in this review; therefore a meta-analysis was not possible. Data were available for the outcomes: function (occupational performance) in ADL at the end of scheduled follow-up, global poor outcome (death or a drop in ADL score) at the end of scheduled follow-up, function in ADL at the end of intervention, and mobility. The data for outcomes related to function in ADL and mobility were reported in the study article as mean (SD) values, and data related to global poor outcome (death or a drop in ADL score) were reported as total N and number of participants who had clinically deteriorated in each treatment group.

Primary outcomes

Performance (function) in ADL at the end of scheduled follow-up

One included trial ([Sackley 2006b](#)) recorded the Barthel ADL Index score; this was used in the analysis as the measure of performance in ADL at the end of scheduled follow-up. As the included trial was a cluster-randomised trial, we used an intra-cluster correlation coefficient of 0.1 to calculate average cluster size to take account of the design effect.

Average cluster size in the trial was calculated by dividing the total number of participants by the total number of care home clusters, $(63 + 55)/(6 + 6) = 9.83$.

The design effect for the trial as a whole is therefore $1 = (m - 1) * ICC + 1 = (9.83 - 1) * 0.1 + 1 = 1.883$.

This results in an effective sample size in the occupational therapy intervention group of $63/1.883 = 33$ and an effective sample size in the control group of $55/1.883 = 29$. The design effect was applied to the outcomes data for performance (function) in ADL at the end of scheduled follow-up.

The SMD using a fixed-effect model was 0.39 (95% CI -0.11 to 0.90; $P = 0.13$) ([Analysis 1.1](#)).

Trials were insufficient to allow firm conclusions to be drawn.

Death or a poor outcome (drop in ADL score) at the end of scheduled follow-up

At six months, [Sackley 2006b](#) reported a reduction in the number of care home residents who died or deteriorated in their ability to perform ADL among participants who received occupational therapy intervention (32/63, 51%) compared with the control group, which received standard care (42/55, 76%) (OR 0.32, 95% CI 0.14 to 0.71; $P = 0.005$).

However, applying the design effect $(1 + (9.83 - 1) * 0.1 = 1.883)$ to the number of residents (participants) who died or deteriorated in their ability to perform ADL (global poor outcome) produces the following results: 17/33 (51%) in the intervention group compared with 22/29 (76%) in the control group (OR 0.34, 95% CI 0.11 to 1.01; $P = 0.05$) ([Analysis 1.2](#)).

Trials were insufficient to allow firm conclusions to be drawn.

Secondary outcomes

Performance (function) in ADL at the end of intervention

[Sackley 2006b](#) reported performance in ADL at the end of the three-month intervention period. When the design effects were applied to the published outcome data, the SMD using a fixed-effect model was 0.48 (95% CI -0.03 to 0.99; $P = 0.06$) ([Analysis 1.3](#)).

Trials were insufficient to allow firm conclusions to be drawn.

Death at the end of scheduled follow-up

Data were available from [Sackley 2006b](#) for the outcome of death at end of scheduled follow-up (six months). Applying the design effect (1.883) to the reported number of deaths in the intervention group (10/63, 16%) compared with the control group (20/55, 36%) at six months produces the following adjusted results: 5/33 (15%) in the intervention group compared with 11/29 (38%) in the control group (OR 0.29, 95% CI 0.09 to 0.98; $P = 0.05$) ([Analysis 1.4](#)).

Trials were insufficient to allow firm conclusions to be drawn.

Global quality of life

No data were available for this outcome.

Mobility

Sackley 2006b reported mobility at the end of scheduled follow-up using the Rivermead Mobility Index score. The design effect was applied to the reported data, resulting in an SMD (using a fixed-effect model) of 0.14 (95% CI -0.36 to 0.64; P = 0.58) (Analysis 1.5).

Trials were insufficient to allow firm conclusions to be drawn.

Mood

No data were available for this outcome.

Global cognition

No data were available for this outcome.

Adverse events

No data were available for this outcome.

Satisfaction with care

No data were available for this outcome.

Health economic outcomes

No data were available for this outcome.

DISCUSSION

The aim of this review was to measure the effects of occupational therapy interventions (provided directly by an occupational therapist or under the supervision of an occupational therapist) targeted at improving, restoring and maintaining independence in ADL (to include both self-care and leisure activities) among stroke survivors residing in long-term institutional care termed collectively as 'care homes' (care homes, residential homes, nursing homes, aged-care facilities, long-term care institutions and older people's homes). A secondary aim was to evaluate occupational therapy interventions aimed at reducing complications such as depression and low mood. Only one trial (Sackley 2006b) met the criteria for inclusion in the review; therefore, we could not pool data for further analysis and interpretation. Sackley 2006b was a pilot study, and the same study team is currently running a larger phase III multi-centre cluster-randomised controlled trial (OTCH 2012), which was identified during the searches and is listed under [Characteristics of ongoing studies](#). It is anticipated that data from the OTCH 2012 study will be available and eligible for inclusion in a meta-analysis in future updates of this review. The included study and the ongoing study share the same objective of evaluating occupational therapy interventions delivered within care home settings to residents

with stroke and their carers, targeted at improving independence in personal ADL.

Summary of main results

One study, involving 118 participants, met the inclusion criteria, and we included it in the review. We found one ongoing study that also met the inclusion criteria for the review, but the data were not yet available to include in the meta-analysis. Data were insufficient to allow determination of whether occupational therapy interventions can improve, restore and maintain independence in ADL for care home residents with stroke. A lack of evidence available precluded evaluation of occupational therapy interventions aimed at reducing complications such as depression and low mood, and those aimed at improving quality of life.

Overall completeness and applicability of evidence

The studies identified were insufficient to address all of the objectives of this review.

Quality of the evidence

The body of evidence identified did not allow a robust conclusion regarding the objectives of this review. Only evidence from 118 participants from one study that had methodological limitations could be included. The included study was a small pilot study and was a cluster-randomised trial. We, therefore, had to take into account this design effect in the analysis of results. Risks of bias in the included review have been summarised in [Figure 2](#).

Potential biases in the review process

We are confident that through a thorough search process, including comprehensive database searching and handsearching of relevant journals, we should have identified all relevant published studies. However, there is always the possibility that some additional studies (published and unpublished) may have been missed during the systematic review process. If this is the case, bias could have been introduced into the review. A potential risk of language bias is noted in the review.

One of the review authors (CMS) was the lead author on three of the study articles (OTCH 2012; RICH-T; Sackley 2006b) and was a co-author on another (Brittle 2009) article that we considered for inclusion in this review. However, to minimise the risk of bias, this author was not included in the actual screening of articles, in the review and data extraction process or in decisions regarding the suitability of articles for inclusion in the review.

Agreements and disagreements with other studies or reviews

To our knowledge, the effects of occupational therapy interventions targeted at improving, restoring and maintaining independence in ADL among stroke survivors residing in care homes have not been systematically reviewed before now.

AUTHORS' CONCLUSIONS

Implications for practice

The effectiveness of occupational therapy for care home residents with stroke remains unclear. The potential benefits of delivering occupational therapy interventions targeted at improving, restoring and maintaining independence in ADL among stroke survivors residing in care homes can be supported by limited evidence from the reviewed RCT. However, evidence is insufficient in this review to allow the conclusion that occupational therapy clearly improves outcomes for care home residents with stroke.

Implications for research

The lack of RCTs evaluating the efficacy of occupational therapy interventions for care home residents with stroke suggests that more high-quality research in this area is needed. [OTCH 2012](#),

a large multi-centre cluster-randomised controlled trial evaluating the effects of a targeted course of occupational therapy intervention for care home residents with stroke, is currently ongoing, with results not expected until early 2014. Further high-quality research involving care home residents with stroke is justified to investigate the effects of occupational therapy interventions upon performance of ADL, mobility and quality of life, as well as the effects on complications in this population and setting, such as depression and low mood.

ACKNOWLEDGEMENTS

We thank Hazel Fraser, the Managing Editor of the Cochrane Stroke Group, for her help and guidance in developing the initial protocol and this review for publication. We also thank Peter Langhorne, the Cochrane Stroke Group Co-ordinating Editor, and Jan Mehrholz, Brenda Thomas, Lynn Legg, Louise Johnson and Ashma Krishan, the peer reviewers, for their constructive comments and suggestions. We are also grateful to Brenda Thomas (Trials Search Co-ordinator) for her assistance in refining the search strategy and in performing the search of the Cochrane Stroke Group Trials Register. We would also like to show our appreciation to Wendy Stanton from the University of Nottingham library service for her assistance in adapting the MEDLINE search strategy to suit the additional databases.

REFERENCES

References to studies included in this review

Sackley 2006b *{published data only}*

Sackley C, Wade DT, Mant D, Atkinson JC, Yudkin P, Cardoso K, et al. Cluster randomized pilot controlled trial of an occupational therapy intervention for residents with stroke in UK care homes. *Stroke* 2006;**37**(9):2336–41.

References to studies excluded from this review

Braun 2012 *{published data only}*

* Braun SM, Beurskens AJ, Kleynen M, Oudelaar B, Schols JM, Wade DT. A multicenter randomized controlled trial to compare subacute 'treatment as usual' with and without mental practice among persons with stroke in Dutch nursing homes. *Journal of the American Medical Directors Association* 2012;**13**(1):85.e1–e7.

Braun SM, Beurskens AJ, van Kroonenburgh SM, Demarteau J, Schols JM, Wade DT. Effects of mental practice embedded in daily therapy compared to therapy as usual in adult stroke patients in Dutch nursing homes: design of a randomised controlled trial. *BMC Neurology* 2007;**7**:34.

Brittle 2009 *{published data only}*

Brittle N, Patel S, Wright C, Baral S, Versfeld P, Sackley C. An exploratory cluster randomized controlled trial of group exercise on mobility and depression in care home residents. *Clinical Rehabilitation* 2009;**23**(2):146–54.

Corr 1995 *{published data only}*

Corr S, Bayer A. Occupational therapy for stroke patients after hospital discharge: a randomized controlled trial. *Clinical Rehabilitation* 1995;**9**(4):291–6.

Egan 2007 *{published data only}*

Egan M, Kessler D, Laporte L, Metcalfe V, Carter M. A pilot randomized controlled trial of community-based occupational therapy in late stroke rehabilitation. *Topics in Stroke Rehabilitation* 2007;**14**(5):37–45.

Frandin 2009 *{published and unpublished data}*

Frandin K, Borell L, Gronstedt H, Bergland A, Helbostad JL, Puggaard L, et al. A Nordic multi-center study on physical and daily activities for residents in nursing home settings: design of a randomized, controlled trial. *Aging Clinical and Experimental Research* 2009;**21**(4-5):314–22.

RICH-T *{published data only}*

Sackley C, Patel S, Wright C. Rehabilitation in care homes (RICH-T): a cluster-randomized controlled trial.

Physiotherapy Research International 2007;**12**(4):205.

* Sackley CM, van den Berg ME, Lett K, Patel S, Hollands K, Wright CC, et al. Effects of a physiotherapy and occupational therapy intervention on mobility and activity in care home residents: a cluster randomised controlled trial. *BMJ* 2009;**339**:b3123. [DOI: 10.1136/bmj.b3123]

Tsaih 2012 *{published and unpublished data}*

Tsaih P-L, Shih Y-L, Hu M-H. Low-intensity task-oriented exercise for ambulation-challenged residents in long-term care facilities. *American Journal of Physical Medicine and Rehabilitation* 2012;**91**(7):616–24.

References to ongoing studies

OTCH 2012 *{published data only}*

* OTCH, Sackley C. A cluster randomised controlled trial of an occupational therapy intervention for residents with stroke living in UK care-homes. Health Technology Assessment Programme Trial Protocol 2010; Vol. Version 2.0. [ISRCTN 00757750; Reference 08/14/30]
Sackley CM, Burton CR, Herron-Marx S, Lett K, Mant J, Roalfe AK, et al. A cluster randomised controlled trial of an occupational therapy intervention for residents with stroke living in UK care homes (OTCH): study protocol. *BMC Neurology* 2012;**12**:52. [ISSN 1471–2377]

Additional references

Altman 1996

Altman DG, Bland JM. Detecting skewness from summary information. *BMJ* 1996;**313**:1200.

American Heart Association 2011

American Heart Association. Heart Disease and Stroke Statistics - 2012 Update: a report from the American Heart Association. Print ISSN: 0009-7322. Online ISSN: 1524-4539. Dallas, TX 2011.

Australian Bureau of statistics 2008

Australian Bureau of Statistics. *3303.0 Causes of death 2206: Australia*. Vol. **88**, Canberra: ABS, 2008.

Ballard 2001

Ballard C, O'Brien J, James I, Mynt P, Lana M, Potkins D, et al. Quality of life for people with dementia living in residential and nursing home care: the impact of performance on activities of daily living, behavioral and psychological symptoms, language skills, and psychotropic drugs. *International Psychogeriatrics* 2001;**13**(1):93-106.

Barodawala 2001

Barodawala S, Kesavan S, Young J. A survey of physiotherapy and occupational therapy provision in UK nursing homes. *Clinical Rehabilitation* 2001;**15**(6):607–10.

Barrett 2001

Barrett JA, Watkins C, Plant R, Dickinson H, Clayton L, Sharma AK. The COSTAR wheelchair study: a two-centre pilot study of self-propulsion in a wheelchair in early stroke rehabilitation. *Clinical Rehabilitation* 2001;**15**:32–41.

Baum 1995

Baum CM. The contribution of occupation to function in persons with Alzheimer's disease. *Journal of Occupational Science: Australia* 1995;**2**(2):59-67.

Bebbington 2001

Bebbington A, Darton R, Netten A. *Care Homes for Older People. Admissions, Needs and Outcomes*. Vol. **2**, Canterbury: PSSRU, 2001.

Berg 1997

Berg K, Sherwood S, Murphy K, Carpenter GI, Gilgen R, Phillips CD. Rehabilitation in nursing homes: a cross-national comparison of recipients. *Age and Ageing* 1997;**26**(2):37–42.

Boter 2003

Boter H, de Haan RJ, Rinkel GJ. Clinimetric evaluation of a Satisfaction-With-Stroke-Care questionnaire. *Neurology* 2003;**250**:534–41.

Bowman 2004

Bowman C, Whistler J, Ellerby M. A national census of care home residents. *Age and Ageing* 2004;**33**(6):561–6.

British Geriatrics Society 2011

British Geriatrics Society. *Quest for Quality: An Inquiry into the Quality of Healthcare Support for Older People in Care Homes: A Call for Leadership, Partnership and Improvement*. London: British Geriatrics Society, 2011.

Carter 1983

Carter LT, Howard BE, O'Neil WA. Effectiveness of cognitive skill remediation in acute stroke patients. *American Journal of Occupational Therapy* 1983;**37**:320–6.

Challis 2000

Challis D, Godlove C, Mozley C, Sutcliffe C, Bagley H, Price L, et al. Dependency in older people recently admitted to care homes. *Age and Ageing* 2000;**29**(3):255–60.

Cohon-Mansfield 1992

Cohon-Mansfield J, Marx MS, Werner P. Observational data on time use and behaviour problems in the nursing home. *Journal of Applied Gerontology* 1992;**11**(1):111–21.

College of Occupational Therapists 2007

College of Occupational Therapists. *Activity Provision: Benchmarking Good Practice in Care Homes*. London: College of Occupational Therapists, 2007.

Collen 1991

Collen FM, Wade DT, Robb GF, Bradshaw CM. The Rivermead Mobility Index: a further development of the Rivermead Motor Assessment. *International Disability Studies* 1991;**13**:50–4.

CQC 2011

Care Quality Commission. *Supporting Life after Stroke: A Review of Services for People Who Have Had a Stroke and Their Carers*. Newcastle upon Tyne: Care Quality Commission, 2011.

Creswell 2009

Creswell JW. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 3rd Edition. California: Sage, 2009.

Divine 1992

Divine GW, Brown JT, Frazier LM. The unit of analysis error in studies about physicians' patient care behaviour. *Journal of General Internal Medicine* 1992;**7**(6):623–9.

Donner 2002

Donner A, Klar N. Issues in the meta-analysis of cluster randomized trials. *Statistics in Medicine* 2002;**21**:2971–80.

Edmans 1997

Edmans JA, Webster J. The Edmans ADL Index: validity and reliability. *Disability Rehabilitation* 1997;**19**:465–76.

Elbourne 2002

Elbourne D, Altman DG, Higgins JPT, Curtina F, Worthington HV, Vail A. A meta-analysis involving cross-over trials: methodological issues. *International Journal of Epidemiology* 2002;**31**(1):140–9.

European Commission 2008

European Commission. *Long-Term Care in the European Union*. Luxembourg: Office for Official Publications of the European Communities, 2008.

EuroQol Group 1990

EuroQol Group. EuroQol - a new facility for the measurement of health-related quality of life. *Health Policy* 1990;**16**:199–208.

Feys 1998

Feys HM, De Weerd WJ, Selz BE, Cox-Steck GA, Spichiger R, Vereeck LE. Effect of a therapeutic intervention for the hemiplegic upper limb in the acute phase of stroke. *Stroke* 1998;**29**(4):785–92.

Folstein 1975

Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research* 1975;**12**(3):189–98.

Forster 2009

Crocker T, Forster A, Young J, Brown L, Ozer S, Smith J, et al. Physical rehabilitation for older people in long-term care. *Cochrane Database of Systematic Reviews* 2013, Issue 2. [DOI: 10.1002/14651858.CD004294]

Hanson 2003

Hanson J, Kellaher L, Rowlands M, Percival J, Marcoux J, Zako R. Profiling the housing stock for older people from domesticity to caring. www.bartlett.ucl.ac.uk/research/space/housingfutures/2-EQUAL/UCL_EQUAL.pdf 2003.

Help the Aged 2006

Help the Aged, National Care Forum, National Care Homes Research and Development Forum. *My Home Life: Quality of Life in Care Homes*. London: Help the Aged, 2006.

Help the Aged 2007

Help the Aged, prepared by the National Care Homes Research and Development Forum. *My Home Life: Quality of life in Care Homes - A Review of the Literature*. London: Help the Aged, 2007.

Higgins 2011

Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.

Huijben-Schoenmakers 2009

Huijben-Schoenmakers M, Gamel C, Hafsteinsdottir TB. Filling up the hours: how do stroke patients on a rehabilitation nursing home spend the day?. *Clinical Rehabilitation* 2009;**23**(12):1145–50.

Johnston 2009

Johnston SC, Mendis S, Mathers CD. Global variation in stroke burden and mortality: estimates from monitoring, surveillance, and modelling. *Lancet Neurology* 2009;**8**(4):345–54.

Jorgensen 1995

Jorgensen HS, Nakayama H, Raaschou HO, Olsen TS. Recovery of walking function of stroke patients: the Copenhagen Stroke Study. *Archives of Physical Medicine and Rehabilitation* 1995;**76**:27–32.

Kelly-Hayes 2003

Kelly-Hayes M, Beiser A, Kase CS, Scaramucci A, D'Agostino RB, Wolf PA. The influence of gender and age on disability following ischemic stroke: the Framingham study. *Journal of Stroke and Cerebrovascular Diseases* 2003;**12**:119–26.

Kiely 2003

Kiely D, Flacker J. The protective effect of social engagement on 1-year mortality in a long-stay nursing home population. *Journal of Clinical Epidemiology* 2003;**56**:472–8.

Kwakkel 1999

Kwakkel G, Wagenaar RC, Twisk JWR, Lankhorst GJ, Koetsier JC. Intensity of leg and arm training after primary middle-cerebral-artery stroke: a randomised trial. *Lancet* 1999;**354**:191–6.

Langhorne 2000

Langhorne P, Stott DJ, Robertson L, MacDonald J, Jones L, McAlpine C, et al. Medical complications after stroke: a multicenter study. *Stroke* 2000;**31**:1223–9.

Langhorne 2009

Langhorne P, Coupar F, Pollock A. Motor recovery after stroke: a systematic review. *Lancet Neurology* 2009;**8**:741–54.

Langlois 1991

Langlois S, Pederson L, MacKinnon JR. The effects of splinting on the spastic hemiplegic hand: report of a feasibility study. *Canadian Journal of Occupational Therapy* 1991;**58**:17–25.

Legg 2006

Legg LA, Drummond AE, Langhorne P. Occupational therapy for patients with problems in activities of daily living after stroke. *Cochrane Database of Systematic Reviews* 2006, Issue 4. [DOI: 10.1002/14651858.CD003585.pub2]

Mahoney 1965

Mahoney F, Barthel D. Functional evaluation: the Barthel Index. *Modern Medicine Journal* 1965;**14**:61–5.

Martin 1998

Martin J, Meltzer H, Elliot D. *The Prevalence of Disability among Adults*. London: Office of Population Censuses and Surveys HMSO, 1998.

Miller 2010

Miller EL, Murray L, Richards L, Zorowitz RD, Bakas T, Clark P, the American Heart Association Council on Cardiovascular Nursing and the Stroke Council. Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: a scientific statement from the American Heart Association. *Stroke* 2010;**41**:2402–48.

National Audit Office 2005

National Audit Office. *Reducing Brain Damage: Faster Access to Better Stroke Care*. London: Department of Health, 2005.

National Audit Office 2010

National Audit Office. *Progress in Improving Stroke Care*. London: The Stationery Office, 2010.

National Stroke Foundation 2010

National Stroke Foundation. *Clinical Guidelines for Stroke Management*. Melbourne, Australia: National Stroke Foundation, 2010.

National Stroke Foundation 2011a

National Stroke Foundation. *National Stroke Audit - Acute Services Organisational Survey Report*. Melbourne, Australia: NSF, 2011.

National Stroke Foundation 2011b

National Stroke Foundation. *National Stroke Audit - Acute Services Clinical Audit Report*. Melbourne, Australia: NSF, 2011.

Nolan 1995

Nolan M, Grant G, Nolan J. Busy doing nothing: activity and interaction levels amongst differing populations of elderly patients. *Journal of Advanced Nursing* 1995;**2**(3): 528–38.

Nouri 1987

Nouri F, Lincoln NB. An extended activities of daily living scale for stroke patients. *Clinical Rehabilitation* 1987;**1**: 233–8.

O'Dea 2000

O'Dea G, Kerrison S, Pollock A. Access to healthcare in nursing homes: a survey in one English Health Authority. *Health and Social Care in the Community* 2000;**8**:180–5.

Office of Fair Trading 2005

Office of Fair Trading. *Care Homes for Older People in the UK: A Market Study*. London: Office of Fair Trading, 2005.

Quilliam 2001

Quilliam BJ, Lapane KL. Clinical correlates and drug treatment of residents with stroke in long-term care. *Stroke* 2001;**32**(6):1385–93.

RCP 2008

Intercollegiate Stroke Working Party. *National Clinical Guideline for Stroke*. 3rd Edition. London: Royal College of Physicians, 2008.

RCP 2011

Royal College of Physicians. *National Sentinel Stroke Clinical Audit 2010 Round 7, Public Report for England, Wales and Northern Ireland*. London: Royal College of Physicians, 2011.

RCP, RCN & BGS 2000

Royal College of Physicians, Royal College of Nursing and British Geriatric Society. *The Health and Care of Older People in Care Homes. A Comprehensive Interdisciplinary Approach: A Report of a Joint Working Party Summary*. London: RCP, 2000.

RevMan 2011 [Computer program]

The Nordic Cochrane Centre, The Cochrane Collaboration. Review Manager (RevMan). Version 5.1. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2011.

Ribbe 1997

Ribbe MW, Ljunggren G, Steel K, Topinkova E, Hawes C, Ikegami N, et al. Nursing homes in 10 nations: a comparison between countries and settings. *Age and Ageing* 1997;**26**(52):3–12.

Rothwell 2005

Rothwell PM. Lack of epidemiological data on secondary stroke prevention. *Lancet Neurology* 2005;**4**(9):518–9.

Sackley 2001a

Sackley CM, Gatt J, Walker MF. The use of rehabilitation services by private nursing homes in Nottingham. *Age and Ageing* 2001a;**30**(6):532–3.

Sackley 2001b

Sackley CM, Dewey ME. Recovery from severely disabling stroke. *Clinical Rehabilitation* 2001b;**15**(4):455.

Sackley 2002

Sackley CM, Dewey ME. The frequency of joint contractures, pressure sores, painful shoulder, other pain and falls after severely disabling stroke. *Clinical Rehabilitation* 2002;**16**:114–5.

Sackley 2003

Sackley C, Wade DT, Mant D. Is the intervention of an occupational therapist effective in increasing independence for residents with stroke living in a care home?. *Cerebrovascular Diseases* 2003;**16**(4):112.

Sackley 2004

Sackley CM, Copley Atkinson J, Walker MF. Occupational therapy in nursing and residential care settings: a description of a randomised controlled trial intervention. *British Journal of Occupational Therapy* 2004;**67**(3):104–9.

Sackley 2006a

Sackley C, Levin S, Cardoso K, Hoppitt T. Observations of activity levels and social interaction in a residential care setting. *International Journal of Therapy and Rehabilitation* 2006;**13**(8):370–3.

Sackley 2008

Sackley C, Brittle N, Smitaa P, Ellins J, Scott M, Wright C, et al. The prevalence of joint contractures, pressure sores,

- painful shoulder, other pain, falls, and depression in the year after a severely disabling stroke. *Stroke* 2008;**39**:3329–34.
- Scottish Stroke Care Audit Team 2011**
Scottish Stroke Care Audit Team. *Scottish Stroke Care Audit 2011: National Report on Stroke Services in Scottish Hospitals*. Edinburgh: Information Services Division, 2011.
- Sprangers 2000**
Sprangers MA, de Regt EB, Andries F, van Agt HM, Bijl RV, de Boer JB. Which chronic conditions are associated with better or poorer quality of life?. *Journal of Clinical Epidemiology* 2000;**53**(9):895–907.
- Steultjens 2003**
Steultjens EMJ, Dekker J, Bouter LM, van de Nes JCM, Cup EHC, van den Ende CHM. Occupational therapy for stroke patients: a systematic review. *Stroke* 2003;**34**(3): 676–87.
- Ukoumunne 1999**
Ukoumunne OC, Gulliford MC, Chinn S, Sterne JAC, Burney PGJ. Methods for evaluating area-wide and organisation-based intervention in health and health care: a systematic review. *Health Technology Assessment* 1999;**3**(5): 1–75.
- US Department of Health and Human Services 1993**
US Department of Health and Human Services Assistant Secretary for Planning and Evaluation Office of Disability, Aging, Long-Term Care Policy. *Nursing Home Care in Five Nations*. Washington, DC: US Department of Health and Human Services, 1993.
- Walker 1996**
Walker MF, Drummond AER, Lincoln NB. Evaluation of dressing practice for stroke patients after discharge from hospital: a crossover design study. *Clinical Rehabilitation* 1996;**10**:23–31.
- Walker 2004**
Walker MF, Leonardi-Bee J, Bath P, Langhorne P, Dewey M, Corr S, et al. Individual patient data meta-analysis of randomized controlled trials of community occupational therapy for stroke patients. *Stroke* 2004;**35**(9):2226–32.
- Ward 2009**
Ward S, Severs M, Dean T, Brooks N. Care home versus hospital and own home environments for rehabilitation of older people. *Cochrane Database of Systematic Reviews* 2009, Issue 2. [DOI: 10.1002/14651858.CD003164.pub2]
- Warlow 2008**
Warlow C, van Gijn J, Dennis M, Wardlaw J, Bamford J, Hankey G, et al. *Stroke: Practical Management*. 3rd Edition. Oxford: Wiley-Blackwell, 2008.
- World Federation of Occupational Therapists 2010**
WFOT Council. Statement on occupational therapy. [www.wfot.org/Portals/0/PDF/Statement on 'Occupational' Therapy.pdf](http://www.wfot.org/Portals/0/PDF/Statement%20on%20Occupational%20Therapy.pdf) 2010.
- World Stroke Organization 2011**
World Stroke Organization. *World Stroke Campaign*. Geneva: WSO, 2011.
- Xia 2002**
Xia J, Merinder LB, Belgamwar MR. Psychoeducation for schizophrenia. *Cochrane Database of Systematic Reviews* 2002, Issue 2. [DOI: 10.1002/14651858.CD002831.pub2]
- Yesavage 1982**
Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *Journal of Psychiatric Research* 1982–3;**17**(1):37–49.
- * Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Sackley 2006b

Methods	<p>Allocation: cluster RCT with random allocation at the level of care home using computer-generated random numbers</p> <p>Blindness: allocation concealed from assessors</p> <p>Duration: intervention delivered over a 3-month period (duration of intervention dependent upon therapist's and resident's agreed goals)</p> <p>Setting: 12 care homes (nursing and residential) in Oxfordshire, UK</p>
Participants	<p>Diagnosis: stroke</p> <p>N = 118</p> <p>Age: average age of intervention group ~ 89 years (SD ~ 6.5); average age of control group ~ 86 (SD ~ 9)</p> <p>Gender: male (n = 21) and female (n = 97)</p> <p>History: residents had moderate to severe stroke-related disability (defined by a Barthel ADL Index score of 4 to 15)</p> <p>Inclusion: residents with moderate to severe stroke-related disability (defined by a Barthel ADL Index score of 4 to 15)</p> <p>Exclusion: residents with acute illness, residents receiving end-of-life care</p>
Interventions	<ul style="list-style-type: none"> Occupational therapy targeted towards improving independence in personal ADL, such as feeding, dressing, toileting, bathing, transferring and mobilising. Techniques used by the occupational therapist to improve performance in ADL included (1) task-specific practise; (2) reducing the complexity or demands of the task by changing the tools required to perform the task or by altering the environment through the provision of aids and adaptations, or by simplifying the task; and (3) specific therapeutic interventions (e.g. stretching to relieve tissue shortening in a hand and providing a splint). The occupational therapy intervention also included an element of education of care home staff and carers. The frequency and duration of occupational therapy intervention were dependent on the resident's and therapist's agreed goals, and interventions took place over the 3-month period during which the therapist was attached to the care home. N = 63 Usual care (no occupational therapist and no identified person with specific responsibility for ADL training or for provision of adaptive equipment. N = 55)
Outcomes	<p>Primary outcome: independence in self-care ADL (Barthel ADL Index)</p> <p>Secondary outcomes: "poor global outcome" (defined as a deterioration in Barthel ADL Index score or death)</p> <p>Functional mobility (Rivermead Mobility Index)</p> <p>Cognitive impairment was assessed at baseline only (short Orientation-Memory-Concentration Test) - this was not an exclusion criterion</p>
Notes	<p>Follow-up periods: 3 months and 6 months</p>
<i>Risk of bias</i>	

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomisation was carried out independently by a statistician with random allocation at the level of care home." Method used was "computer-generated random numbers"
Allocation concealment (selection bias)	Low risk	"Allocation was revealed only to the occupational therapist, not to the assessors." Therefore, allocation was revealed only to the treating therapist
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Participants, care home staff and treating therapist could not be blinded as to treatment group allocation
Blinding of outcome assessment (detection bias) All outcomes	Low risk	"Assessments were completed by research staff masked to the trial allocation." Assessor was blinded as to treatment allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	"Although the analysis was by intention-to-treat, this was modified in the case of BI and RMI scores because of the many deaths that occurred before follow-up." Data were treated on an 'intention-to-treat' basis and study attrition was clearly reported. At 3-month outcomes, 9 scores were missing from the control group and 4 were missing from the intervention group. At 6-month outcomes, 11 were missing (20 in total over 6 months) from the control group, and 6 were missing (10 in total over 6 months) from the intervention group. All 'missing' data were related to the death of participants during the course of the study. This is to be expected in a frail elderly care home population
Selective reporting (reporting bias)	Low risk	
Other bias	Unclear risk	"Bias can arise from cluster designs because only 1 resident needs to reveal the group to unblind the assessor to the whole home." However, this design was justified by the authors because "the chance of contamination if residents were randomised individually was very high, outweighing the disad-

vantages of this design.”

ADL: activities of daily living

BI: Barthel Index

RMI: Rivermead Mobility Index

RCT: randomised controlled trial

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Braun 2012	Intervention was delivered by occupational therapists and physiotherapists. The occupational therapy component of the intervention could not be clearly identified
Brittle 2009	Participants had mixed reasons for care home residence; less than 50% of participants had a diagnosis of stroke (23%) Intervention was delivered by physiotherapists not by occupational therapists; this was not an occupational therapy intervention
Corr 1995	Participants were not care home residents
Egan 2007	Participants were not care home residents
Frandin 2009	Participants had mixed reasons for care home residence, less than 50% of participants had a diagnosis of stroke (confirmed by trialists)
RICH-T	Participants had mixed reasons for care home residence; less than 50% of participants had a diagnosis of stroke (22%)
Tsaih 2012	Participants had mixed reasons for care home residence, less than 50% of participants had a diagnosis of stroke (trialists confirmed 27% had a confirmed diagnosis of stroke) and intervention was not delivered by an occupational therapist; a physiotherapist delivered the therapy-based intervention

Characteristics of ongoing studies [ordered by study ID]**OTCH 2012**

Trial name or title	A cluster RCT of an occupational therapy intervention for residents with stroke living in UK care homes (OTCH)
Methods	Allocation: cluster RCT will be performed with random allocation at the level of care home using computer-generated random numbers Blindness: randomisation will be conducted by the Clinical Trials Unit and will be revealed only to the treating occupational therapist. Allocation will be concealed from assessors

	Duration: intervention will be delivered over a 3-month period (duration of intervention dependent on therapist's and resident's agreed goals) Setting: care homes within the UK
Participants	Diagnosis: stroke or TIA Target N = 900 (from 90 care homes) Age: adults Gender: males and females Inclusion: adult men and women living in a care home with a history of stroke or TIA Exclusion: active end-of-life care plan
Interventions	<ul style="list-style-type: none"> • A targeted course of occupational therapy (targeted repetitive training of ADL, provision of adaptive equipment and minor environmental adaptations and staff training) aimed towards improving independence in personal ADL and mobility. The intervention will be delivered to both the individual resident and the care home staff by an occupational therapist over a period of 3 months • Standard care (which does not routinely include provision of occupational therapy)
Outcomes	Primary outcome: independence in ADL (Barthel ADL Index) Secondary outcomes: functional mobility (Rivermead Mobility Index), mood (15-item Geriatric Depression Scale (GDS15) and informant version), adverse events, staff attitude, quality of life and health utility (using the EuroQol EQ-5D) All primary and secondary outcome measures will be assessed at baseline (0 months), after the intervention is provided (3 months) and at follow-up (6 and 12 months) In addition, the MMSE will be used at baseline to determine participants' cognitive impairment, not as an exclusion criterion
Starting date	January 2010
Contact information	Professor Catherine Sackley, C.Sackley@uea.ac.uk
Notes	The study is being funded by the NIHR Health Technology Assessment Programme - HTA (UK) and aims to be completed in 2013 Trial registration: ISRCTN00757750

ADL: activities of daily living

MMSE: Mini-Mental State Examination

RCT: randomised controlled trial

TIA: transient ischaemic attack

DATA AND ANALYSES

Comparison 1. Occupational therapy versus standard care

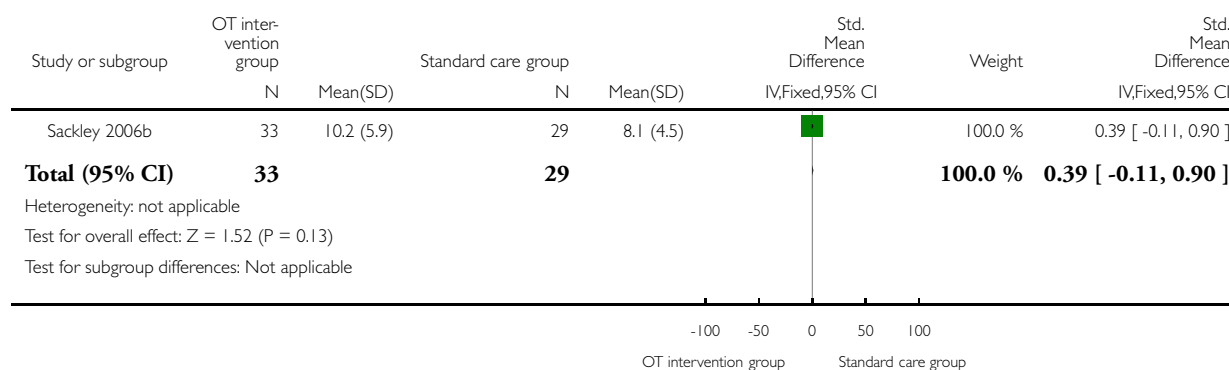
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Function in ADL at the end of scheduled follow-up (Barthel ADL Index score)	1	62	Std. Mean Difference (IV, Fixed, 95% CI)	0.39 [-0.11, 0.90]
2 Global poor outcome (death or a drop in ADL score) at the end of scheduled follow-up (6 months)	1	62	Odds Ratio (M-H, Fixed, 95% CI)	0.34 [0.11, 1.01]
3 Function in ADL at the end of intervention (Barthel ADL Index score)	1	62	Std. Mean Difference (IV, Fixed, 95% CI)	0.48 [-0.03, 0.99]
4 Death at the end of scheduled follow-up	1	62	Odds Ratio (M-H, Fixed, 95% CI)	0.29 [0.09, 0.98]
5 Mobility (Rivermead Mobility Index score) at the end of scheduled follow-up	1	62	Std. Mean Difference (IV, Fixed, 95% CI)	0.14 [-0.36, 0.64]

Analysis 1.1. Comparison 1 Occupational therapy versus standard care, Outcome 1 Function in ADL at the end of scheduled follow-up (Barthel ADL Index score).

Review: Occupational therapy for care home residents with stroke

Comparison: 1 Occupational therapy versus standard care

Outcome: 1 Function in ADL at the end of scheduled follow-up (Barthel ADL Index score)

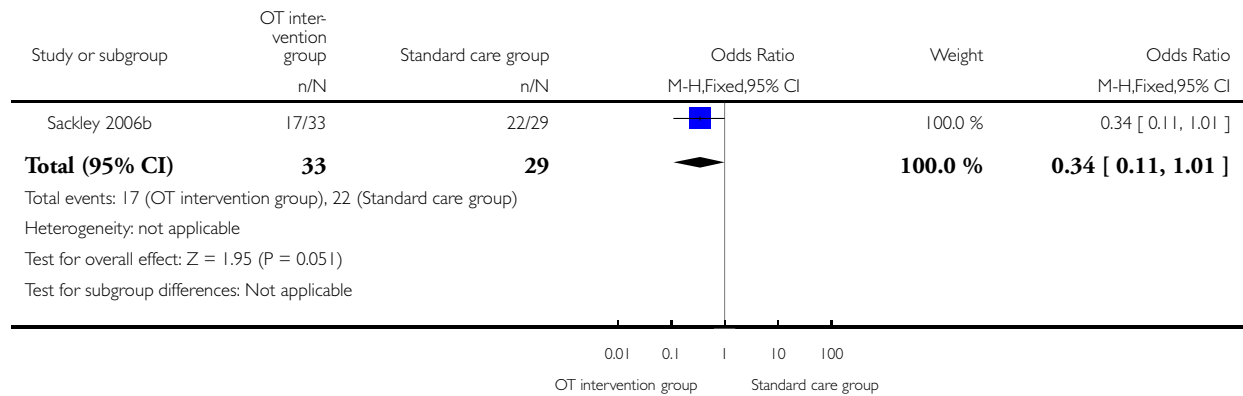


Analysis 1.2. Comparison 1 Occupational therapy versus standard care, Outcome 2 Global poor outcome (death or a drop in ADL score) at the end of scheduled follow-up (6 months).

Review: Occupational therapy for care home residents with stroke

Comparison: 1 Occupational therapy versus standard care

Outcome: 2 Global poor outcome (death or a drop in ADL score) at the end of scheduled follow-up (6 months)

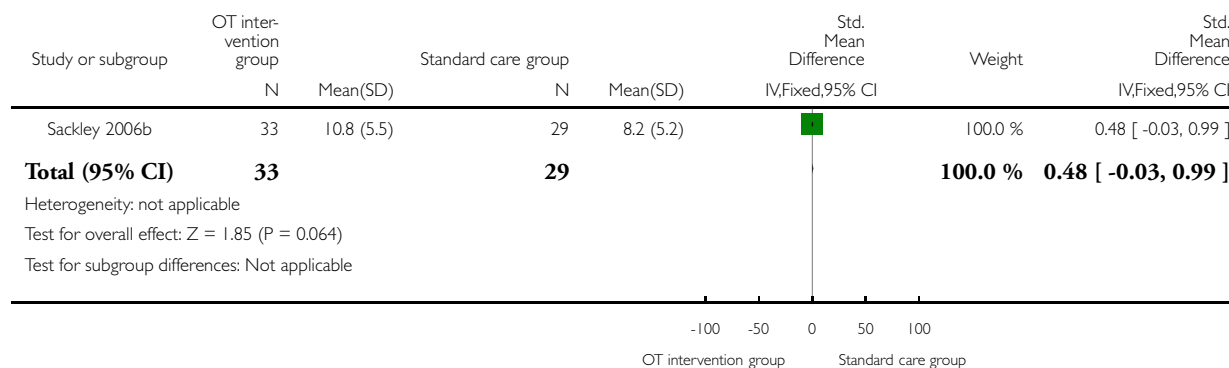


Analysis 1.3. Comparison 1 Occupational therapy versus standard care, Outcome 3 Function in ADL at the end of intervention (Barthel ADL Index score).

Review: Occupational therapy for care home residents with stroke

Comparison: 1 Occupational therapy versus standard care

Outcome: 3 Function in ADL at the end of intervention (Barthel ADL Index score)

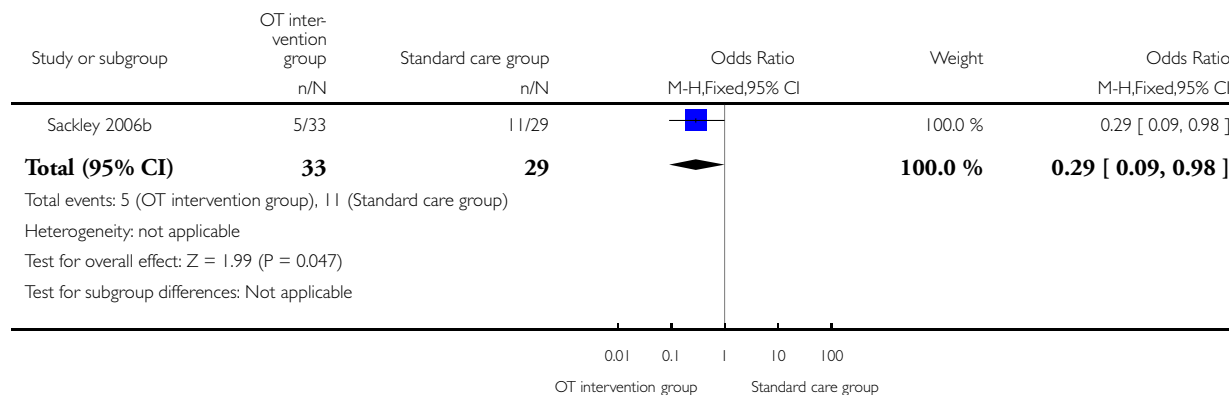


Analysis 1.4. Comparison 1 Occupational therapy versus standard care, Outcome 4 Death at the end of scheduled follow-up.

Review: Occupational therapy for care home residents with stroke

Comparison: 1 Occupational therapy versus standard care

Outcome: 4 Death at the end of scheduled follow-up

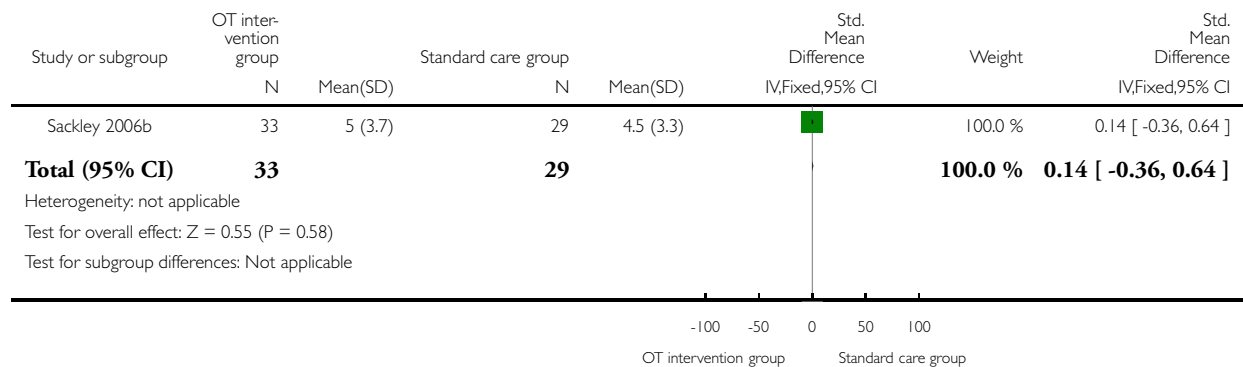


Analysis 1.5. Comparison 1 Occupational therapy versus standard care, Outcome 5 Mobility (Rivermead Mobility Index score) at the end of scheduled follow-up.

Review: Occupational therapy for care home residents with stroke

Comparison: 1 Occupational therapy versus standard care

Outcome: 5 Mobility (Rivermead Mobility Index score) at the end of scheduled follow-up



APPENDICES

Appendix I. Cochrane Central Register of Controlled Trials (CENTRAL) search strategy

1. (stroke):ti,ab,kw in Trials
2. (residential home):ti,ab,kw or (residential care):ti,ab,kw or (nursing home):ti,ab,kw or (care home):ti,ab,kw or (institution*):ti,ab,kw in Trials
3. (long-term care):ti,ab,kw in Trials
4. (#2 OR #3) in Title, Abstract or Keywords
5. (rehabilitation):ti,ab,kw or (activities of daily living):ti,ab,kw or (art therapy):ti,ab,kw or (bibliotherapy):ti,ab,kw or (dance therapy):ti,ab,kw in Trials
6. (exercise therapy):ti,ab,kw or (music therapy):ti,ab,kw or (occupational therapy):ti,ab,kw or (recreation therapy):ti,ab,kw or (vocational rehabilitation):ti,ab,kw in Trials
7. (leisure activities):ti,ab,kw or (recreation):ti,ab,kw or (human activities):ti,ab,kw or (task performance and analysis):ti,ab,kw or (self-care):ti,ab,kw in Trials
8. (recovery of function):ti,ab,kw or (goals):ti,ab,kw or (ADL):ti,ab,kw or (occupational therap*):ti,ab,kw or (exercise):ti,ab,kw in Trials
9. (leisure):ti,ab,kw or (recreation*):ti,ab,kw or (selfcare):ti,ab,kw or (personal care OR self manage* OR personal manage*):ti,ab,kw or (function):ti,ab,kw in Trials

10. (dressing OR feeding OR eating OR toilet* OR bathing OR washing OR grooming OR mobility):ti,ab,kw or (everyday activit* OR everyday functioning):ti,ab,kw or (gardening OR reading OR painting OR drawing OR craft* or dance OR dancing):ti,ab,kw in Trials
11. (#5 OR #6 OR #7 OR #8 OR #9 OR #10) in Title, Abstract or Keywords
12. (#1 AND #4 AND #11) in Title, Abstract or Keywords
13. (randomized controlled trial* OR cross-over OR cross over OR crossover):ti,ab,kw or (random allocation OR quasi-random* OR quasi random*):ti,ab,kw or (controlled clinical trial OR clinical trial OR assign* OR allocat*):ti,ab,kw or (control group* OR double-blind OR single-blind OR cross-over stud* OR masked):ti,ab,kw or (program evaluation OR comparative study OR random* OR RCT OR control):ti,ab,kw in Trials
14. (#12 AND #13) in Title, Abstract or Keywords

Appendix 2. MEDLINE search strategy

1. cerebrovascular disorders/ or exp basal ganglia cerebrovascular disease/ or exp brain ischemia/ or exp carotid artery diseases/ or exp intracranial arterial diseases/ or exp "intracranial embolism and thrombosis"/ or exp intracranial haemorrhages/ or stroke/ or exp brain infarction/ or stroke, lacunar/ or vertebral artery dissection/
2. (stroke or poststroke or post-stroke or cerebrovasc\$ or brain vas\$ or cerebral vas\$ or cva\$ or apoplex\$ or SAH).tw.
3. ((brain\$ or cerebr\$ or cerebell\$ or intracran\$ or intracerebral) adj5 (isch?emi\$ or infarct\$ or thrombo\$ or emboli\$ or occlus\$)).tw.
4. ((brain\$ or cerebr\$ or cerebell\$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage\$ or hemorrhage\$ or haematoma\$ or hematoma\$ or bleed\$)).tw.
5. hemiplegia/ or exp paresis/
6. (hemipleg\$ or hemipar\$ or paresis or paretic).tw.
7. 1 or 2 or 3 or 4 or 5 or 6
8. residential facilities/ or group homes/ or halfway houses/ or homes for the aged/ or exp nursing homes/
9. institutionalization/ or long-term care/ or Housing for the Elderly/
10. ((care or nursing or residential or rest or old\$ people\$ or old folk\$ or group or geriatric) adj2 (home or homes)).tw.
11. ((long term or long-term or residential or institution\$) adj care).tw.
12. ((aged or elderly or geriatric or extended) adj2 care adj2 (facility or facilities)).tw.
13. ((aged or elderly) adj3 (home or homes)).tw.
14. 8 or 9 or 10 or 11 or 12 or 13
15. rehabilitation/ or "activities of daily living"/ or art therapy/ or bibliotherapy/ or dance therapy/ or exp exercise therapy/ or music therapy/ or occupational therapy/ or recreation therapy/ or rehabilitation, vocational/
16. leisure activities/ or exp recreation/ or human activities/
17. "Task Performance and Analysis"/ or self-care/ or recovery of function/ or goals/
18. ((activit\$ adj3 daily living) or ADL or ADLs).tw.
19. (occupational therap\$ or rehabilitation or exercis\$ or leisure or recreation\$ or self-care or selfcare).tw.
20. ((self or personal) adj5 (care or manage\$)).tw.
21. (recover\$ adj5 function\$).tw.
22. (dressing or feeding or eating or toilet\$ or bathing or washing or grooming or mobility).tw.
23. (everyday adj3 (activit\$ or functioning)).tw.
24. (gardening or reading or painting or drawing or craft\$ or dance or dancing).tw.
25. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. 7 and 14 and 25
27. cerebrovascular disorders/rh or exp basal ganglia cerebrovascular disease/rh or exp brain ischemia/rh or exp carotid artery diseases/rh or exp intracranial arterial diseases/rh or exp "intracranial embolism and thrombosis"/rh or exp intracranial hemorrhages/rh or stroke/ rh or exp brain infarction/rh or stroke, lacunar/rh or vertebral artery dissection/rh
28. 14 and 27
29. 26 or 28
30. Randomized Controlled Trials as Topic/
31. random allocation/
32. Controlled Clinical Trials as Topic/
33. control groups/

34. clinical trials as topic/
35. double-blind method/
36. single-blind method/
37. cross-over studies/
38. Therapies, Investigational/
39. Research Design/
40. Program Evaluation/
41. evaluation studies as topic/
42. randomized controlled trial.pt.
43. controlled clinical trial.pt.
44. clinical trial.pt.
45. (evaluation studies or comparative study).pt.
46. (random\$ or RCT or RCTs).tw.
47. (controlled adj5 (trial\$ or stud\$)).tw.
48. (clinical\$ adj5 trial\$).tw.
49. ((control or treatment or experiment\$ or intervention) adj5 (group\$ or subject\$ or patient\$)).tw.
50. (quasi-random\$ or quasi random\$ or pseudo-random\$ or pseudo random\$).tw.
51. ((control or experiment\$ or conservative) adj5 (treatment or therapy or procedure or manage\$)).tw.
52. ((singl\$ or doubl\$ or tripl\$ or trebl\$) adj5 (blind\$ or mask\$)).tw.
53. (cross-over or cross over or crossover).tw.
54. (assign\$ or allocat\$).tw.
55. controls.tw.
56. or/30-55
57. 29 and 56

Appendix 3. EMBASE search strategy

1. cerebrovascular disorders/ or exp basal ganglia cerebrovascular disease/ or exp brain ischemia/ or exp carotid artery diseases/ or exp intracranial arterial diseases/ or exp "intracranial embolism and thrombosis"/ or exp intracranial haemorrhages/ or stroke/ or exp brain infarction/ or stroke, lacunar/ or vertebral artery dissection/
2. (stroke or poststroke or post-stroke or cerebrovasc\$ or brain vasc\$ or cerebral vasc\$ or cva\$ or apoplex\$ or SAH).tw.
3. ((brain\$ or cerebr\$ or cerebell\$ or intracran\$ or intracerebral) adj5 (isch?emi\$ or infarct\$ or thrombo\$ or emboli\$ or occlus\$)).tw.
4. ((brain\$ or cerebr\$ or cerebell\$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage\$ or hemorrhage\$ or haematoma\$ or hematoma\$ or bleed\$)).tw.
5. hemiplegia/ or exp paresis/
6. (hemipleg\$ or hemipar\$ or paresis or paretic).tw.
7. 1 or 2 or 3 or 4 or 5 or 6
8. residential facilities/ or group homes/ or halfway houses/ or homes for the aged/ or exp nursing homes/
9. institutionalization/ or long-term care/ or Housing for the Elderly/
10. ((care or nursing or residential or rest or old\$ people\$ or old folk\$ or group or geriatric) adj2 (home or homes)).tw.
11. ((long term or long-term or residential or institution\$) adj care).tw.
12. ((aged or elderly or geriatric or extended) adj2 care adj2 (facility or facilities)).tw.
13. ((aged or elderly) adj3 (home or homes)).tw.
14. 8 or 9 or 10 or 11 or 12 or 13
15. rehabilitation/ or "activities of daily living"/ or art therapy/ or bibliotherapy/ or dance therapy/ or exp exercise therapy/ or music therapy/ or occupational therapy/ or recreation therapy/ or rehabilitation, vocational/
16. leisure activities/ or exp recreation/ or human activities/
17. "Task Performance and Analysis"/ or self-care/ or recovery of function/ or goals/
18. ((activit\$ adj3 daily living) or ADL or ADLs).tw.
19. (occupational therap\$ or rehabilitation or exercis\$ or leisure or recreation\$ or self-care or selfcare).tw.

20. ((self or personal) adj5 (care or manage\$)).tw.
21. (recover\$ adj5 function\$).tw.
22. (dressing or feeding or eating or toilet\$ or bathing or washing or grooming or mobility).tw.
23. (everyday adj3 (activit\$ or functioning)).tw.
24. (gardening or reading or painting or drawing or craft\$ or dance or dancing).tw.
25. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. 7 and 14 and 25
27. cerebrovascular disorders/rh or exp basal ganglia cerebrovascular disease/rh or exp brain ischemia/rh or exp carotid artery diseases/rh or exp intracranial arterial diseases/rh or exp "intracranial embolism and thrombosis"/rh or exp intracranial hemorrhages/rh or stroke/rh or exp brain infarction/rh or stroke, lacunar/rh or vertebral artery dissection/rh
28. 14 and 27
29. 26 or 28
30. Randomized Controlled Trials as Topic/
31. random allocation/
32. Controlled Clinical Trials as Topic/
33. control groups/
34. clinical trials as topic/
35. double-blind method/
36. single-blind method/
37. cross-over studies/
38. Therapies, Investigational/
39. Research Design/
40. Program Evaluation/
41. evaluation studies as topic/
42. randomized controlled trial.pt.
43. controlled clinical trial.pt.
44. clinical trial.pt.
45. (evaluation studies or comparative study).pt.
46. (random\$ or RCT or RCTs).tw.
47. (controlled adj5 (trial\$ or stud\$)).tw.
48. (clinical\$ adj5 trial\$).tw.
49. ((control or treatment or experiment\$ or intervention) adj5 (group\$ or subject\$ or patient\$)).tw.
50. (quasi-random\$ or quasi random\$ or pseudo-random\$ or pseudo random\$).tw.
51. ((control or experiment\$ or conservative) adj5 (treatment or therapy or procedure or manage\$)).tw.
52. ((singl\$ or doubl\$ or tripl\$ or trebl\$) adj5 (blind\$ or mask\$)).tw.
53. (cross-over or cross over or crossover).tw.
54. (assign\$ or allocat\$).tw.
55. controls.tw.
56. or/30-55
57. 29 and 56

Appendix 4. CINAHL search strategy

1. TX cerebrovascular disorder* or basal ganglia cerebrovascular disease or brain ischemia or carotid * diseases or intracranial * diseases or intracranial embolism or intracranial thrombosis or intracranial haemorrhage* or stroke or brain infarct* or lacunar stroke or vertebral artery dissection or poststroke or post-stroke or cerebrovasc* or brain vasc* or cerebral vasc* or cva* or apoplex* or SAH or brain* isch#emi* or brain* infarct* or brain* thrombo* or brain* emboli* or brain* oclus* or cerebr* isch#emi* or cerebr* infarct* or cerebr* thrombo* or cerebr* emboli* or cerebr* oclus* or cerebell* isch#emi* or cerebell* infarct* or cerebell* thrombo* or cerebell* emboli* or cerebell* oclus* or intracran* isch#emi* or intracran* infarct* or intracran* thrombo* or intracran* emboli* or intracran* oclus* or intracerebral isch#emi* or intracerebral* infarct* or intracerebral thrombo* or intracerebral emboli* or intracerebral oclus* or brain* haemorrhage* or brain* hemorrhage* or brain* h#ematoma* or brain* bleed* or cerebr* haemorrhage* or cerebr* hemorrhage* or cerebr* h#ematoma* or cerebr* bleed* or cerebell* haemorrhage* or cerebell* hemorrhage* or cerebell* h#ematoma* or cerebell* bleed* or intracerebral haemorrhage* or intracerebral hemorrhage* or intracerebral h#ematoma* or intracerebral bleed* or intracranial haemorrhage* or intracranial hemorrhage* or intracranial h#ematoma* or intracranial bleed* or subarachnoid haemorrhage* or subarachnoid hemorrhage* or subarachnoid h#ematoma* or subarachnoid bleed* or hemipleg* or paresis or hemipar* or paretic
2. TX residential facilit* or group home or halfway house* or homes for the aged or institutionalization or long-term care or Housing for the Elderly or care home* or nursing home* or residential home* or rest home* or old * home* or group home* or geriatric home* or long term care or long-term care or residential care or institution* care or aged care facilit* or elderly care facilit* or geriatric care facilit* or extended care facilit* or aged home* or elderly home*
3. TX rehabilitation or activities of daily living or art therapy or bibliotherapy or dance therapy or exercise therapy or music therapy or occupational therapy or recreation therapy or rehabilitation or vocational rehabilitation or leisure activities or recreation or human activities or task performance or task analysis or self-care or recovery * function or goals or activit* daily living or ADL or ADLs or occupational therap* or exercis* or leisure or recreation* or selfcare or personal care or personal manage* or self manage* or recover* function* or dressing or feeding or eating or toilet* or bathing or washing or grooming or mobility or everyday activit* or everyday functioning or gardening or reading or painting or drawing or craft* or dance or dancing
4. TX Randomized * trials or random allocation or Controlled * trials or control group* or clinical trial* or double-blind method or single-blind method or cross-over studies or research design or program evaluation or evaluation stud* or comparative study or random* trial* or random* stud* or RCT or RCTs or treatment group* or intervention group* or control subject* or treatment subject* or experiment* subject* or intervention subject* or control patient* or treatment patient* or experiment* patient* or intervention patient* or quasi-random* or quasi random* or pseudo-random* or pseudo random* or control or experiment* or conservative treatment or conservative therapy or conservative procedure or conservative manage* or singl* blind* or sing* mask* or doubl* blind* or doubl* mask* or tripl* blind* or tripl* mask* or trebl* blind* or trebl* mask* or cross-over or cross over or crossover or assign* or allocat* or controls
5. 1 AND 2 AND 3 AND 4

Appendix 5. AMED search strategy

1. cerebrovascular disorders/ or exp basal ganglia cerebrovascular disease/ or exp brain ischemia/ or exp carotid artery diseases/ or exp intracranial arterial diseases/ or exp "intracranial embolism and thrombosis"/ or exp intracranial haemorrhages/ or stroke/ or exp brain infarction/ or stroke, lacunar/ or vertebral artery dissection/
2. (stroke or poststroke or post-stroke or cerebrovasc\$ or brain vasc\$ or cerebral vasc\$ or cva\$ or apoplex\$ or SAH).tw.
3. ((brain\$ or cerebr\$ or cerebell\$ or intracran\$ or intracerebral) adj5 (isch?emi\$ or infarct\$ or thrombo\$ or emboli\$ or oclus\$)).tw.
4. ((brain\$ or cerebr\$ or cerebell\$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage\$ or hemorrhage\$ or haematoma\$ or hematoma\$ or bleed\$)).tw.
5. hemiplegia/ or exp paresis/
6. (hemipleg\$ or hemipar\$ or paresis or paretic).tw.
7. 1 or 2 or 3 or 4 or 5 or 6
8. residential facilities/ or group homes/ or halfway houses/ or homes for the aged/ or exp nursing homes/
9. institutionalization/ or long-term care/ or Housing for the Elderly/
10. ((care or nursing or residential or rest or old\$ people\$ or old folk\$ or group or geriatric) adj2 (home or homes)).tw.
11. ((long term or long-term or residential or institution\$) adj care).tw.
12. ((aged or elderly or geriatric or extended) adj2 care adj2 (facility or facilities)).tw.
13. ((aged or elderly) adj3 (home or homes)).tw.
14. 8 or 9 or 10 or 11 or 12 or 13

15. rehabilitation/ or “activities of daily living”/ or art therapy/ or bibliotherapy/ or dance therapy/ or exp exercise therapy/ or music therapy/ or occupational therapy/ or recreation therapy/ or rehabilitation, vocational/
16. leisure activities/ or exp recreation/ or human activities/
17. “Task Performance and Analysis”/ or self-care/ or recovery of function/ or goals/
18. ((activit\$ adj3 daily living) or ADL or ADLs).tw.
19. (occupational therap\$ or rehabilitation or exercis\$ or leisure or recreation\$ or self-care or selfcare).tw.
20. ((self or personal) adj5 (care or manage\$)).tw.
21. (recover\$ adj5 function\$).tw.
22. (dressing or feeding or eating or toilet\$ or bathing or washing or grooming or mobility).tw.
23. (everyday adj3 (activit\$ or functioning)).tw.
24. (gardening or reading or painting or drawing or craft\$ or dance or dancing).tw.
25. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. 7 and 14 and 25
27. cerebrovascular disorders/rh or exp basal ganglia cerebrovascular disease/rh or exp brain ischemia/rh or exp carotid artery diseases/rh or exp intracranial arterial diseases/rh or exp “intracranial embolism and thrombosis”/rh or exp intracranial hemorrhages/rh or stroke/rh or exp brain infarction/rh or stroke, lacunar/rh or vertebral artery dissection/rh
28. 14 and 27
29. 26 or 28
30. Randomized Controlled Trials as Topic/
31. random allocation/
32. Controlled Clinical Trials as Topic/
33. control groups/
34. clinical trials as topic/
35. double-blind method/
36. single-blind method/
37. cross-over studies/
38. Therapies, Investigational/
39. Research Design/
40. Program Evaluation/
41. evaluation studies as topic/
42. randomized controlled trial.pt.
43. controlled clinical trial.pt.
44. clinical trial.pt.
45. (evaluation studies or comparative study).pt.
46. (random\$ or RCT or RCTs).tw.
47. (controlled adj5 (trial\$ or stud\$)).tw.
48. (clinical\$ adj5 trial\$).tw.
49. ((control or treatment or experiment\$ or intervention) adj5 (group\$ or subject\$ or patient\$)).tw.
50. (quasi-random\$ or quasi random\$ or pseudo-random\$ or pseudo random\$).tw.
51. ((control or experiment\$ or conservative) adj5 (treatment or therapy or procedure or manage\$)).tw.
52. ((singl\$ or doubl\$ or tripl\$ or trebl\$) adj5 (blind\$ or mask\$)).tw.
53. (cross-over or cross over or crossover).tw.
54. (assign\$ or allocat\$).tw.
55. controls.tw.
56. or/30-55
57. 29 and 56

Appendix 6. Occupational therapy database of systematic reviews and randomised controlled trials (OT seeker) search strategy

stroke AND “care home” AND “occupational therapy”

Appendix 7. PsycINFO search strategy

1. cerebrovascular disorders/ or exp basal ganglia cerebrovascular disease/ or exp brain ischemia/ or exp carotid artery diseases/ or exp intracranial arterial diseases/ or exp “intracranial embolism and thrombosis”/ or exp intracranial haemorrhages/ or stroke/ or exp brain infarction/ or stroke, lacunar/ or vertebral artery dissection/
2. (stroke or poststroke or post-stroke or cerebrovasc\$ or brain vas\$ or cerebral vas\$ or cva\$ or apoplex\$ or SAH).tw.
3. ((brain\$ or cerebr\$ or cerebell\$ or intracran\$ or intracerebral) adj5 (isch?emi\$ or infarct\$ or thrombo\$ or emboli\$ or occlus\$)).tw.
4. ((brain\$ or cerebr\$ or cerebell\$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage\$ or hemorrhage\$ or haematoma\$ or hematoma\$ or bleed\$)).tw.
5. hemiplegia/ or exp paresis/
6. (hemipleg\$ or hemipar\$ or paresis or paretic).tw.
7. 1 or 2 or 3 or 4 or 5 or 6
8. residential facilities/ or group homes/ or halfway houses/ or homes for the aged/ or exp nursing homes/
9. institutionalization/ or long-term care/ or Housing for the Elderly/
10. ((care or nursing or residential or rest or old\$ people\$ or old folk\$ or group or geriatric) adj2 (home or homes)).tw.
11. ((long term or long-term or residential or institution\$) adj care).tw.
12. ((aged or elderly or geriatric or extended) adj2 care adj2 (facility or facilities)).tw.
13. ((aged or elderly) adj3 (home or homes)).tw.
14. 8 or 9 or 10 or 11 or 12 or 13
15. rehabilitation/ or “activities of daily living”/ or art therapy/ or bibliotherapy/ or dance therapy/ or exp exercise therapy/ or music therapy/ or occupational therapy/ or recreation therapy/ or rehabilitation, vocational/
16. leisure activities/ or exp recreation/ or human activities/
17. “Task Performance and Analysis”/ or self-care/ or recovery of function/ or goals/
18. ((activit\$ adj3 daily living) or ADL or ADLs).tw.
19. (occupational therap\$ or rehabilitation or exercis\$ or leisure or recreation\$ or self-care or selfcare).tw.
20. ((self or personal) adj5 (care or manage\$)).tw.
21. (recover\$ adj5 function\$).tw.
22. (dressing or feeding or eating or toilet\$ or bathing or washing or grooming or mobility).tw.
23. (everyday adj3 (activit\$ or functioning)).tw.
24. (gardening or reading or painting or drawing or craft\$ or dance or dancing).tw.
25. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
26. 7 and 14 and 25
27. cerebrovascular disorders/rh or exp basal ganglia cerebrovascular disease/rh or exp brain ischemia/rh or exp carotid artery diseases/rh or exp intracranial arterial diseases/rh or exp “intracranial embolism and thrombosis”/rh or exp intracranial hemorrhages/rh or stroke/ rh or exp brain infarction/rh or stroke, lacunar/rh or vertebral artery dissection/rh
28. 14 and 27
29. 26 or 28
30. Randomized Controlled Trials as Topic/
31. random allocation/
32. Controlled Clinical Trials as Topic/
33. control groups/
34. clinical trials as topic/
35. double-blind method/
36. single-blind method/
37. cross-over studies/
38. Therapies, Investigational/
39. Research Design/
40. Program Evaluation/

41. evaluation studies as topic/
42. randomized controlled trial.pt.
43. controlled clinical trial.pt.
44. clinical trial.pt.
45. (evaluation studies or comparative study).pt.
46. (random\$ or RCT or RCTs).tw.
47. (controlled adj5 (trial\$ or stud\$)).tw.
48. (clinical\$ adj5 trial\$).tw.
49. ((control or treatment or experiment\$ or intervention) adj5 (group\$ or subject\$ or patient\$)).tw.
50. (quasi-random\$ or quasi random\$ or pseudo-random\$ or pseudo random\$).tw.
51. ((control or experiment\$ or conservative) adj5 (treatment or therapy or procedure or manage\$)).tw.
52. ((singl\$ or doubl\$ or tripl\$ or trebl\$) adj5 (blind\$ or mask\$)).tw.
53. (cross-over or cross over or crossover).tw.
54. (assign\$ or allocat\$).tw.
55. controls.tw.
56. or/30-55
57. 29 and 56

Appendix 8. PEDro search strategy

stroke AND occupational therapy AND care home

Appendix 9. ASSIA search strategy

((all("cerebrovascular disorders") OR "stroke" OR ("brain infarction" OR "brain haemorrhage") OR all("carotid artery disease*") OR "vertebral artery dissection") AND ("residential home*" OR "nursing home*" OR "group homes" OR "homes for the aged" OR "long-term care" OR "long term care" OR institutionalization* OR "institutional care")) AND (rehabilitation or "activities of daily living" or "art therapy" or bibliotherapy or "dance therapy" or "exercise therapy" or "music therapy" or "occupational therapy" or "recreation therapy" or "vocational rehabilitation" or "leisure activities" or "recreation" or "human activities" or "task performance and analysis" or "self-care" or "recovery of function" or "goals" or ADL or ADLs or "occupational therapist" or "exercise" or leisure or recreation* or selfcare or "self care" or "self manage*" or "personal care" or "personal manage*" or dressing or feeding or eating or toilet* or bathing or washing or grooming or mobility or "everday activit*" or "everyday functioning" or gardening or reading or painting or drawing or craft* or dance or dancing) AND ("randomized controlled trial*" or "random allocation" or "controlled clinical trials" or "control groups" or "clinical trial*" or "double-blind" or "single-blind" "cross-over studies" or "program evaluation" or random* or RCT or RCTs or "controlled trial*" or "controlled stud*" or "control group*" or "treatment group*" or "experimental group*" or "intervention group*" or "quasi-random*" or "quasi random*" or "pseudo-random*" or "pseudo random" or control or "single blind*" or "double blind*" or "tr* blind*" or cross-over or "cross over" or crossover or assign* or allocat* or controls)

Appendix 10. NHS Economic Evaluation Database (NHS EED) search strategy

((stroke) in Title, Abstract or Keywords and (residential home) OR (residential care) OR (nursing home) OR (care home) OR (institution*) OR (long-term care) in Title, Abstract or Keywords and (rehabilitation) OR (activities of daily living) OR (art therapy) OR (bibliotherapy) OR (dance therapy) OR (exercise therapy) or (music therapy) OR (occupational therapy) OR (recreation therapy) OR (vocational rehabilitation) OR (leisure activities) OR (recreation) OR (human activities) OR (task performance and analysis) OR (self-care) OR (recovery of function) OR (goals) OR (ADL) OR (occupational therap*) or (exercise) OR (leisure) OR (recreation*) OR (selfcare) OR (personal care OR self manage* OR personal manage*) or (function) in Title, Abstract or Keywords or (dressing or feeding or eating or toilet* or bathing or washing or grooming or mobility) OR (everyday activit* OR everyday functioning) OR (gardening OR reading OR painting OR drawing OR craft* OR dance OR dancing) in Title, Abstract or Keywords and (randomized controlled trial* OR cross-over OR cross over OR crossover) OR (random allocation OR quasi-random* OR quasi random) OR (controlled

clinical trial OR clinical trial OR assign* OR allocat*) OR (control group* OR double-blind OR single-blind OR cross-over stud* OR masked) OR (program evaluation OR comparative study OR random* OR RCT OR control) in Title, Abstract or Keywords in NHS Economic Evaluation Database”

Appendix 11. ERIC search strategy

((all(“cerebrovascular disorders”) OR “stroke” OR (“brain infarction” OR “brain haemorrhage”) OR all(“carotid artery disease*”) OR “vertebral artery dissection”) AND (“residential home*” OR “nursing home*” OR “group homes” OR “homes for the aged” OR “long-term care” OR “long term care” OR institutionalization* OR “institutional care”)) AND (rehabilitation or “activities of daily living” or “art therapy” or bibliotherapy or “dance therapy” or “exercise therapy” or “music therapy” or “occupational therapy” or “recreation therapy” or “vocational rehabilitation” or “leisure activities” or “recreation” or “human activities” or “task performance and analysis” or “self-care” or “recovery of function” or “goals” or ADL or ADLs or “occupational therapist” or “exercise” or leisure or recreation* or selfcare or “self care” or “self manage*” or “personal care” or “personal manage*” or dressing or feeding or eating or toilet* or bathing or washing or grooming or mobility or “everyday activit*” or “everyday functioning” or gardening or reading or painting or drawing or craft* or dance or dancing) AND (“randomized controlled trial*” or “random allocation” or “controlled clinical trials” or “control groups” or “clinical trial*” or “double-blind” or “single-blind” “cross-over studies” or “program evaluation” or random* or RCT or RCTs or “controlled trial*” or “controlled stud*” or “control group*” or “treatment group*” or “experimental group*” or “intervention group*” or “quasi-random*” or “quasi random*” or “pseudo-random*” or “pseudo random” or control or “single blind*” or “double blind*” or “tr* blind*” or cross-over or “cross over” or crossover or assign* or allocat* or controls)

Appendix 12. CIRRIE search strategy

1. stroke (subject)
2. AND occupational therapy (subject)
3. AND care home (subject)
4. OR nursing home (subject)
5. OR residential home (subject)

Appendix 13. Web of Science search strategy

1. Topic=(stroke or poststroke or “post stroke” or apoplex* or cerebrovasc* or brain vas* or cerebral vas* or cva or SAH or “cerebrovascular disorders” or “basal ganglia cerebrovascular disease” or “brain ischemia” or “carotid artery diseases” or “intracranial arterial diseases” or “intracranial embolism” or “intracranial thrombosis” or “intracranial haemorrhages” or “brain infarction” or “lacunar stroke” or “vertebral artery dissection”) OR Topic=(brain isch\$emi* or brain infarct or brain thrombo* or brain emboli* or brain occlus* or brain h\$emorrhage\$ or hemiplegia or paresis or hemipleg* or hemipar* or paresis or paretic)
2. TS=(“residential facilities” or “group homes” or “halfway houses” or “homes for the aged” or “nursing homes” or “institutionalization” or “long term care” or “housing for the elderly” or “care home*” or “nursing home*” or “residential home*” or “rest home*” or “old peoples home*” or “old folks home*” or “geriatric home*” or “long-term care” or “residential care” or “institutional care”)
3. TS=(rehabilitation or “activities of daily living” or “art therapy” or bibliotherapy or “dance therapy” or “exercise therapy” or “music therapy” or “occupational therapy” or “recreation therapy” or “vocational rehabilitation” or “leisure activities” or recreation or “human activities” or “task performance” or “task analysis” or “self care” or “recovery of function” or goals or ADL* or “occupational therap*” or exercise or leisure or recreation* or selfcare or “self manage*” or “personal care” or “personal manage*” or “recovery of function” or dressing or feeding or eating or toilet* or bathing or washing or grooming or mobility or “everyday activit*” or “everyday functioning” or gardening or reading or painting or drawing or craft* or dance or dancing)
4. TS=(“randomized controlled trial*” or “random allocation” or “controlled clinical trial*” or “control group*” or “clinical trial*” or “double blind method” or “single blind method” or “cross over studies” or “investigational therapies” or “research design” or “program evaluation” or “evaluation stud*” or “comparative study” or random* or RCT* or “controlled trial*” or “controlled stud*” or “treatment group*” or “experiment* group*” or “intervention group*” or “quasi random*” or “pseudo random*” or “control treatment” or “control therapy” or “control procedure” or “experiment* treatment” or “experiment* therapy” or “experiment* procedure” or “conservative treatment” or “conservative therapy” or “conservative procedure” or “conservative manage*” or “single blind*” or “double blind*” or “triple blind*” or “treble blind*” or assign* or allocat* or controls)

5. #4 AND #3 AND #2 AND #1

CONTRIBUTIONS OF AUTHORS

JCF-S planned the review, wrote the first draft of the protocol and revised subsequent drafts, performed the searches, checked eligibility, extracted data from the studies and conducted the analyses. JCF-S wrote the first draft of the review paper and revised subsequent drafts in preparation for publication.

CSC reviewed eligibility of studies, extracted data from studies and provided comments on drafts of the review paper.

MFW acted as third review author and aided in independently reviewing the articles for which a discrepancy in outcomes between the first two review authors was noted. MFW also provided advice and comments and helped to revise the protocol and the subsequent review paper.

CMS provided advice and comments and helped to revise the protocol and the subsequent review paper.

EMJS helped to revise the protocol and provided guidance on methodology and on the plan for analysis.

All five authors collectively worked together to produce the final review paper.

DECLARATIONS OF INTEREST

JCF-S worked as a research therapist on an HTA-funded study of Occupational Therapy in Care Homes (OTCH). This study has now finished recruitment. This review is part of JFS's PhD programme of research.

MFW is a co-applicant on the HTA-funded OTCH study. This study has now finished recruitment.

CMS is the Chief Investigator for the NIHR HTA-funded OTCH trial.

SOURCES OF SUPPORT

Internal sources

- Wendy Stanton, Library Faculty Team Leader, University of Nottingham, UK.

Provided advice on the original MEDLINE search strategy and on adapting the search terms to suit different databases.

- Cochrane Schizophrenia Group, University of Nottingham, UK.

Provided training on undertaking a Cochrane systematic review and using Review Manager software to complete the review and meta-analysis process.

External sources

- Cochrane Stroke Group, UK.

Performed the search of the Cochrane Stroke Group Trials Register.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

No changes were made to the protocol to enable completion of this review, apart from a change of review author. Because of unforeseen circumstances, Maxwell Feltham was replaced by Christine Cobley as review author one week after the protocol was published.

INDEX TERMS

Medical Subject Headings (MeSH)

*Nursing Homes; *Stroke Rehabilitation; Activities of Daily Living; Disabled Persons [*rehabilitation]; Occupational Therapy [*methods]; Randomized Controlled Trials as Topic

MeSH check words

Adult; Humans