The effectiveness of training and other interventions in care homes

Background

Over the last 30-40 years care homes have changed from an alternative form of accommodation in later life to a place for those with the highest support needs towards the end of life. The proportion of residents with dementia has steadily increased and lengths of stay have decreased.[1]

Interventions in care homes cover a very broad range and are mainly addressed at the key issues faced by care home staff and residents for example the handling and use of medication, poor sleep patterns, falls, challenging behaviour, dealing with depression and dementia, the spread of contagious diseases and infections, lack of physical activity or end-of-life care.

Most training interventions are training for a particular purpose and many are therefore, within this review, reported under the relevant intervention purpose, for example alleviating challenging behaviour or depression, with, where appropriate, a cross-reference under training.

Summary and key findings

- Training in care homes is essential and has, in the past, not always considered to be adequate. Because of their heterogeneity, training interventions in care homes will have variable outcomes. Staff training has been shown to be effective in reducing apathy and challenging behaviour in residents as well as in recognising and reducing depression. Training has improved staff behaviour management and communication skills and has reduced the use of sedation in dementia. Person-centred training interventions have been shown to be effective in improving agitation and reducing the use of antipsychotics.
- Dementia, currently, cannot be cured or its progress reversed so interventions around dementia in residential care usually address the behavioural and psychological symptoms of dementia (BPSD) and improvements in quality of life for residents with dementia. Activity provision, sensory stimulation, Dementia Care Mapping and personalised interventions can reduce agitation and/or improve quality of life.
- Pain management, staff education and training, multidisciplinary interventions and person-centred interventions, including Montessori methods, have all been shown to be effective in reducing challenging behaviour in care home residents.

[1] Lievesley, Crosby, Bowman and Midwinter, *The Changing Role of Care Homes,* Centre for Policy on Ageing 2011

- There is no evidence that physical activity in care homes affects depression, or quality-of-life in dementia, but it may improve individual resident's perceptions of their own health.
- There is no evidence of the appropriateness or effectiveness of the use of care pathways in end-of-life care in care homes.
- Multi-faceted, staff oriented interventions, interventions to reduce medication use and interventions to provide high doses of vitamin D can all be effective in reducing falls in residential care.
- Vaccination of residents against pneumonia and influenza has been shown to be effective in reducing illness and mortality in residents, as has influenza vaccination of staff by promoting 'herd immunity'.
- Medication reviews in care home may be effective in reducing the level of psychotropic drug prescribing and reducing falls. There is also evidence that the use of pharmacy-managed barcode medication management systems may cut down on medication errors.
- Other reviews have found that interdisciplinary interventions, involving residents' primary physicians and/or pharmacists, have had a positive impact on resident outcomes.
- Night time sleep patterns in residential care are improved by acupressure, multi-component non-pharmacological interventions and bright light therapy but not by reductions in night-time noise and light events or reductions in day-time sleeping.
- The use of static air overlay mattresses in residential care may reduce the risk of pressure ulcers

Review of evidence

The reviewed evidence is listed in reverse chronological order with the most recent evidence first.

a) Reviews and overviews

Study	Findings
Graverholt B, Forsetlund L and Jamtvedt G (2014) Reducing hospital admissions from nursing homes: a systematic review, *BMC Health Services Research* 14 (36)	Five systematic reviews and five primary studies were included, evaluating a total of 11 different interventions. Fewer hospital admissions were found in four out of seven evaluations of structuring and standardising clinical practice; in both evaluations of geriatric specialist services, and in influenza vaccination of residents. The quality of the evidence for all comparisons was of low or very low quality. Author's synopsis: Few evaluations are conducted on the effects of interventions to reduce hospital admissions from nursing homes. Eleven evaluated interventions were identified, but none were tested more than once with a rigorous study design. Although the quality of evidence was low for all comparisons in this review, some of the interventions had effects on reducing hospital admissions. These interventions, such as advance care planning, palliative care, care pathways and geriatric specialist services, may represent important aspects of nursing home care to reduce hospital admissions and should be studied further. Our findings suggest an evidence-policy gap, where current policies and practices are lacking evidence-based management strategies to underpin them.
Nazir A, Unroe K, Tegeler M, Khan B, Azar J and Boustani M (2013) Systematic Review of Interdisciplinary Interventions in Nursing Homes, *Journal of the American Medical Directors Association* 14 (7) : 471-478	The study identified 27 RCTs: 7 had no statistically significant effect on the targeted primary outcome, 2 had a statistically negative effect, and 18 demonstrated a statistically positive effect. Participation of residents' own primary physicians (all 6 trials were positive) and/or a pharmacist (all 4 trials were positive) in the intervention were common elements of successful trials. For interventions that used formal team meetings, presence of communication and coordination among team members were the most commonly observed elements. Conclusion: Overall interdisciplinary interventions had a positive impact on resident outcomes in the NH setting. Participation of the residents' primary physician and/or a pharmacist in the intervention, as well as team communication and coordination, were consistent features of successful interventions.

Collet J, de Vugt M E, Verhey F R J and Schols J M G A (2010) Efficacy of integrated interventions combining psychiatric care and nursing home care for nursing home residents a review of the literature, *International Journal of Geriatric Psychiatry* 25 (1) : 3-13	Nursing home residents needing both psychiatric care and nursing home care for either somatic illness or dementia combined with psychiatric disorders or severe behavioural problems are referred to as Double Care Demanding patients, or DCD patients. Eight intervention trials, including four RCTs (2b level of evidence), were identified as relevant studies for the purpose of this review. Seven studies, three of which were RCTs, showed beneficial effects of a comprehensive, integrated multidisciplinary approach combining medical, psychiatric and nursing interventions on severe behavioural problems in DCD nursing home patients. Important elements of a successful treatment strategy for DCD nursing home patients include a thorough assessment of psychiatric, medical and environmental causes as well as programmes for teaching behavioural management skills to nurses. DCD nursing home patients were found to benefit from short-term mental hospital admission.

b) Challenging behaviour

Study	Methods	Findings
Husebo B S, Ballard C, Sandvik R, Nilsen O B and Aarsland D (2011) Efficacy of treating pain to reduce behavioural disturbances in residents of nursing homes with dementia: cluster randomised clinical trial, *BMJ* 343 : d4065	Objective: To determine whether a systematic approach to the treatment of pain can reduce agitation in people with moderate to severe dementia living in nursing homes. Design: Cluster randomised controlled trial. Setting: 60 clusters (single independent nursing home units) in 18 nursing homes within five municipalities of western Norway. Participants: 352 residents with moderate to severe dementia and clinically significant behavioural disturbances randomised to a stepwise protocol for the treatment of pain for eight weeks with additional follow-up four weeks after the end of treatment (33 clusters; n=175) or to usual treatment (control, 27 clusters; n=177). Intervention: Participants in the intervention group received individual daily treatment of pain for eight weeks according to the stepwise protocol, with paracetamol (acetaminophen), morphine, buprenorphine transdermal patch, or pregabaline. The control group received usual treatment and care.	Results: Agitation was significantly reduced in the intervention group compared with control group after eight weeks (repeated measures analysis of covariance adjusting for baseline score, P<0.001): the average reduction in scores for agitation was 17% (treatment effect estimate -7.0, 95% confidence interval -3.7 to -10.3). Treatment of pain was also significantly beneficial for the overall severity of neuropsychiatric symptoms (-9.0, -5.5 to -12.6) and pain (-1.3, -0.8 to -1.7), but the groups did not differ significantly for activities of daily living or cognition. Conclusion: A systematic approach to the management of pain significantly reduced agitation in residents of nursing homes with moderate to severe dementia. Effective management of pain can play an important part in the treatment of agitation and could reduce the number of unnecessary prescriptions for psychotropic drugs in this population.

Goyder J (2011) *Staff Training using STAR (Staff Training in Assisted Living*, D.Clin.Psy. Thesis , University College London	Effectiveness of staff training programmes for reducing Behavioural and Psychological Symptoms of Dementia (BPSD). Author's synopsis: A detailed review of the available literature indicated that staff training is a potentially valuable method of reducing BPSD in residents with dementia living in care homes, however, the poor quality of the available evidence and inconsistency of the findings makes it difficult to draw a firm conclusion. Seven RCTs revealed that training interventions were effective for reducing BPSD whilst three RCTs found positive trends despite a lack of significant findings. Three RCTs found no evidence in favour of the effectiveness of staff training interventions on BPSD. Five non-randomised designs obtained positive findings. One non-randomised study found a positive trend which failed to reach significance and one study found no influence of staff training on BPSD. Sixteen studies included a follow-up assessment. In the majority of studies, the positive effects of the training intervention were maintained at follow-up.	
Deudon A, Maubourguet N, Gervais X, Leone E, Brocker P, Carcaillon L, Riff S, Lavallart B and Robert P H (2009) Non-pharmacological management of behavioural symptoms in nursing homes, *International Journal of Geriatric Psychiatry* 24 (12) : 1386-1395	The effectiveness of a staff education intervention to manage BPSD in older people with a diagnosis of dementia was evaluated. The trial was conducted in 16 nursing homes in two regions of France; 306 patients with a diagnosis of dementia and presenting BPSD were selected. Nursing homes were randomly allocated to an intervention group or a control group. An 8-week staff education and training programme was conducted in the nursing homes in the intervention group. The main outcome measures were the Cohen-Mansfield Agitation Inventory (CMAI) and an Observation Scale (OS) score. Assessments were done at baseline (W0), at the end of the intervention period (W8) and 12 weeks after (W20).	There was a significant decrease in the global CMAI score between baseline and W8 (-7.8; $p > 0.01$) and between baseline and W20 (-6.5; $p > 0.01$) in the intervention group but not in the control group. Results of mixed linear models showed that the CMAI global score, the CMAI physically non-aggressive behaviours sub-scale score and verbally non-aggressive behaviours subscale score significantly decreased in the intervention group ($p < 0.001$), although there was no significant evolution in the control group. Direct assessment with the OS produced the same pattern of results, with a significant decrease only in the intervention group. Conclusion: The intervention reduced BPSD in severely demented nursing home residents and this effect was still present 3 months after the end of the programme.

Opie J, Doyle C and O'Connor D W (2002) Challenging behaviours in nursing home residents with dementia: a randomized controlled trial of multidisciplinary interventions, *International Journal of Geriatric Psychiatry* 17 (1) : 6-13	A 4-member team comprising a psychiatrist, psychologist and nurses conducted detailed assessments of 99 Australian nursing home residents with advanced dementia who were rated by staff as having frequent, severe behavioural disturbances. Residents were then randomly assigned to an "early" or "late" intervention group and observed for 4 weeks. Interventions encompassed psychological strategies, nursing approaches, psychotropic medications and management of pain. Outcome measures indicated the frequency and severity of disruptive behaviours and assessment of changes by senior nursing home staff.	While improvements in behaviour were noted in both groups from the outset of observation, pointing to a powerful 'Hawthorne effect', consultancies were associated with a modest but statistically significant decrease in challenging behaviours. The consultancies were also well-received by staff.

Neufeld R R, Libow L S, Foley W J, Dunbar J M, Cohen C and Breuer B (1999) Restraint reduction reduces serious injuries among nursing home residents, *Journal of the American Geriatrics Society* 47 (10) : 1202-1207	Objectives: To describe how removing physical restraints affected injuries in nursing home settings. Design: A 2-year prospective study of an educational intervention for physical restraint reduction. Setting: Sixteen diverse nursing homes with 2075 beds in California, Michigan, New York, and North Carolina. Participants: Study A: 859 residents who were physically restrained at the onset of the intervention on October 1, 1991. Study B: all residents who occupied the 2075 beds in the 16 facilities 3 months before the intervention and 3 months after its completion. Intervention: Educational program for nursing home staff followed by quarterly site consultations to participating nursing homes. Main outcome measures: Rate of physical restraint use and injuries.	In Study A: Serious injuries declined significantly among the 859 residents restrained initially when restraint orders were discontinued (X2 = 6.2, P =.013). In Study B: During the intervention period, physical restraint use among the 2075 residents decreased from 41% to 4%, a 90% reduction. The decrease in the percentage of injuries of moderate to serious severity was significant (i.e., 7.5% vs 4.4%, P2-tail =.0004) as was the rate of moderate and serious injuries combined (Rate Ratio = 1.580, P2-tail =.0033). Conclusions: A substantial decrease in restraint use occurred without an increase in serious injuries. Although minor injuries and falls increased, restraint-free care is safe when a comprehensive assessment is done and restraint alternatives are used.

c) Dementia

Study	Methods	Findings
Fossey J, Masson S, Stafford J, Lawrence V, Corbett A and Ballard C (2014) The disconnect between evidence and practice: a systematic review of person-centred interventions and training manuals for care home staff working with people with dementia, *International Journal of Geriatric Psychiatry*	The overall objective was to determine the availability of person-centred intervention and training manuals for dementia care staff with clinical trial evidence of efficacy. Interventions were identified using a search of electronic databases, augmented by mainstream search engines, reference lists, hand searching for resources and consultation with an expert panel. The specific search for published manuals was complemented by a search for randomised control trials focussing on training and activity-based interventions for people with dementia in care homes. Manuals were screened for eligibility and rated to assess their quality, relevance and feasibility.	A meta-analysis of randomised control trials indicated that person-centred training interventions conferred significant benefit in improving agitation and reducing the use of antipsychotics. Each of the efficacious packages included a sustained period of joint working and supervision with a trained mental health professional in addition to an educational element. However, of the 170 manuals that were identified, 30 met the quality criteria and only four had been evaluated in clinical trials. Conclusions: Despite the availability of a small number of evidence-based training manuals, there is a widespread use of person-centred intervention and training manuals that are not evidence-based. Clearer guidance is needed to ensure that commissioned training and interventions are based on robust evidence.

van de Ven G, Draskovic I, van Herpen E, Koopmans R T C M, Donders R, Zuidema S U, Adang E M M and Vernooij-Dasse M J F J (2014) The Economics of Dementia-Care Mapping in Nursing Homes: A Cluster-Randomised Controlled Trial, *PLoS ONE* 9 (1) : e86662	Dementia-care mapping (DCM) is a cyclic intervention aiming at reducing neuropsychiatric symptoms in people with dementia in nursing homes. Alongside an 18-month cluster-randomized controlled trial in which we studied the effectiveness of DCM on residents and staff outcomes, we investigated differences in costs of care between DCM and usual care in nursing homes. Dementia special care units were randomly assigned to DCM or usual care. Nurses from the intervention care homes received DCM training, a DCM organizational briefing day and conducted the 4-months DCM-intervention twice during the study. A single DCM cycle consists of observation, feedback to the staff, and action plans for the residents. We measured costs related to health care consumption, falls and psychotropic drug use at the resident level and absenteeism at the staff level. Data were extracted from resident files and the nursing home records. Prices were determined using the Dutch manual of health care cost and the cost prices delivered by a pharmacy and a nursing home. Total costs were evaluated by means of linear mixed-effect models for longitudinal data, with the unit as a random effect to correct for dependencies within units. Thirty-four units from 11 nursing homes, including 318 residents and 376 nursing staff members participated in the cost analyses.	Analyses showed no difference in total costs. However certain changes within costs could be noticed. The intervention group showed lower costs associated with outpatient hospital appointments over time ($p = 0.05$) than the control group. In both groups, the number of falls, costs associated with the elderly-care physician and nurse practitioner increased equally during the study ($p<0.02$). Conclusions: DCM is a cost-neutral intervention. It effectively reduces outpatient hospital appointments compared to usual care. Other considerations than costs, such as nursing homes' preferences, may determine whether they adopt the DCM method.

van der Ploeg E S, Eppingstall B, Camp C J, Runci S J, Taffe J and O'Connor D W (2013) A randomized crossover trial to study the effect of personalized, one-to-one interaction using Montessori-based activities on agitation, affect, and engagement in nursing home residents with dementia, Cambridge University Press *International Psychogeriatrics* 25 (4) : 565-575	The aim of this study was to test whether personalised one-to-one interaction activities based on Montessori principles would improve agitation, affect and engagement more than a relevant control condition. A randomised crossover trial was conducted in nine residential facilities in metropolitan Melbourne, Australia. Personalised one-to-one activities that were delivered using Montessori principles were compared with a non-personalised activity to control for the non-specific benefits of one-to-one interaction. Participants were observed 30 minutes before, during and after the sessions. The presence or absence of a selected physically non-aggressive behaviour was noted in every minute, together with the predominant type of affect and engagement.	Behaviour counts fell considerably during both the Montessori and control sessions relative to beforehand. During Montessori activities, the amount of time spent actively engaged was double compared to during the control condition and participants displayed more positive affect and interest as well. Participants with no fluency in English (all from non-English speaking backgrounds) showed a significantly larger reduction in agitation during the Montessori than control sessions. Overall these results show that even non-personalised social contact can assist in settling agitated residents. Tailoring activities to residents' needs and capabilities elicit more positive interactions and are especially suitable for people who have lost fluency in the language spoken predominantly in their residential facility.

Wenborn J, Challis D, Head J, Miranda-Castillo C, Popham C, Thakur R, Illes J and Orrell M (2013) Providing activity for people with dementia in care homes: a cluster randomised controlled trial, *International Journal of Geriatric Psychiatry* 28 (12) : 1296-1304	To assess an occupational therapy programme designed to enable care home staff to increase activity provision. A cluster randomised controlled trial with blinded assessment of outcome was conducted. A total of 210 residents with dementia in 16 care homes were recruited. Intervention homes received the programme, and control homes were provided usual care. Primary outcome is quality of life; secondary measures are dependency, challenging behaviour, depression, anxiety, severity of dementia and number and type of medication.	Quality of life decreased overall with statistically significant change in staff ratings ($p<0.001$). At follow-up, staff-rated quality of life was slightly lower in the intervention group (mean difference in staff ratings = -1.91, 95% CI -3.39 to -0.43, $p=0.01$). There were no significant differences between the two groups for self-rated quality of life or secondary outcomes. Conclusion Although the intervention had no measurable effect the results may be related to: wide variability in how the intervention was implemented, such as low staff attendance at the education and coaching sessions, and patchy provision of additional activities to residents; or the residents' severity of dementia or the choice of outcome measures.
Zimmerman S, Anderson W L, Brode S, Jonas D, Lux L, Beeber A S, Watson L C, Viswanathan M, Lohr K N and Sloane P D (2013) Systematic Review: Effective Characteristics of Nursing Homes and Other Residential Long-Term Care Settings for People with Dementia, *Journal of the American Geriatrics Society* 61 (8) : 1399-1409	An evidence-based review of factors within long-term care settings that affect the quality of care. This review compared characteristics of nursing homes and other residential long-term care settings for people with dementia and their informal family caregivers with respect to health and psychosocial outcomes. Fourteen articles meeting review criteria that were of at least fair quality were found: four prospective cohort studies, nine randomized controlled trials (RCTs), and one nonrandomized controlled trial.	Overall, low or insufficient strength of evidence was found regarding the effect of most organizational characteristics, structures, and processes of care on health and psychosocial outcomes for people with dementia and no evidence for informal caregivers. Findings of moderate strength of evidence indicate that pleasant sensory stimulation reduces agitation for people with dementia. Also, although the strength of evidence is low, protocols for individualized care and to improve function result in better outcomes for these individuals. Outcomes do not differ between nursing homes and residential care or assisted living settings for people with dementia except when medical care is indicated.

Goyder J (2011) *Staff Training using STAR (Staff Training in Assisted Living*, D.Clin.Psy. Thesis , University College London	See Challenging Behaviour	
Husebo B S, Ballard C, Sandvik R, Nilsen O B and Aarsland D (2011) Efficacy of treating pain to reduce behavioural disturbances in residents of nursing homes with dementia: cluster randomised clinical trial, *BMJ* 343 : d4065	See Challenging Behaviour	
Vasse E, Vernooij-Dassen M, Spijker A, Olde Rikkert M and Koopmans R (2010) A systematic review of communication strategies for people with dementia in residential and nursing homes, *International Psychogeriatrics* 22 (2) : 189-200	The aim of this review was to study the effects of non-pharmacological interventions in residential and nursing homes on (1) communication between residents with dementia and care staff, and (2) the neuropsychiatric symptoms of residents with dementia. Nineteen intervention studies were selected for review. They included structured and communicative "sessions at set times" for residents (e.g. life review) and communication techniques in activities of "daily care" applied by care staff (e.g. sensitivity to non-verbal communication).	A meta-analysis of five set-time interventions (communication) and another meta-analysis of four set-time interventions (neuropsychiatric outcomes) found no significant overall effects. Individual set-time intervention studies report positive effects on communication when interventions are single-task sessions, like life review or one-on-one conversation. Interventions around daily care activities had positive effects on communication outcomes. Effects of both types of interventions on neuropsychiatric symptoms were divergent. This review indicates that care staff can improve their communication with residents with dementia when strategies are embedded in daily care activities or interventions are single-task sessions at set times. These results offer the possibility of improving the quality of care, but not of directly reducing neuropsychiatric symptoms.

Deudon A, Maubourguet N, Gervais X, Leone E, Brocker P, Carcaillon L, Riff S, Lavallart B and Robert P H (2009) Non-pharmacological management of behavioural symptoms in nursing homes, *International Journal of Geriatric Psychiatry* 24 (12) : 1386-1395	See Challenging Behaviour	
Orrell M, Hancock G, Hoe J, Woods B, Livingston G and Challis D (2007) A cluster randomised controlled trial to reduce the unmet needs of people with dementia living in residential care, *International Journal of Geriatric Psychiatry* 22 (11) : 1127-1134	A single blind, multicentre, cluster randomised controlled trial recruited 238 people aged 60+ with dementia living in 24 residential homes from three areas (10 London, 8 North Wales, and 6 Manchester). Unmet needs, such as inadequate daytime activities, isolation and anxiety and depression, were measured by the Camberwell Assessment of Needs for the Elderly (CANE) and quality of life using the Quality of Life in Alzheimer's Disease (QoL-AD). Homes were randomised to the control (care as usual) or the intervention, 1 hour per week liaison input per home to deliver a personalised intervention package over 20 weeks to meet the unmet needs. A single blind follow-up included 192 (61%) available participants.	At follow-up, the total number of unmet needs was reduced in both groups, but analysing the groups by clusters there were no significant differences in either unmet needs or quality of life. The CANE can identify unmet needs; and while the assessment may have led to unmet needs being reduced at follow-up, the liaison intervention did not significantly reduce unmet needs relative to the control group. Unmet needs such as sensory problems, mobility, drugs, and psychological distress were especially reduced in the intervention group at follow-up.

Fossey J Enhanced psychosocial care as an alternative to use of antipsychotics in nursing homes for residents with severe dementia: a cluster randomised trial, *The Journal of Quality Research in Dementia: Issue 4*	To determine whether behavioural symptoms in people with severe dementia could be safely managed with focused intervention training and support, to reduce the proportion being treated with neuroleptics Six care homes were randomised to the training and support intervention and six to treatment as usual. All residents were analysed at each time point. This did not affect the primary analyses, carried out on the follow-up data at 12 months only. The personal and clinical characteristics of the residents in both sets of homes were similar at baseline.	At 12 months, 40 of 174 (23.0%) residents in the intervention homes were taking neuroleptics compared with 69 of 164 (42.1%) in the control homes: this was an average reduction 19.1% (95% confidence interval 0.5% to 37.7%). At 12 months the mean dose of neuroleptics was 107.1 in the control group and 102.1 in the intervention group: average difference 4.9 (-20.0 to 29.9). Adjusting for stratification variables confirmed this result (average difference 4.0, -22.0 to 29.9). After excluding those residents for whom withdrawal of neuroleptics would have been contraindicated, this difference increased to 19.3 (-7.0 to 45.7), with a mean dose of 114.3 in the control group and 94.9 in the intervention group. At the end of 12 months the percentage of residents from the intervention homes who were still prescribed neuroleptics was less than half that in the control homes. Episodes of aggressive behaviour and levels of agitation did not increase in homes with reduced prescribing of neuroleptics. However the training and support intervention did not have a significant effect on any of the secondary outcome measures (agitation, patient's quality of life, proportion of patients taking other psychotropic drugs, adverse events - including documented falls - and incidents involving irritable behaviour towards staff or other residents).

d) Depression

Study	Methods	Findings
Underwood M, Lamb S E, Eldridge S, Sheehan B, Slowther A-M, Spencer A, Thorogood M, Atherton N, Bremner S A, Devine A, Diaz-Ordaz K, Ellard D R, Potter R, Spanjers K and Taylor S J C (2013) Exercise for depression in elderly residents of care homes: a cluster-randomised controlled trial, *The Lancet* 382 (9886) : 41-49	A cluster-randomised controlled trial in care homes in two regions in England; northeast London, and Coventry and Warwickshire, randomised into intervention and control groups. The intervention package included depression awareness training for care-home staff, 45 min physiotherapist-led group exercise sessions for residents (delivered twice weekly), and a whole home component designed to encourage more physical activity in daily life. The control consisted of only the depression awareness training. The primary outcome was number of depressive symptoms on the geriatric depression scale-15 (GDS-15). Follow-up was for 12 months. At randomisation, 891 individuals in 78 care homes (35 intervention, 43 control) had provided baseline data.	Of residents with a GDS-15 score, 374 of 765 (49%) were depressed at baseline; 484 of 765 (63%) provided 12 month follow-up scores. Overall the GDS-15 score was 0·13 (95% CI -0·33 to 0·60) points higher (worse) at 12 months for the intervention group compared with the control group. Among residents depressed at baseline, GDS-15 score was 0·22 (95% CI -0·52 to 0·95) points higher at 6 months in the intervention group than in the control group. In an end of study cross-sectional analysis, including 132 additional residents joining after randomisation, the odds of being depressed were 0·76 (95% CI 0·53 to 1·09) for the intervention group compared with the control group. This moderately intense exercise programme did not reduce depressive symptoms in residents of care homes.

Conradsson M, Littbrand H, Lindelöf N, Gustafson Y and Rosendahl E (2010) Effects of a high-intensity functional exercise programme on depressive symptoms and psychological well-being among older people living in residential care facilities, Taylor & Francis *Aging & Mental Health* 14 (5) : 565-576	The effects of a high-intensity functional exercise programme on depressive symptoms and psychological well-being among older people dependent in activities of daily living (ADL) and living in residential care facilities were evaluated in this Swedish cluster-randomised controlled study. Participants were 191 older people, aged 65-100, dependent in activities of daily living (ADL) and with Mini Mental State Examination (MMSE) scores between 10 and 30. One hundred (52%) of the participants had a diagnosed dementia disorder. A high-intensity functional weight-bearing exercise programme and a control activity were performed in groups. Sessions were held five times over each two week period for three months, a total of 29 times. The outcome measures, Geriatric Depression Scale (GDS-15) and Philadelphia Geriatric Center Morale Scale (PGCMS) were blindly assessed at baseline, three and six months.	There were no significant differences in GDS or PGCMS between the exercise and the control group at the three and six month follow-ups in the total sample. Among people with dementia, there was a between-group difference at three months in PGCMS scores in favour of the exercise group. A high-intensity functional exercise programme seems generally not to influence depressive symptoms or psychological well-being among older people dependent in ADL and living in residential care facilities.
Lyne K J, Moxon S, Sinclair I, Young P, Kirk C and Ellison S (2006) Analysis of a care planning intervention for reducing depression in older people in residential care, *Aging & Mental Health* 10 (4) : 394-403	A training and care planning approach to reducing depression was implemented for 114 depressed residents living in 14 residential care homes in North Yorkshire. Care staff were offered brief mental health training by community mental health teams for older people. They were then assigned to work individually with residents in implementing the care planning intervention, which was aimed at alleviating depression and any health, social or emotional factors that might contribute to the resident's depression.	Clinically significant improvements in depression scores were associated with implementation of the intervention, as evidenced by changes in scores on the General Mental State Schedule - Depression Scale (GMS-DS). There was evidence of an interaction between the power of the intervention and degree of dementia. These improvements were not accounted for by any change in psychotropic medication.

e) End of life / Palliative care

Study	Methods	Findings
Chan R J and Webster J (2013) *End-of-life care pathways for improving outcomes in caring for*, The Cochrane Collaboration / JohnWiley & Sons, Ltd	End-of-life pathways are used for people who are in the last days of their life to guide care, aid decision making and provide efficient care. This review examined whether using end-of-life care pathways in caring for the dying was effective. We searched scientific databases for clinical trials in which the effect of the end-of-life care pathway was compared with a control group that received usual care or with trials comparing one end-of-life care pathway with another end-of-life care pathway.	Authors' synopsis We could not locate any high-quality controlled studies that could answer this important question; despite concerns about the Liverpool Care Pathway (the most commonly used end-of-life care pathway).

f) Falls

Study	Methods	Findings
Cameron I D, Murray G R, Gillespie L D, Robertson M C, Hill K D, Cumming R G and Kerse N (2010) *Interventions for preventing falls in older people in nursing care facilities and hospitals*, The Cochrane Collaboration – John Wiley & Sons, Ltd	A review of randomised controlled trials of interventions to reduce falls in older people in nursing care facilities or hospitals. Primary outcomes were rate of falls and risk of falling. In nursing care facilities, the results from seven trials testing supervised exercise interventions were inconsistent. This was the case too for multifactorial interventions, which overall did not significantly reduce the rate of falls (rate ratio (RaR) 0.82, 95% CI 0.62 to 1.08; 7 trials, 2997 participants) or risk of falling (risk ratio (RR) 0.93, 95% CI 0.86 to 1.01; 8 trials, 3271 participants). A post hoc subgroup analysis, however, indicated that where provided by a multidisciplinary team, multifactorial interventions reduced the rate of falls (RaR 0.60, 95% CI 0.51 to 0.72; 4 trials, 1651 participants) and risk of falling (RR 0.85, 95% CI 0.77 to 0.95; 5 trials, 1925 participants). Vitamin D supplementation reduced the rate of falls (RaR 0.72, 95% CI 0.55 to 0.95; 4 trials, 4512 participants), but not risk of falling (RR 0.98, 95% CI 0.89 to 1.09; 5 trials, 5095 participants).	Authors' conclusions There is evidence that multifactorial interventions reduce falls and risk of falling in hospitals and may do so in nursing care facilities. Vitamin D supplementation is effective in reducing the rate of falls in nursing care facilities. Exercise in subacute hospital settings appears effective but its effectiveness in nursing care facilities remains uncertain.

Bouwen A, de Lepeleire J and Buntinx F (2008) Rate of accidental falls in institutionalised older people with and without cognitive impairment halved as a result of a staff-oriented intervention, *Age and Ageing* 37 (3) : 306-310	In a clustered randomised controlled trial, 10 nursing wards from 7 nursing homes, 5 wards were randomised in a control and 5 in an intervention group. Nurses from the intervention group received multi-faceted training about the occurrences of accidental fall, risk factors for falls, and possible environmental modifications. For each fall, they were asked to record the relevant risk factors, to keep a fall diary and to evaluate fall causes and possible preventive actions. For all residents, cognition and mobility were evaluated using a Mini Mental State Examination (MMSE) and a Timed Up and Go Test (TUGT). Fall rate were recorded in an identical way for 6 months before and after the start of the intervention.	The relative risk of falling at least once in people in the intervention versus the control group, adjusted for the pre-intervention results, was 0.46. There was no difference between residents with and without cognitive impairment or impaired mobility. In those falling at least once, the difference between the average number of falls in the two intervention arms was not significant.
Sterke C S, Verhagen A P, van Beeck E F and . van der Cammen T J M (2008) The influence of drug use on fall incidents among nursing home residents: a systematic review, *International Psychogeriatrics, vol 20, no 5* 20 (5) : 890-910	The authors conducted a systematic review of the literature to investigate which psychoactive drugs increase fall risk, and what is known about the influence of these drugs on gait in nursing home residents with dementia. 17 studies were included in this review, including studies with a prospective cohort design. Pooled risk estimates were not calculated because there was no homogeneity across studies. The strength of evidence for psychoactive drugs as a prognostic factor for falls was assessed by defining four levels of evidence: strong, moderate, limited or inconclusive. Strong evidence was defined as consistent findings (80% or more) in at least two high quality cohorts.	Strong evidence was found that the use of multiple drugs (3/3 cohorts, effect sizes 1.30-10.30), antidepressants (10/12 cohorts, effect sizes 1.10-7.60), and anti-anxiety drugs (2/2 cohorts, effect sizes 1.22-1.32) is associated with increased fall risk. The evidence for the associations of other psychoactive drug classes with fall risk was limited or inconclusive. Although the research available is limited, the scarce evidence shows that multiple drugs, antidepressants and anti-anxiety drugs increase fall risk in nursing home populations with residents with dementia.

Broe K E, Chen T C, Weinberg J, Bischoff-Ferrari H A, Holick M F and Kiel D P (2007) A Higher Dose of Vitamin D Reduces the Risk of Falls in Nursing Home Residents: A Randomized, Multiple-Dose Study, *Journal of the American Geriatrics Society* 55 (2) : 234-239	To determine the effect of four vitamin D supplement doses on falls risk in elderly nursing home residents. Design: Secondary data analysis of a previously conducted randomized clinical trial. Setting: Seven hundred twenty-five-bed long-term care facility. Participants: One hundred twenty-four nursing home residents (average age 89). Intervention: Participants were randomly assigned to receive one of four vitamin D supplement doses (200 IU, 400 IU, 600 IU, or 800 IU) or placebo daily for 5 months. Measurements: Number of fallers and number of falls assessed using facility incident tracking database.	Over the 5-month study period, the proportion of participants with falls was 44% in the placebo group (11/25), 58% (15/26) in the 200 IU group, 60% (15/25) in the 400 IU group, 60% (15/25) in the 600 IU group, and 20% (5/23) in the 800 IU group. Participants in the 800 IU group had a 72% lower adjusted-incidence rate ratio of falls than those taking placebo over the 5 months (rate ratio=0.28; 95% confidence interval=0.11–0.75). No significant differences were observed for the adjusted fall rates compared to placebo in any of the other supplement groups. Conclusion: Nursing home residents in the highest vitamin D group (800 IU) had a lower number of fallers and a lower incidence rate of falls over 5 months than those taking lower doses. Adequate vitamin D supplementation in elderly nursing home residents could reduce the number of falls experienced by this high falls risk group.

Flicker L, MacInnis R J, Stein M S, Scherer S C, Mead K E, Nowson C A, Thomas J, Lowndes C, Hopper J L and Wark J D (2005) Should Older People in Residential Care Receive Vitamin D to Prevent Falls? Results of a Randomized Trial, *Journal of the American Geriatrics Society* 53 (11) : 1881-1888	To determine whether vitamin D supplementation can reduce the incidence of falls and fractures in older people in residential care who are not classically vitamin D deficient. Design: Randomized, placebo-controlled double-blind, trial of 2 years' duration. Setting: Multicenter study in 60 hostels (assisted living facilities) and 89 nursing homes across Australia. Participants: Six hundred twenty-five residents (mean age 83.4) with serum 25-hydroxyvitamin D levels between 25 and 90 nmol/L. Intervention: Vitamin D supplementation (ergocalciferol, initially 10,000 IU given once weekly and then 1,000 IU daily) or placebo for 2 years. All subjects received 600 mg of elemental calcium daily as calcium carbonate. Measurements: Falls and fractures recorded prospectively in study diaries by care staff.	The vitamin D and placebo groups had similar baseline characteristics. In intention-to-treat analysis, the incident rate ratio for falling was 0.73 (95% confidence interval (CI)=0.57–0.95). The odds ratio for ever falling was 0.82 (95% CI=0.59–1.12) and for ever fracturing was 0.69 (95% CI=0.40–1.18). An a priori subgroup analysis of subjects who took at least half the prescribed capsules (n=540), demonstrated an incident rate ratio for falls of 0.63 (95% CI=0.48–0.82), an odds ratio (OR) for ever falling of 0.70 (95% CI=0.50–0.99), and an OR for ever fracturing of 0.68 (95% CI=0.38–1.22). Conclusion: Older people in residential care can reduce their incidence of falls if they take a vitamin D supplement for 2 years even if they are not initially classically vitamin D deficient.

Kerse N, Butler M, Robinson E and Todd M (2004) Fall Prevention in Residential Care: A Cluster, Randomized, Controlled Trial, *Journal of the American Geriatrics Society* 52 (4) : 524-531	To establish the effectiveness of a fall-prevention program in reducing falls and injurious falls in older residential care residents. Design: Cluster, randomized, controlled trial. Setting: Fourteen randomly selected residential care homes in Auckland, New Zealand. Participants: All older residents (n=628, 95% participation rate). Intervention: Residential care staff, using existing resources, implemented systematic individualized fall-risk management for all residents using a fall-risk assessment tool, high-risk logo, and strategies to address identified risks. Measurements: Number of residents sustaining a fall, falls, and injurious-falls incidence rates.	During 12 months of follow-up, 103 (43%) residents in the control group and 173 (56%) residents in the intervention group fell (P<.018). There was a significantly higher incidence rate of falls in intervention homes than in control homes (incident rate ratio=1.34, 95% confidence interval=1.06–1.72) during the intervention period after adjusting for dependency level (type of home), baseline fall rate, and clustering. There was no difference in the injurious fall incidence rate or incidence of serious injuries. Conclusion: This fall-prevention intervention did not reduce falls or injury from falls. Low-intensity intervention may be worse than usual care.

Dyer C A E, Taylor G J, Reed M, Dyer C A, Robertson D R and Harrington R (2004) Falls prevention in residential care homes: a randomised controlled trial, *Age and Ageing* 33 (6) : 596-602	A cluster randomised controlled trial to determine the effect of risk factor modification and balance exercise on falls rates in residential care homes. 196 residents (aged 60 years or over) in 20 residential care homes were enrolled (38% response rate). Homes were randomly allocated to intervention and control arms. A total of 102 residents were consigned to the intervention arm and 94 to the control arm. Intervention: a multifactorial falls prevention programme including 3 months gait and balance training, medication review, podiatry and optometry. Main outcome measures: number of falls/recurrent falls per person, number of medications per person, and change in Tinetti gait and balance measure.	In the intervention group there was a mean of 2.2 falls per resident per year compared with 4.0 in the control group; this failed to reach statistical significance (P = 0.2) once the intra-cluster correlation (ICC, 0.10) had been accounted for. Several risk factors were reduced in the intervention arm. Conclusions: falls risk factor reduction is possible in residents of care homes. A modest reduction in falls rates was demonstrated but this failed to reach statistical significance.

McMurdo M E T, Millar A M and Daly F (2000) A Randomized Controlled Trial of Fall Prevention Strategies in Old Peoples' Homes, *Gerontology* 46 : 83-87	To evaluate the effectiveness of falls risk factor assessment/modification and seated balance exercise training in reducing falls among elderly people living in residential care, 133 residents with a mean age of 84± (SD) 6.8 years were allocated at random by home to receive either a 6-month falls risk factor assessment/modification and seated balance exercise training programme (n = 77) or 6 months of reminiscence therapy (n = 56). The risk factors targeted were postural hypotension, polypharmacy, visual acuity, and ambient lighting levels Only 90 of 133 (67.7%) residents completed the 6-month intervention period, and 84 (63.2%) completed the 7- to 12-month falls-monitoring follow-up period.	Both prevalence of postural hypotension (p = 0.0005) and poor visual acuity (p = 0.04) were reduced in the intervention group. There was no difference between the groups in the number of falls sustained, the risk of falling [odds ratio 0.45 (95% CI 0.19–1.14)], or in the risk of recurrent falling [odds ratio 1.07 (95% CI 0.40–2.97)]. No significant differences were found between the groups with regard to change in other outcome measures. Conclusions: The high drop-out rate reduced the power of this study to detect any effect of the interventions used.

g) Influenza vaccination

Study	Methods	Findings
Maruyama T, Taguchi O, Niederman M S, Morser J, Kobayashi H, Kobayashi T, D'Alessandro-Gabazza C, Nakayama S, Nishikubo K, Noguchi T, Takei Y and Gabazza E C (2010) Efficacy of 23-valent pneumococcal vaccine in preventing pneumonia and improving survival in nursing home residents- double blind, randomised and placebo controlled trial, *BMJ* 340 : c1004	To determine the efficacy of a 23-valent pneumococcal polysaccharide vaccine in people at high risk of pneumococcal pneumonia. Design Prospective, randomised, placebo controlled double blind study. Setting Nursing homes in Japan. Participants 1006 nursing home residents. Interventions Participants were randomly allocated to either 23-valent pneumococcal polysaccharide vaccine (n=502) or placebo (n=504). Main outcome measures The primary end points were the incidence of all cause pneumonia and pneumococcal pneumonia. Secondary end points were deaths from pneumococcal pneumonia, all cause pneumonia, and other causes.	Pneumonia occurred in 63 (12.5%) participants in the vaccine group and 104 (20.6%) in the placebo group. Pneumococcal pneumonia was diagnosed in 14 (2.8%) participants in the vaccine group and 37 (7.3%) in the placebo group (P<0.001). All cause pneumonia and pneumococcal pneumonia were significantly more frequent in the placebo group than in the vaccine group: incidence per 1000 person years 55 v 91 (P<0.0006) and 12 v 32 (P<0.001), respectively. Death from pneumococcal pneumonia was significantly higher in the placebo group than in the vaccine group (35.1% (13/37) v 0% (0/14), P<0.01). The death rate from all cause pneumonia (vaccine group 20.6% (13/63) v placebo group 25.0% (26/104), P=0.5) and from other causes (vaccine group 17.7% (89/502) v placebo group (80/504) 15.9%, P=0.4) did not differ between the two study groups. Conclusion The 23-valent pneumococcal polysaccharide vaccine prevented pneumococcal pneumonia and reduced mortality from pneumococcal pneumonia in nursing home residents.

Hayward A C, Harling R, Wetten S, Johnson A M, Munro S, Smedley J, Murad S and Watson J M (2006) Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health service use among residents: cluster randomised controlled trial, *British Medical Journal* 333 (7581) : 1241-1244	To determine whether vaccination of care home staff against influenza indirectly protects residents. Design: Pair matched cluster randomised controlled trial. Setting: Large private chain of UK care homes during the winters of 2003-4 and 2004-5. Participants: Nursing home staff (n=1703) and residents (n=2604) in 44 care homes (22 intervention homes and 22 matched control homes). Interventions: Vaccination offered to staff in intervention homes but not in control homes. Main outcome measures The primary outcome was all cause mortality of residents. Secondary outcomes were influenza-like illness and health service use in residents.	In 2003-4 vaccine coverage in full time staff was 48.2% (407/884) in intervention homes and 5.9% (51/859) in control homes. In 2004-5 uptake rates were 43.2% (365/844) and 3.5% (28/800). National influenza rates were substantially below average in 2004-5. In the 2003-4 period of influenza activity significant decreases were found in mortality of residents in intervention homes compared with control homes (rate difference -5.0 per 100 residents, 95% confidence interval -7.0 to -2.0) and in influenza-like illness (P=0.004), consultations with general practitioners for influenza-like illness (P=0.008), and admissions to hospital with influenza-like illness (P=0.009). No significant differences were found in 2004-5 or during periods of no influenza activity in 2003-4. Conclusions: Vaccinating care home staff against influenza can prevent deaths, health service use, and influenza-like illness in residents during periods of moderate influenza activity.

Carman W F, Elder A G, Wallace L A, McAulay K, Walker A, Murray G D and Stott D J (2000) Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial, *The Lancet* 355 (9198) : 93-97	To find out whether vaccination of healthcare workers lowers mortality and the frequency of virologically proven influenza in patients. In a parallel-group study, health-care workers in 20 long-term elderly-care hospitals (range 44—105 patients) were randomly offered or not offered influenza vaccine (cluster randomisation, stratified for policy for vaccination of patients and hospital size). All deaths among patients were recorded over 6 months in the winter of 1996—97. We selected a random sample of 50% of patients for virological surveillance for influenza, with combined nasal and throat swabs taken every 2 weeks during the epidemic period. Swabs were tested by tissue culture and PCR for influenza viruses A and B.	Influenza vaccine uptake in health-care workers was 50·9% in hospitals in which they were routinely offered vaccine, compared with 4·9% in those in which they were not. The uncorrected rate of mortality in patients was 102 (13·6%) of 749 in vaccine hospitals compared with 154 (22·4%) of 688 in no-vaccine hospitals (odds ratio 0·58 [95% CI 0·40—0·84], p=0·014). The two groups did not differ for proportions of patients positive for influenza infection (5·4% and 6·7%, respectively); at necropsy, PCR was positive in none of 17 patients from vaccine hospitals and six (20%) of 30 from novaccine hospitals (p=0·055). Vaccination of health-care workers was associated with a substantial decrease in mortality among patients. However, virological surveillance showed no associated decrease in non-fatal influenza infection in patients.

h) Medication

Study	Methods	Findings
Wallerstedt S M, Kindblom J M, Nylén K, Samuelsson O and Strandell A (2014) Medication reviews for nursing home residents to reduce mortality and hospitalisation: systematic review and meta-analysis, *British Journal of Clinical Pharmacology*	Medication reviews by a third party have been introduced as a method to improve drug treatment in older people. This study assessed if this intervention reduces mortality and hospitalisation for nursing home residents. Systematic literature searches were performed including randomised and non-randomised controlled trials (RCTs and non-RCTs) of medication reviews compared with standard care or other type of medication reviews in nursing home residents. The outcome variables were mortality and hospitalisation. Study quality was assessed systematically. The study performed meta-analyses using random effects models. Seven RCTs and five non-RCTs fulfilled the inclusion criteria. The mean age of included patients varied between 78 and 86 years. They were treated with a mean of four to twelve drugs. The study quality was assessed as high (n=1), moderate (n=4), or low (n=7).	Eight studies compared medication reviews with standard care. In six of them, pharmacists were involved in the intervention. Meta-analyses of RCTs revealed a risk ratio (RR) for mortality of 1.03 (medication reviews vs. standard care; 5 trials; 95% confidence interval (CI): 0.85; 1.23). Corresponding RR for hospitalisation was 1.07 (2 trials; 95% CI: 0.61; 1.87). Conclusions The findings indicate that medication reviews for nursing home residents do not reduce mortality or hospitalisation. More research in the setting of controlled trials remains to be done in order to clarify how drug treatment can be optimised for these patients

Loganathan M, Singh S, Franklin B D, Bottle A and Majeed A (2011) Interventions to optimise prescribing in care homes: Systematic review, *Age and Ageing* 40 (2) : 150-162	Sixteen studies met the inclusion criteria. Four intervention strategies were identified: staff education, multi-disciplinary team (MDT) meetings, pharmacist medication reviews and computerised clinical decision support systems (CDSSs).	Author's synopsis Complex educational programmes that focused on improving patients' behavioural management and drug prescribing were the most studied area, with six of eight studies highlighting an improvement in prescribing. Mixed results were found for pharmacist interventions. CDSSs were evaluated in two studies, with one showing a significant improvement in appropriate drug orders. Two of three studies examining MDT meetings found an overall improvement in appropriate prescribing. Conclusion: results are mixed and there is no one interventional strategy that has proved to be effective.
Nishtala P, Mclachlan A, Bell S and Chen T (2008) Psychotropic prescribing in long term care facilities: impact of medication reviews and educational interventions, *American Journal of Geriatric Psychiatry* 16 (8) : 621-632	The objective of this literature review was to evaluate the evidence pertaining to the impact of medication reviews and/or educational interventions on psychotropic drug use in long-term care facilities. Twenty six studies evaluating the impact of medication reviews and/or educational interventions on psychotropic drug use in long-term care facilities. Eleven studies met the inclusion criteria for this review and the data from six of these studies were included in a meta-analysis.	The pooled odds ratio (OR) from five studies on hypnotic prescribing showed a decrease in use post-intervention (OR = 0.57, 95% confidence intervals [CI] = 0.41–0.79). The pooled OR from five studies on prevalence of antipsychotic prescribing post-intervention was not significant (OR = 0.81, 95% CI = 0.63–1.04). Medication reviews and/or educational interventions are effective in reducing psychotropic drug prescribing. However, research on the benefits of these interventions in reducing psychotropic drug use on total health care costs and resident health outcomes is lacking.

Zermansky A G, Alldred D P, Petty D R, Raynor D K, Freemantle N, Eastaugh J and Bowie P. (2006) Clinical medication review by a pharmacist of elderly people living in care homes – randomised controlled trial, *Age and Ageing* 35 : 586-591	Objective: to measure the impact of pharmacist-conducted clinical medication review with elderly care home residents. Design: randomised controlled trial of clinical medication review by a pharmacist against usual care. Setting: sixty-five care homes for the elderly in Leeds, UK. Participants: a total of 661 residents aged 65+ years on one or more medicines. Intervention: clinical medication review by a pharmacist with patient and clinical records. Recommendations to general practitioner for approval and implementation. Control patients received usual general practitioner care. Main outcome measures: primary: number of changes in medication per participant. Secondary: number and cost of repeat medicines per participant; medication review rate; mortality, falls, hospital admissions, general practitioner consultations, Barthel index, Standardised Mini-Mental State Examination (SMMSE).	The pharmacist reviewed 315/331 (95.2%) patients in 6 months. A total of 62/330 (18.8%) control patients were reviewed by their general practitioner. The mean number of drug changes per patient was 3.1 for intervention and 2.4 for control group ($P < 0.0001$). There were respectively 0.8 and 1.3 falls per patient ($P < 0.0001$). There was no significant difference for GP consultations per patient (means 2.9 and 2.8 in 6 months, $P = 0.5$), hospitalisations (means 0.2 and 0.3, $P = 0.11$), deaths (51/331 and 48/330, $P = 0.81$), Barthel score (9.8 and 9.3, $P = 0.06$), SMMSE score (13.9 and 13.8, $P = 0.62$), number and cost of drugs per patient (6.7 and 6.9, $P = 0.5$) (£42.24 and £42.94 per 28 days). A total of 75.6% (565/747) of pharmacist recommendations were accepted by the general practitioner; and 76.6% (433/565) of accepted recommendations were implemented. Conclusions: general practitioners do not review most care home patients' medication. A clinical pharmacist can review them and make recommendations that are usually accepted. This leads to substantial change in patients' medication regimens without change in drug costs. There is a reduction in the number of falls. There is no significant change in consultations, hospitalisation, mortality, SMMSE or Barthel scores.

i) Oral health

Study	Methods	Findings
De Visschere L, Schols J, van der Putten G-J, de Baat C and Vanobbergen J (2012) Effect evaluation of a supervised versus non-supervised implementation of an oral health care guideline in nursing homes: a cluster randomised controlled clinical trial, *Gerodontology* 29 (2) : e96-e106	To compare a supervised versus a non-supervised implementation of an oral health care guideline in Flanders (Belgium). The key factor in realising good oral health is daily oral hygiene care. In 2007, the Dutch guideline 'Oral health care in care homes for elderly people' was developed to improve oral health of institutionalised elderly. A random sample of 12 nursing homes was randomly allocated to the intervention or the control group. Representative samples of 30 residents in each home were monitored during a 6-month study period. The intervention included a supervised implementation of the guideline	At the 6-month follow-up, a small but statistically significant ($p = 0.002$) beneficial effect (0.32) of the intervention was observed for denture plaque after adjustment for baseline value and the random effect of the institution. In the linear mixed regression models, including a random institution effect, difference in denture plaque level was no longer statistically significant at the 5% level. Conclusion: Denture hygiene has been improved by the supervised implementation, although with lower benefits than presumed.

j) Physical activity, Physiotherapy and Occupational Therapy

Study	Methods	Findings
Wenborn J, Challis D, Head J, Miranda-Castillo C, Popham C, Thakur R, Illes J and Orrell M (2013) Providing activity for people with dementia in care homes: a cluster randomised controlled tria, *International Journal of Geriatric Psychiatry* 28 (12) : 1296-1304	See Dementia	
Underwood M, Lamb S E, Eldridge S, Sheehan B, Slowther A-M, Spencer A, Thorogood M, Atherton N, Bremner S A, Devine A, Diaz-Ordaz K, Ellard D R, Potter R, Spanjers K and Taylor S J C (2013) Exercise for depression in elderly residents of care homes: a cluster-randomised controlled trial, *The Lancet* 382 (9886) : 41-49	See Depression	
Conradsson M, Littbrand H, Lindelöf N, Gustafson Y and Rosendahl E (2010) Effects of a high-intensity functional exercise programme on depressive symptoms and psychological well-being among older people living in residential care facilities, Taylor & Francis *Aging & Mental Health* 14 (5) : 565-576	See Depression	

Ciairano S, Liubicich M E and Rabaglietti E (2010) The effects of a physical activity programme on the psychological wellbeing of older people in a residential care facility, *Ageing and Society* 30 (4) : 609-626	This experimental study aimed to analyse the effects of an aerobic activity intervention delivered by specially trained instructors to a sample of Italian older people living in a residential care facility. The researchers assessed intervention effects on general health perception, perception that one's health represents a limitation for moderate and heavy physical activity, and positive and negative self-perception. The 36-item Short Form Health Survey Questionnaire (SF-36) was administered at pre-test and post-test to a sample of 22 older people (ten in the control group and 12 in the intervention group) of both genders with an average age of 80.6 years.	Authors' synopsis: The study showed that: (a) the perception that one's health can limit moderate and heavy physical activity decreased significantly in the older people belonging to the intervention group between pre- and post-test, while it increased in the control group; (b) positive self-perception was found to be stable in the intervention group, while it decreased in the control group; and (c) there was no interaction between group and time with respect to both general health perception and negative self-perception. The exercise programme seemed to have a particularly positive effect on older people's beliefs about their ability to master successfully the activities of daily living such as walking and moving objects.

Sackley C M, van den Berg M E, Lett K, Patel S, Hollands K, Wright C C and Hoppitt T J (2009) Effects of a physiotherapy and occupational therapy intervention on mobility and activity in care home residents, *British Medical Journal* 339 (7722) : 670-673	Objective: To compare the clinical effectiveness of a programme of physiotherapy and occupational therapy with standard care in care home residents who have mobility limitations and are dependent in performing activities of daily living. Design: Cluster randomised controlled trial, with random allocation at the level of care home. Setting: Care homes within the NHS South Birmingham primary care trust and the NHS Birmingham East and North primary care trust that had more than five beds and provided for people in the care categories “physical disability” and “older people.” Participants: Care home residents with mobility limitations, limitations in activities of daily living (as screened by the Barthel index), and not receiving end of life care were eligible to take part in the study. Intervention A targeted three month occupational therapy and physiotherapy programme. Main outcome measures Scores on the Barthel index and the Rivermead mobility index.	After adjusting for home effect and baseline characteristics, no significant differences were found in mean Barthel index scores at six months post-randomisation between treatment arms (mean effect 0.08, 95% confidence interval -1.14 to 1.30; P=0.90), across assessments (-0.01, -0.63 to 0.60; P=0.96), or in the interaction between assessment and intervention (0.42, -0.48 to 1.32; P=0.36). Similarly, no significant differences were found in the mean Rivermead mobility index scores between treatment arms (0.62, -0.51 to 1.76; P=0.28), across assessments (-0.15, -0.65 to 0.35; P=0.55), or interaction (0.71, -0.02 to 1.44; P=0.06). Conclusions The three month occupational therapy and physiotherapy programme had no significant effect on mobility and independence. On the other hand, the variation in residents’ functional ability, the prevalence of cognitive impairment, and the prevalence of depression were considerably higher in this sample than expected on the basis of previous work.

Peri K, Kerse N, Robinson E, Parsons M, Parsons J and Latham N (2008) Does functionally based activity make a difference to health status and mobility? A randomised controlled trial in residential care facilities (The Promoting Independent Living Study, PILS), *Age and Ageing* 37 (1) : 57-63	A cluster randomised controlled trial with 149 residents (mean age 84.7) in five care homes in Auckland, New Zealand was conducted to determine whether a repetitive activities of daily living (ADLs) activity programme improved their health status, life satisfaction and mobility. Trained research staff worked with residents in the intervention group to set a goal, completed a functional assessment for each resident, and designed an individualised activity programme based on ADL for care home staff to implement as part of residents' daily activity. Mobility (timed-up-and-go, TUG), life satisfaction (Late Life Satisfaction Index, LSI-Z), and health status (SF-36) were assessed at baseline, and 3 and 6 month follow-up.	In the intervention group, the SF-36 total Physical Component Summary (PCS) score improved at 3 months compared to the control group. There were no differences between groups on mobility measures at any time, nor on any measures after 6 months.

k) Pressure ulcers

Study	Methods	Findings
van Leen M, Hovius S, Neyens J, Halfens R and Schols J (2011) Pressure relief, cold foam or static air? A single center, prospective, controlled randomized clinical trial in a Dutch nursing home, *Journal of Tissue Viability* 20 (1) : 30-34	To determine the type of mattress that is the best for preventing pressure ulcers, in a single centre, prospective, controlled trial a static air overlay mattress (no electric pump needed) on top of a cold foam mattress with a cold foam mattress alone were compared on pressure ulcer incidence in nursing home residents. Methods: 83 Patients were included in the study with a score lower than 12 points on the Norton scale and no pressure ulcer at the start of the study. 42 Patients received a cold foam mattress and 41 patients received a static air overlay on top of that cold foam mattress. Out of bed we standardized the pressure reduction in sitting position by using a static air cushion in both groups. Patients were checked weekly in both groups for pressure ulcers. Only when there were signs of developing a pressure ulcer grade 2 or higher, was repositioning by nursing home pressure ulcer protocol (PU protocol) put into practice.	Seven patients (17.1%) on a cold foam mattress and two (4.8%) on a static air mattress developed a pressure ulcer grade 2 or more. There was no difference regarding pressure ulcer incidence between patients with a high risk (Norton 5-8) and patients with a medium risk (Norton 9-12). In 5 out of 7 patients who developed a pressure ulcer on a foam mattress the ulcers showed no healing using our PU protocol. In the static air group all pressure ulcers healed by regular treatment according to our PU protocol.

l) Sleep

Study	Methods	Findings
Sun J-L, Sung M-S, Huang M-Y, Cheng G-C, Lin C-C (2010) Effectiveness of acupressure for residents of long-term care facilities with insomnia: a randomized controlled trial, *International Journal of Nursing Studies* 47 (7) : 798-805	The aim of this study was to evaluate the effectiveness of acupressure on the Shenmen point for residents of long-term care facilities with insomnia. Fifty residents with insomnia in long-term care facilities were enrolled in a randomized controlled trial, with 25 participants allocated to the experimental group and 25 participants to the control group. For a 5-week period, the experimental group received standard acupressure on the HT7 points of both wrists, whereas the control group received only light touch on the same places. Insomnia was measured with the Athens Insomnia Scale-Taiwan form (AIS-T). Participants' self-reported scores were noted at baseline, during the 5-week period, and after intervention. This study was analysed on an intention-to-treat procedure.	The experimental group had significantly better scores on the AIS-T compared to the control group, not only during the intervention period, but also extending after intervention, as shown by generalized estimating equations ($p<0.05$). Conclusions: Offering acupressure on a regular basis has the potential to improve insomnia in residents of long-term care facilities. Acupressure on the HT7 point may improve insomnia for up to 2 weeks after the intervention.

Martin J L, Marler M R, Harker J O, Josephson K R and Alessi C A (2007) A multicomponent nonpharmacological intervention improves activity rhythms among nursing home residents with disrupted sleep/wake patterns, *Journals of Gerontology: Series A, Biological Sciences and Medical Sciences* 62A (1) : 67-72	The study examined the impact of a multi-component non-pharmacological intervention on 24-hour rest/activity rhythms among long-stay NH residents. Methods. The study was a randomized controlled trial in which, following a 3-day baseline, participants received 5 days of either usual care (control condition) or the active intervention. The intervention combined increased exposure to outdoor bright light, efforts to keep residents out of bed during the day, structured physical activity, institution of a bedtime routine, and efforts to reduce night-time noise and light in residents' rooms. For 100 residents with baseline and follow-up wrist actigraphy data (mean age = 87 years; 76% women), rest/activity rhythms were modelled to determine the rhythm acrophase (peak time), nadir (trough time), midline estimating statistic of rhythm (MESOR) (midpoint), amplitude (height of peak), slope, and the rest period/active period ratio (a).	The intervention led to an increase in the duration of the “active” portion of the rhythm, which was primarily accounted for by a shift in the rest/activity rhythm rise to an earlier time. Findings persisted when analyses were adjusted for age, cognitive functioning, medical co-morbidities, and behavioural disturbances. Conclusions. These findings suggest that the intervention may effectively improve the robustness of rest/activity rhythms in NH residents..

Endeshaw Y W, Ouslander J G, Schnelle J F and Bliwise D L (2007) Polysomnographic and clinical correlates of behaviorally observed daytime sleep in nursing home residents, *Journals of Gerontology: Series A, Biological Sciences and Medical Sciences* 62A (1) : 55-61	One hundred and seventy four nursing home residents from 8 nursing homes in Atlanta, Georgia participated in this daytime sleepiness study. Demographic and clinical data were obtained from medical records; and assessment of residents was carried out by trained research staff. Overnight polysomnography was performed in a sub-group of the sample. Mean age was 83.4 ±8.8 years, and 136 participants were women (78%). On average, these residents were observed asleep in 19% of their daytime observations, from which it could be inferred that about 2.3 hours was spent asleep between 8 am and 8 pm.	An absence of association between behavioural observations with sleep (BOS) and nocturnal sleep suggest that the causes of daytime sleepiness and nocturnal sleep problems may not be related. This finding may have important implications for interventions that aim to reduce daytime sleepiness among nursing home residents.

Alessi C A, Martin J L, Webber A P, Cynthia K E, Harker J O and Josephson K R (2005) Randomized, Controlled Trial of a Non-pharmacological Intervention to Improve Abnormal Sleep/Wake Patterns in Nursing Home Residents, *Journal of the American Geriatrics Society* 53 (5) : 803-810	The objective of this study was to test a multidimensional, non-pharmacological intervention to improve abnormal sleep/wake patterns in nursing home residents. Design: Randomized, controlled trial. Setting: Four nursing homes in the Los Angeles area. Participants: Residents were screened for excessive daytime sleeping (asleep =15% of daytime observations) and night-time sleep disruption (asleep <80% of night-time hours, according to wrist actigraphy). Four hundred ninety-two residents were screened; 339 had excessive daytime sleeping. Of these, 133 had night-time sleep disruption and consented to participate; 120 completed baseline assessments, and 118 (77% female, mean age 86.9, 90% non-Hispanic white) were randomized to intervention versus usual care. Intervention: Five consecutive days and nights of efforts to decrease daytime in-bed time, 30 minutes or more of daily sunlight exposure, increased physical activity, structured bedtime routine, and efforts to decrease night-time noise and light. Measurements: Seventy-two consecutive hours of wrist actigraphy (night-time sleep) and structured behavioural observations (daytime sleep and participation in social and physical activities and social conversation) at baseline and repeated at follow-up while the intervention or usual care condition was in place	The only effect on night-time sleep was a modest decrease in mean duration of night-time awakenings in intervention participants (10.6 minutes at baseline, 9.8 minutes at follow-up) versus an increase in controls (9.8 minutes at baseline, 13.8 minutes at follow-up) (F=4.27, P=.04). There were no significant effects on percentage of night-time sleep or number of night-time awakenings. There was a significant decrease in daytime sleeping in intervention participants (32% of daytime observations asleep at baseline, 21% at follow-up), with no change in controls (32% at baseline, 30% at follow-up; F=20.68, P<.001). Intervention participants had increased participation in social (F=22.42, P<.001) and physical (F=12.65, P=.001) activities and social conversation (F=5.04, P=.03). Conclusion: A multidimensional, non-pharmacological intervention into lifestyle and environmental factors that likely contribute to abnormal sleep/wake patterns in nursing home residents resulted in decreased daytime sleeping and increased participation in social and physical activities and social conversation. Non-pharmacological interventions should be considered in the management of abnormal sleep/wake patterns in nursing home residents. The main effect may be a significant decrease in daytime sleeping, which may translate to an improvement in quality of life.

Lyketsos C G, Lindell Veiel L, Baker A and Steele C (1999) A randomized, controlled trial of bright light therapy for agitated behaviors in dementia patients residing in long-term care, *International Journal of Geriatric Psychiatry* 14 (7) : 520-525	In this study, 15 patients with dementia and agitated behaviours living in residential care were assigned either to morning bright light therapy (BLT) for 1 hour a day, or to a control condition with dim light exposure. Patients were treated in either condition for 4 weeks, followed by 1 week on no treatment, prior to being crossed over to the other condition. 8 patients completed the entire study, the rest at least 2 weeks.	Those randomised to the BLT condition showed statistically significant improvement in nocturnal sleep from a mean of 6.4 hours to 8.1 hours a night 4 weeks later. The sleep of patients in the control condition did not improve significantly. There were no other significant differences between baseline and follow-up, nor between BLT and control treated patients on other outcome measures. However, BLT does not lead to improvements in agitated behaviours in institutionalised patients with non-disturbed sleep-wake cycles.

Alessi C A, Yoon E J, Schnelle J F, Al-Samarrai N R and Cruise P A (1999) A randomized trial of a combined physical activity and environmental intervention in nursing home residents: do sleep and agitation improve?, *Journal of the American Geriatrics Society* 47 (7) : 784-791	To test whether an intervention combining increased daytime physical activity with improvement in the night-time environment improves sleep and decreases agitation in nursing home residents. Design: A randomized trial. Setting: One community nursing home in the Los Angeles, California area. Participants: Twenty-nine incontinent residents (mean age 88.3 years, 90% female). Intervention: Subjects were randomized to receive either (1) an intervention combining increased daytime physical activity (14 weeks in duration) plus a night-time program (5 nights in duration) to decrease noise and sleep-disruptive nursing care practices (intervention group), or (2) the night-time program alone (control group). Measurements: Daytime physical activity monitors and structured physical function assessments; night-time wrist activity monitors to estimate nighttime sleep; and timed daytime behavioural observations of sleep versus wakefulness, either in or out of bed, and agitation.	Physical function measures did not change significantly. Wrist actigraphy estimation of night-time percent sleep (time asleep over time monitored in bed at night) increased in intervention subjects from 51.7% at baseline to 62.5% at follow-up compared with 67.0% at baseline to 66.3% at follow-up in controls. At follow-up, intervention subjects averaged a 32% decrease in observed time spent in bed during the day compared with baseline, with essentially no change in controls. Seven of 15 intervention subjects had a decrease in observed agitation at follow-up, compared with baseline, versus only 1 of 14 controls with a decrease in agitation.

Schnelle J F, Alessi C A, Al-Samarrai N R, Fricker R D Jr and Ouslander J G The nursing home at night: effects of an intervention on noise, light, and sleep., *Journal of the American Geriatrics Society* 47 (4) : 430-438	The purpose of this study was to improve sleep by reducing the frequency of night-time noise and light changes. Participants and setting: Two hundred sixty-seven incontinent nursing home residents in eight nursing homes. Design: A randomized control group design with a delayed intervention for the control group. Measurements: Bedside noise and light monitors recorded the number of 2-minute intervals at night with peak sounds recorded above 50 dBs and the number of light changes of at least 10 lux between adjacent 2-minute intervals. Daytime behavioural observations measured sleep and in-bed time during the day, and wrist activity was used to estimate sleep at night. Awakening events associated with the environmental variables were derived from the wrist activity data. Intervention: A behavioural intervention implemented between 7:00 p.m. and 6:00 a.m. that involved feedback to nursing home staff about noise levels and implementation by research staff of procedures to both abate noise (e.g., turn off unwatched television sets) and to individualize night-time incontinence care routines to be less disruptive to sleep.	Noise was reduced significantly, from an average of 83 intervals per night with peak noises recorded above 50 dBs to an average of 58 intervals per night in the group that received the initial intervention, whereas noise in the control group showed no change. All 10-dB categories of noise from 50 to 90+ dBs were reduced, and light changes were reduced from an average of four per night per resident to two per night ($P < .001$). Despite these significant changes in the environmental variables, there was a significant differential improvement in the intervention group on only two night sleep measures: awakening associated with a combination of noise plus light ($P < .001$) and awakening associated with light ($P < .001$). However, there was a significant correlation between change in noise and change in percent sleep from baseline to intervention ($r = -.29$, $P < .05$), suggesting that the intervention did not reduce noise to low enough levels to produce a significant improvement in sleep. The intervention effects on all environmental variables were replicated in the delayed intervention group, who again showed significant improvement on the same sleep measures. Observations of day sleep and in-bed time did not change over the phases of the trial for either group. Conclusion: The significant reductions in noise and light events resulting from the intervention did not lead to significant improvements in the day sleep and most night sleep measures.

m) Technology

Study	Methods	Findings
Pillemer K, Meador R H, Teresi J A, Chen E K, Henderson C R Jr, Lachs M S, Boratgis G, Silver S and Eimicke J P (2012) Effects of electronic health information technology implementation on nursing home resident outcomes, *Journal of Aging and Health* 24 (1) : 92-112	The study evaluated the impact of implementing a comprehensive health information technology (HIT) system on resident clinical, functional, and quality of care outcome indicators as well as measures of resident awareness of and satisfaction with the technology. The study used a prospective, quasi-experimental design, directly assessing 761 nursing home residents in 10 urban and suburban nursing homes in the greater New York City area.	No statistically significant impact of the introduction of HIT on residents was found on any outcomes, with the exception of a significant negative effect on behavioural symptoms. Residents' subjective assessments of the HIT intervention were generally positive. The absence of effects on most indicators is encouraging for the future development of HIT in nursing homes. The single negative finding suggests that further investigation is needed on possible impact on resident behaviour.

Szczepura A, Wild D and Nelson S (2010) *Preventing medication administration errors using pharmacy-managed barcode medication management systems in long-term residential care*, Warwick Research Archive Portal http://wrap.warwick.ac.uk/3226/	All medication administrations were recorded prospectively for 345 older residents in thirteen care homes during a 3-month period using the computerised system. Staff were surveyed to identify their awareness of administration errors prior to system introduction. Overall, 188,249 attempts to administer medication were analysed to determine the prevalence of potential medication administration errors (MAEs). Error classifications included attempts to administer medication at the wrong time, to the wrong person or discontinued medication. Analysis compared data at residential and nursing home level and care and nursing staff groups.	Typically each resident was exposed to 206 medication administration episodes every month and received nine different drugs. Administration episodes were more numerous ($p < 0.01$) in nursing homes (226.7 per resident) than in residential homes (198.7). Prior to technology introduction, only 12% of staff administering drugs reported they were aware of administration errors being averted in their care home. Following technology introduction, 2,289 potential MAEs were recorded over three months. The most common MAE was attempting to give medication at the wrong time. On average each resident was exposed to 6.6 potential errors. In total, 90% of residents were exposed to at least one MAE with over half (52%) exposed to serious errors such as attempts to give medication to the wrong resident. MAEs rates were significantly lower ($p < 0.01$) in residential homes than nursing homes. The level of non-compliance with system alerts was low in both settings (0.075% of administrations) demonstrating virtually complete error avoidance. Conclusion: Potentially inappropriate administration of medication is a serious problem in long-term residential care. A computerised barcode system can accurately and automatically detect inappropriate attempts to administer drugs to residents. This tool can reliably be used by care staff as well as nurses to improve quality of care and patient safety.

n) Training

Study	Methods	Findings
Fossey J, Masson S, Stafford J, Lawrence V, Corbett A and Ballard C (2014) The disconnect between evidence and practice: a systematic review of person-centred interventions and training manuals for care home staff working with people with dementia, *International Journal of Geriatric Psychiatry*	See Dementia	
Leone E, Deudon A, Bauchet M, Laye M, Bordone N, Lee J-H, Piano J, Friedman L, David R, Delva F, Brocker P, Yesavage J and Robert P H (2013) Management of apathy in nursing homes using a teaching program for care staff: the STIM-EHPAD study, Wiley Blackwell *International Journal of Geriatric Psychiatry* 28 (4) : 383-392	This study aimed to evaluate the effectiveness of a nursing home (NH) staff education to manage apathy in older individuals with a diagnosis of dementia. Sixteen NHs agreed to participate, and 230 demented apathetic residents were randomly assigned to the reference group (RG) or the intervention group (IG). IG received a month of weekly four hour training sessions. Qualitative evaluation was performed through interviews and questionnaires regarding work practices and knowledge about dementia. Quantitative evaluation was at baseline, at the end of the training programme (week four), and three months after the end of it with the use of the Neuropsychiatric Inventory (NPI), the Apathy Inventory, and two observation scales. In the qualitative evaluation, very few staff responded to the questionnaire.	In the quantitative evaluation, the results were as follows. NPI: the IG scores increased from baseline to week four more than the RG for symptoms belonging to the affective and the psychotic NPI item subgroup. Apathy Inventory: there was a significant decrease of the emotional blunting score dimension in the IG. Group Observation Scale: significant improvement was observed for the emotional blunting dimension in the IG only. The study concludes that apathy is rarely identified as a problem in NH. Emotional blunting was the only dimension sensitive to change.

Goyder J, Orrell M, Wenborn J and Spector A (2012) Staff training using STAR: a pilot study in UK care homes, *International Psychogeriatrics* 24 (6) : 911-920	This pilot study investigated the feasibility of implementing Staff Training in Assisted Living Residences (STAR) in UK care homes. The eight-week STAR training course was delivered in two care homes; 25 care staff attended the training. 32 residents with dementia and clinically significant anxiety, depression or behavioural problems, were included in the study. Residents and staff were assessed at baseline and eight-week follow-up.	Residents demonstrated significantly reduced symptoms of depression and behavioural problems following the implementation of STAR, although resident-rated quality of life and anxiety symptoms did not improve significantly. Staff sense of hopefulness towards people with dementia also improved significantly; and staff rated themselves as significantly more competent at forming relationships with residents. Delivering the STAR training course to care staff can have an impact on the behavioural and psychological symptoms of dementia displayed by care home residents.
Sengupta M, Ejaz F K and Harris-Kojetin L D (2012) Training of home health aides and nurse aides, Routledge *Gerontology & Geriatrics Education, vol 33, no 4* 33 (4) : 383-401	Training and satisfaction with training were examined using data from nationally representative samples of 2,897 certified nursing assistants (CNAs) from the National Nursing Assistant Survey and 3,377 home health aides (HHAs) from the National Home Health Aide Survey conducted in 2004 and 2007 in the USA. This study compares perceptions of CNAs and HHAs regarding the initial and continuing education they received to prepare them for their job.	More than 80% of HHAs and all CNAs received some initial training. Of these significantly more HHAs compared to CNAs felt that training had prepared them 'very well' for their jobs. The two groups also differed in their assessments of the content of the initial training; for example, more CNAs believed that their training was 'excellent' in helping them address patients' limitations in activities of daily living compared to HHAs. The vast majority of HHAs and CNAs received continuing education, and about three quarters in each group assessed this training as being 'very useful'.
Goyder J (2011) *Staff Training using STAR (Staff Training in Assisted Living*, D.Clin.Psy. Thesis , University College London	See Challenging Behaviour	

Deudon A, Maubourguet N, Gervais X, Leone E, Brocker P, Carcaillon L, Riff S, Lavallart B and Robert P H (2009) Non-pharmacological management of behavioural symptoms in nursing homes, *International Journal of Geriatric Psychiatry* 24 (12) : 1386-1395	See Challenging Behaviour	
Bouwen A, de Lepeleire J and Buntinx F (2008) Rate of accidental falls in institutionalised older people with and without cognitive impairment halved as a result of a staff-oriented intervention, *Age and Ageing* 37 (3) : 306-310	See Falls	
Fossey J Enhanced psychosocial care as an alternative to use of antipsychotics in nursing homes for residents with severe dementia: a cluster randomised trial, *The Journal of Quality Research in Dementia: Issue 4*	See Dementia	
Kuske B, Hanns S, Luck T, Angermeyer M C, Behrens J and Riedel-Heller S G (2007) Nursing home staff training in dementia care: a systematic review of evaluated programs, *International Psychogeriatrics, vol 19, no 5* 19 (5) : 818-841	A literature search was conducted of in-service interventions for caregivers of people with dementia in nursing homes, published between 1999 and 2004. The aim was to obtain and overview of the evaluated interventions and to characterise their methodological quality. Of the 21 studies identified, most were published in the US, and most were of poor methodological quality.	Although nearly all reported positive effects, their results must be interpreted cautiously due to methodological weaknesses. Extensive interventions with ongoing support successfully demonstrated implementation of new knowledge. Owing to methodological weaknesses and a lack of follow-up evaluations, little or no evidence exists for the efficacy of particularly, the transfer of knowledge in simpler interventions when reinforcing and enabling factors were not present.
Fossey J Training for staff can reduce use of sedatives in care homes, *The Journal of Quality Research in Dementia: Issue 4*	See Dementia	

Lyne K J, Moxon S, Sinclair I, Young P, Kirk C and Ellison S (2006) Analysis of a care planning intervention for reducing depression in older people in residential care, *Aging & Mental Health* 10 (4) : 394-403	See Depression	
Eisses A M H, Kluiter H, Jongenelis K, Pot A M, Beekman A T F and Ormel J (2005) Care staff training in detection of depression in residential homes for the elderly randomised trial, *British Journal of Psychiatry* 186 : 404-409	The authors conducted a randomised controlled trial in ten residential homes in the Netherlands. The intervention consisted of a training programme for staff and collaborative evaluation by staff and a mental health specialist of residents with possible depression.	Recognition of depression increased more in homes where staff received the training programme than in the control homes. Treatment rates also increased compared with control homes, but the increase was not significant. Residents with depressive symptoms had a more favourable course when staff had received training. Moreover, the prevalence of depressive symptoms decreased, but the decrease was not significant. Training of care staff results in the increased detection of depression in older people, a trend towards more treatment and better outcomes.
Williams K, Kemper S and Hummert M L Improving Nursing Home Communication: An Intervention to Reduce Elderspeak, *The Gerontologist* 43 (2) : 242-247	This study evaluated a brief educational program designed to increase staff awareness of intergenerational speech modifications such as elderspeak and strategies to enhance communication. A communication-training program was provided to Certified Nursing Assistants (CNAs; n = 20) in five nursing homes. Audio recordings of staff interacting with residents before and after training were transcribed, coded, and compared on features of elderspeak.	After the training, CNAs reduced their use of elderspeak including terms of endearment, inappropriate collective pronouns, and shortened sentence length. In addition, the emotional tone of staff speech with residents was rated as less controlling and more respectful after the training while caring qualities were maintained. Speech rate did not change significantly. Implications: Teaching CNAs to reduce elderspeak holds promise as an approach to improving the social environment in nursing homes.

Magai C, Cohen C I and Gomberg D (2002) Impact of training dementia caregivers in sensitivity to nonverbal emotion signals, *International Psychogeriatrics* 14 (1) : 25-38	Ninety one American mid-to late-stage dementia nursing home patients and their staff caregivers participated in this study on sensitivity to non-verbal communication and its ability to enhance patients' mood and to improve caregivers' psychological well-being. Participants were assigned to either a non-verbal sensitivity group, a behavioural placebo group receiving instruction in the cognitive and behavioural aspects of dementia, or a wait-list control. Training comprised 10 one-hour sessions taught by a clinical psychologist using prepared materials. Patient measures taken at baseline and 4 three-week intervals included symptomatology (e.g. depression) as reported by staff caregivers, and positive and negative facial expressions of emotions elicited during face-to-face interview.	Results indicated that positive affect increased sharply during the first 6 weeks after intervention in the non-verbal group; the other two groups showed no change. There was a decline in negative affect across time for all groups. Effects with respect to patient symptomatology did not reach significance. Caregivers in both training groups showed a decline in symptomatology, whereas the wait-list control group did not.
Burgio L D, Stevens A, Burgio K L, Roth D L, Paul P and Gerstle J (2002) Teaching and maintaining behavior management skills in the nursing home, *The Gerontologist, vol 42, no 4* 42 (4) : 487-496	To assess the efficacy of a comprehensive behaviour management skills training programme for improving assistants' skill performance in US nursing homes is examined, as is the effectiveness of a staff motivational system for maintaining newly acquired behaviour management skills over a 6-month period. The study used a randomised clinical trial of 88 Alabama residents with behaviour disturbances. 106 assistants who received the training and implemented formal staff management (FSM), and supervisory staff using conventional staff management (CSM, usual supervisory routine) were followed up at 4 weeks, and 3 and 6 months.	During the immediate post-training period, both groups improved 5 out of 7 communication skills and the ability to delay physical assistance during care routines. Although assistants showed a reduction in the use of ineffective behaviour management strategies, they did not increase their use of effective behavioural strategies. Follow-up suggested that FSM was more effective than CSM for maintaining and even improving communication skills over time. Resident agitation was reduced during care interactions and maintained at follow-up.

Burgio L D, Allen-Burge R, Roth D L, Bourgeois M S, Dijkstra K, Gerstle J, Jackson E and Bankester L (2001) Come talk with me: improving communication between nursing assistants and nursing home residents during care routines, *The Gerontologist* 41 (4) : 449-461	In the USA, the effects of communications skills training were examined, along with the use of memory books by certified nursing assistants (CNAs) on verbal interactions between 64 CNAs and 67 nursing home residents during care routines. CNAs were taught to use communication skills and memory books during their interactions with residents with moderate cognitive impairments and intact communication abilities. A staff motivational system was used to encourage performance and maintenance of these skills. Formal measures of treatment implementation were included. Results were compared with those for participants on non-treatment control units.	Trained CNAs talked more, used positive statements more frequently, and tended to increase the number of specific instructions given to residents. Changes in staff behaviour did not result in an increase in total time giving care to residents. Maintenance of CNA behaviour change was found 2 months after research staff had left the nursing home. Although an increase was found in positive verbal interactions between CNAs and residents on intervention units, other changes in resident communication were absent.
Moxon S, Lyne K, Sinclair I, Young P and Kirk C (2001) Mental health in residential homes: a role for care staff, *Ageing and Society* 21 (1) : 71-94	Two linked studies assess the feasibility of involving care staff in reducing the prevalence of depression in homes for older people. Mental health training was provided for care staff delivered by members of a Community Mental health Team for the Elderly. The research programme used quantitative and qualitative methods to evaluate the effects of a theoretical training for care staff; a system of mentoring care staff to reinforce the training; and a care-planning intervention for the management of depression which combined psychosocial and medical approaches.	The training programme was positively evaluated by the recipients, the trainers and the researcher who observed it. The ability of care staff to detect depression improved significantly over time, and depression was reduced to below case-level in seven of the eight depressed residents who participated in the care-planning intervention. This research suggests that psychosocial interventions that involve collaboration between carers and residents, supported by a Community Mental Health Team, may have an important part to play in supplementing medical management of depression in residential care homes.

Dalley G, Denniss M, Centre for Policy on Ageing - CPA (2001) *Trained to care? investigating the skills and competencies of care assistants in homes for older people*, London: Centre for Policy on Ageing : 69 pp	This report comprises a literature review, and results of a survey of 418 homes that responded from an original sample of 1,200. It examines the following key topics: the range and type of training available to care homes; the number of care assistants currently trained or qualified; variations in training according to type of home; the attitudes of owners and managers toward investing in training; and the demonstrable benefits of training. The reason for the focus on care assistants is that they constitute the bulk of the staff working in care homes, and are in direct, face-to-face contact with residents.	The survey found great variations in the level of training: some homes had well-developed strategies, while others provided little or no training.

o) Volunteering

Study	Methods	Findings
van der Ploeg E S, Mbakilea T, Genovesi S and O'Connor D W (2012) The potential of volunteers to implement non-pharmacological interventions to reduce agitation associated with dementia in nursing home residents, *International Psychogeriatrics* 24 (11) : 1790-1797	Advanced dementia may be accompanied by behavioural and psychological symptoms of dementia (BPSD). BPSD stemming from pain, depression, or psychosis benefit from treatment with drugs, but in other cases, medications have limited efficacy and may elicit adverse effects. Therefore, more attention has been paid to non-pharmacological interventions, which have fewer risks and can be successful in reducing agitation and negative mood. However, these interventions are frequently not implemented in nursing homes due to staffing constraints. This study explores the potential of volunteers to further assist staff. The authors interviewed 18 staff members and 39 volunteers in 17 aged care facilities in southeast Melbourne, Australia.	Three-quarters of the facilities in this region worked with at least one regular volunteer. Both self-interest and altruistic reasons were identified as motives for volunteering. Volunteers were perceived by facility representatives as helpful to residents through provision of stimulation and company. However, they were discouraged from engaging with individuals with prominent BPSD. A majority of facility representatives and volunteers had experienced some difficulties in negotiating working relationships but most were easily resolved. A large majority of volunteers expressed an interest in learning new methods of interacting with residents. Despite their beneficial effects for agitated residents, non-pharmacological interventions are often not implemented in aged care facilities.

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Alessi C A, Martin J L, Webber A P, Cynthia K E, Harker J O and Josephson K R (2005) Randomized, Controlled Trial of a Nonpharmacological Intervention to Improve Abnormal Sleep/Wake Patterns in Nursing Home Residents, *Journal of the American Geriatrics Society* 53 (5) : 803-810

Alessi C A, Yoon E J, Schnelle J F, Al-Samarrai N R and Cruise P A (1999) A randomized trial of a combined physical activity and environmental intervention in nursing home residents: do sleep and agitation improve?, *Journal of the American Geriatrics Society* 47 (7) : 784-791

Bouwen A, de Lepeleire J and Buntinx F (2008) Rate of accidental falls in institutionalised older people with and without cognitive impairment halved as a result of a staff-oriented intervention, *Age and Ageing* 37 (3) : 306-310

Burgio L D, Allen-Burge R, Roth D L, Bourgeois M S, Dijkstra K, Gerstle J, Jackson E and Bankester L (2001) Come talk with me: improving communication between nursing assistants and nursing home residents during care routines, *The Gerontologist* 41 (4) : 449-461

Burgio L D, Stevens A, Burgio K L, Roth D L, Paul P and Gerstle J (2002) Teaching and maintaining behavior management skills in the nursing home, *The Gerontologist, vol 42, no 4* 42 (4) : 487-496

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Ciairano S, Liubicich M E and Rabaglietti E (2010) The effects of a physical activity programme on the psychological wellbeing of older people in a residential care facility, *Ageing and Society* 30 (4) : 609-626

Clelland J, Scott D and McKenzie D (2005) An analysis of allied health professional training in care homes for older people in Glasgow, *Quality in Ageing* 6 (3) : 24-36

Collet J, de Vugt M E, Verhey F R J and Schols J M G A (2010) Efficacy of integrated interventions combining psychiatric care and nursing home care for nursing home residents a review of the literature, *International Journal of Geriatric Psychiatry* 25 (1) : 3-13

Conradsson M, Littbrand H, Lindelöf N, Gustafson Y and Rosendahl E (2010) Effects of a high-intensity functional exercise programme on depressive symptoms and psychological well-being among older people living in residential care facilities, Taylor & Francis *Aging & Mental Health* 14 (5) : 565-576

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Dyer C A E, Taylor G J, Reed M, Dyer C A, Robertson D R and Harrington R (2004) Falls prevention in residential care homes: a randomised controlled trial, *Age and Ageing* 33 (6) : 596-602

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