

## Appendix C: Evidence on CDM models for seniors in long-term care settings

Article	CDM Components (Scott, 2008)	Chronic Disease & Setting	Sample	Intervention Design	Intervention Delivery	Outcomes & Important Findings
<p>Brodaty et al., 2003</p> <p>Sydney, New South Wales, Australia</p>	<p>Multidisciplinary care</p> <p>Coordinated care</p> <p>Evidence-based care</p>	<p>Dementia</p> <p>11 nursing homes</p>	<p>Sample Size (n): 86</p> <ul style="list-style-type: none"> <li>Women: 72%</li> <li>Men: 28%</li> </ul> <p>Sample Age (mean): 82.9</p> <p>Sample Age (SD): 82.9</p> <p>Other Health</p> <ul style="list-style-type: none"> <li>Depression (n=34), psychosis (n=19), or depression and psychosis (n=34).</li> </ul>	<p>Randomized control trial (12 weeks)</p> <ul style="list-style-type: none"> <li>Treatment size (n): 40 (depression: n=21, psychosis: n=19); 39 (depression: n=22, psychosis: n=17)</li> <li>Control size (n): 39 (depression: n=23, psychosis: n=16)</li> </ul>	<p>Case management</p> <ul style="list-style-type: none"> <li>Two geriatric psychiatrists supervised multidisciplinary team's (senior registrar in psychogeriatrics, psychologist and registered nurse's) administration of treatment plans, comprised of psychological, social and, if appropriate, pharmacological interventions.</li> </ul> <p>Consultation</p> <ul style="list-style-type: none"> <li>Management plans devised by the project team at multidisciplinary team meetings were provided to nursing home staff and residents' general practitioner. Nursing home staff and residents' general practitioner consulted the project team upon request.</li> </ul>	<p>Depression</p> <ul style="list-style-type: none"> <li><u>Even Briefer Assessment Scale for Depression</u>: A sig. time effect (<math>p&lt;0.001</math>) was found for the depression sample. Z-scores improved equally for all groups. Case management had an effect size of -0.185, whereas consultation had an effect size of -0.013. No interaction was found for case management when consultation was combined with standard care. A sig. time effect (<math>p&lt;0.01</math>) was also found for the psychosis sample. Case management had an effect size of 0.065, whereas consultation had an effect size of 0.132. No interaction was found for case management when consultation was combined with standard care.</li> <li><u>Hamilton Rating Scale for Depression</u>: The proportion of residents experiencing symptoms pre- and post-treatment improved fairly equally across interventions (<math>p=0.240</math> for depression subgroup, <math>p=0.302</math> for psychosis subgroup) but case management seemed to be most effective, followed by consultation.</li> <li><u>Cornell Scale for Depression in Dementia</u>: Case management, consultation and standard care reduced the total NPI score, total BEHAVE-AD score and BEHAVE-AD behavioural domain in all residents (in order from greatest to least).</li> <li><u>Geriatric Depression Scale; Neuropsychiatric Inventory</u>: There was no significant difference between treatment groups at baseline (<math>\chi^2=4.37</math>, <math>df=4</math>, <math>p=0.359</math>). Most were not receiving antidepressant therapy (47.0%), about a third were receiving adequate antidepressant therapy (36.3%), and a smaller proportion were receiving inadequate antidepressant therapy (15.2%). For the depression group, 38.1% of case management subjects, 34.8% of consultation subjects and 4.5% of standard care subjects were on adequate medication by the</li> </ul>

						<p>end of the study. A significant difference between groups (<math>\chi^2=8.057</math>, <math>df=1</math>, <math>p=0.018</math>) was found. For the psychosis group, 21.1% of case management subjects, 11.8% of consultation subjects, and 0.0% of standard care subjects were on adequate medication by the end of the study. There were no significant differences between groups (<math>\chi^2=2.655</math>, <math>df=1</math>, <math>p=0.103</math>) but cell sizes were small.</p> <ul style="list-style-type: none"> <li>• <u>Neuropsychiatric Inventory</u>: Post-hoc analyses did not reveal any significant differences.</li> <li>• <u>SAD Faces (modified Faces Pain Scale)</u></li> </ul> <p><b>Psychosis</b></p> <ul style="list-style-type: none"> <li>• <u>Neuropsychiatric Inventory</u></li> <li>• <u>Behavioural Pathology in Alzheimer's Disease Rating Scale</u></li> <li>• <u>Scale for the Assessment of Positive Symptoms</u>;</li> <li>• <u>DSM-IV criteria</u></li> </ul> <p><b>Adequacy of pharmacotherapy</b></p> <ul style="list-style-type: none"> <li>• <u>Dosage equivalents for therapeutic efficacy of antidepressants were based on the American Psychiatric Association minimum antidepressant dosage recommendations for major depression but revised by the project team to cater to a geriatric population and include antidepressants not available in the United States (American Psychiatric Association, 1993). The dosage equivalents for therapeutic efficacy of antipsychotic medication were based on published guidelines (Victorian Drug Usage Advisory Committee, 1995)</u></li> </ul>
Carpenter et al., 2003	Multidisciplinary care  Coordinated care	Dementia  1 nursing home	Sample Size (n): 3 <ul style="list-style-type: none"> <li>• Women: 66.7%</li> <li>• Men: 33.3%</li> </ul>	Pilot study <ul style="list-style-type: none"> <li>• Treatment size (n): 3</li> </ul>	R-E-M psychotherapy <ul style="list-style-type: none"> <li>• Residents were seen for 16 sessions of R-E-M, usually twice per week for 20-30 minutes. R-E-M incorporates aspects of cognitive, behavioural,</li> </ul>	Depression <ul style="list-style-type: none"> <li>• <u>Cornell Scale for Depression in Dementia</u>; Depression scores decreased during the trial and were at their lowest point at termination. A slight increase in depressive symptoms was seen at</li> </ul>

Philadelphia, Pennsylvania, United States	<p><b>Clinical information systems</b></p> <p><b>Evidence-based care</b></p>		<p><b>Sample Age (mean):</b>89.3</p> <p><b>Other Health</b></p> <ul style="list-style-type: none"> <li>Depression.</li> </ul>		<p>humanistic, and psychodynamic treatments and acknowledges the importance of a systems perspective when working in residential settings with clients who depend on others for assistance in meeting their daily needs. R-E-M treatment has three goals: 1) restore self-esteem and support a positive self-concept, 2) empower residents to make use of their existing abilities, and 3) mobilize residents and the environment to achieve and maintain long-term mental health.</p>	<p>follow up suggesting the importance of continuation of treatment to prevent relapse.</p> <p><b>Functional status</b></p> <ul style="list-style-type: none"> <li><u>Multi-Dimensional Assessment Instrument</u>: Participation increased during the course of treatment though this trend was variable. Residents become more engaged in social and solitary activities and were less likely to sit alone in their room or sleep, although as with mood, longer-term gains were inconsistent.</li> </ul> <p><b>Occupation and engagement</b></p> <ul style="list-style-type: none"> <li><u>Multi-Dimensional Assessment Instrument</u>; for all residents, therapists observed progress towards treatment goals. Near the end of therapy, two of the residents experienced a slight decline through their progress although they remained well in the goal attained range of the scale.</li> </ul> <p><b>Therapist's rating of progress</b></p> <ul style="list-style-type: none"> <li><u>A goal attainment scaling approach (Kiresuk &amp; Sherman, 1968), in which therapists and residents agreed on individualized treatment goals at the start of therapy and then periodically evaluated progress toward these goals</u>; mobilize interventions increased frequency during therapy, reflecting the shift of therapeutic attention from relationship building to empowerment then mobilization.</li> </ul> <p><b>Treatment adherence</b></p> <ul style="list-style-type: none"> <li><u>The number of Mobilize interventions administered over the course of therapy, judged by a rater watching videotapes of the therapy sessions</u></li> </ul>
Chapman & Toseland, 2007  United States	Multidisciplinary care	Dementia  2 nursing homes	<p><b>Sample Size (n):</b> 118 (Control: n=60)</p>	<p><b>2x2 Randomized (8 weeks)</b></p> <ul style="list-style-type: none"> <li>Treatment size (n): 47</li> <li>Control size (n): 61</li> </ul>	<p><b>Advanced Illness Care Teams</b></p> <ul style="list-style-type: none"> <li>Team of medicine, nursing, social work, psychology, physical and occupational therapy, and nutrition met 5 times (Each AICT met five</li> </ul>	<p><b>Agitation</b></p> <ul style="list-style-type: none"> <li>Cohen-Mansfield Agitation Inventory</li> </ul> <p><b>Pain</b></p>

					times (weeks 1, 2, 3, 5, and 8) during the eight-week intervention period) to address (1) medical issues, (2) meaningful activities, (3) psychological problems, and (4) behavioral concerns of residents.	<ul style="list-style-type: none"> <li>• Faces Legs Activity Cry Consoliability Behavioural Pain Scale</li> <li>• Pain in Advanced Dementia</li> </ul> <p><b>Depression</b></p> <ul style="list-style-type: none"> <li>• Cornell Scale for Depression in Dementia</li> </ul>
Day et al., 2014	<p>Multidisciplinary care</p> <p>Coordinated care</p> <p>Clinical information systems</p> <p>Evidence-based care</p>	<p>Diabetes Mellitus</p> <p>1 long-term care facility</p>	<p>Sample Size (n): 22</p> <ul style="list-style-type: none"> <li>• Women: 45.5%</li> <li>• Men: 54.5%</li> </ul>	<p>Repeated measures (6 months)</p> <ul style="list-style-type: none"> <li>• Treatment size (n): 22</li> </ul>	<p><b>Chart review, training sessions and coordinated diabetes mellitus disease management (CDDM) model processes</b></p> <ul style="list-style-type: none"> <li>• Firstly, a medical chart review to identify residents with diabetes mellitus, including short-term care and long-stay residents: demographics, resident condition, current treatments, preventive screenings, glycated hemoglobin A1c (HbA1c) levels, incidence of hypoglycemia or hyperglycemia, patient participation in planning care, and medication use. Later, the QI intervention was implemented using an interdisciplinary team (two physicians and an NP, a director of nursing, an administrator, a staff nurse, a dietician, a pharmacist, an activity director, and a physical therapist). The NP conducted 1-hour training sessions for all nursing staff using current guidelines for diabetes mellitus management (evidence-based plan of care using an</li> </ul>	<p><b>Sliding scale insulin use</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review</u>: There were improvements in attaining HbA1c goals (36% to 85%), reductions in hypoglycemia incidence (p=0.018), and decreased use of SSI orders (p=0.004).</li> </ul> <p><b>Incidence of hypoglycemia</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review</u>: There was no significant change in hyperglycemia incidence (p=0.603) and medication use (p&gt;0.05) but there was a significant increase in preventive screenings (p&lt;0.001) and CKD screenings (p=0.001).</li> </ul> <p><b>Use of oral medications: metformin, sulfonylureas, and dipeptidyl peptidase-4 [DPP-4] inhibitors</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review</u></li> </ul> <p><b>Stage of kidney disease by glomerular filtration rate</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review</u></li> </ul>

					interprofessional team approach).	
Kolanowski et al., 2005	Multidisciplinary care	Dementia	<p>Sample Size (n): 30</p> <ul style="list-style-type: none"> <li>Women: 77%</li> <li>Men: 23%</li> </ul> <p>Sample Age (mean): 82.3</p> <p>Sample Age (SD): 7.5</p> <p>Other Health</p> <ul style="list-style-type: none"> <li>Stable dose of psychoactive drug and behavioural symptoms</li> </ul>	Crossover experimental design with repeated measures (82 days)	<p>Recreational activities from the Need-driven Dementia-compromised Behaviour (NCB) model</p> <ul style="list-style-type: none"> <li>Participants assigned to one of six possible order-of-condition presentations using a permuted blocked randomization scheme. Five participants assigned to each order of presentation. Trained research assistants, blind to condition match, implemented each activity condition for up to 20 minutes per day for 12 consecutive days, with a 2-day washout period between conditions: activities matched to skill level only; activities matched to style of interest only; and a combination of both.</li> </ul>	<p>Time on task</p> <ul style="list-style-type: none"> <li>Time in minutes and seconds (time on task) that the participant participated in each activity session and the intensity of participation, taken from videotapes. Intensity of participation was measured using a method developed by Kovach and Magliocco (1998). Participation was coded as active: physically or verbally engaging in the steps of an activity, passive: paying attention to the activity, others participating in the activity, or the leader, or commenting on the activity while not directly engaging in the activity, null: physically inactive, eyes opened but not focused on a particular event or person, and no purposeful activity apparent, dozing: eyes closed in apparent sleep, or unrelated: the person engaging in an activity unrelated to the planned therapeutic activity (Kovach &amp; Magliocco, 1998); A significant difference in mean time on task among the treatments (<math>p=0.001</math>) was found. The least squares means for treatment C was significantly higher than for treatment A (<math>p=.001</math>), but not significantly different from treatment B (<math>p=0.371</math>). Treatment B was significantly higher than treatment A (<math>p=0.040</math>).</li> </ul> <p>Engagement</p> <ul style="list-style-type: none"> <li>Measured from videotapes, using a stopwatch, starting from the initiation of engagement in activity and ending at 20 minutes or when the participant disengaged from the activity. Raters followed decision rules for identifying when the participant was "engaged" and when "disengaged"; A significant difference in mean participation among the treatments (<math>p&lt;0.001</math>). The least squares means for treatment C was significantly higher than that for treatment A (<math>p&lt;0.001</math>) or treatment B (<math>p=0.003</math>). Treatments A and B were not significantly different (<math>p=0.442</math>).</li> </ul> <p>Positive affect</p> <ul style="list-style-type: none"> <li>Philadelphia Geriatric Center Affect Rating Scale; A significant difference in positive affect among the treatment means (<math>p&lt;0.001</math>). Positive</li> </ul>
Pennsylvania, United States	Coordinated care	4 nursing homes				

						<p>affect was significantly lower for baseline than for treatments B (<math>p = 0.009</math>) or C (<math>p &lt; 0.001</math>), but not for treatment A (<math>p = 0.124</math>). Positive affect was significantly higher for treatment C than for treatment A (<math>p = 0.021</math>), but not for treatment B. (<math>p = 0.219</math>). Treatments A and B were not significantly different (<math>p = 0.748</math>).</p> <p><b>Negative affect</b></p> <ul style="list-style-type: none"> <li><u>Philadelphia Geriatric Center Affect Rating Scale</u>; There was not a significant difference among the treatment means for negative affect, although the <math>p</math> was very close to the 0.05 cut point (<math>p = 0.056</math>), suggesting there may be some treatment effect. The preplanned comparisons with baseline do show significant differences for baseline versus treatment A (<math>p = 0.046</math>), baseline versus treatment B (<math>p = 0.011</math>), and baseline versus treatment C (<math>p = 0.042</math>). There was less negative affect under all three treatments compared to baseline.</li> </ul> <p><b>Agitation</b></p> <ul style="list-style-type: none"> <li><u>Modified form of Cohen-Mansfield Agitation Inventory</u>; There was little variability in CMAI scores across days within treatments. There was a significant difference in mean score among the treatments (<math>p &lt; 0.001</math>). Under treatments A, B, and C, there was significantly less agitation (<math>p = 0.007</math> for treatment A, <math>p = 0.001</math> for treatment B, <math>p = 0.002</math> for treatment C) than during baseline. There were no significant differences among treatments A, B, and C (all <math>p &lt; 0.940</math>).</li> </ul> <p><b>Passivity</b></p> <ul style="list-style-type: none"> <li><u>Passivity in Dementia Scale</u>; All treatments significantly reduced each subscale of passivity, with the exception of emotions, where treatment A did not differ from baseline. Treatment C resulted in significantly less passivity compared with treatment A but not B. Treatments A and B did not differ.</li> </ul> <p><b>Mood</b></p>
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						<ul style="list-style-type: none"> <li><b>Dementia Mood Picture Task;</b> No significant difference in mood change score (post, pre) among treatments (p=0.860) and none of the treatments were different from baseline (p=0.542 for treatment A, p=0.997 for treatment B, and p=0.831 for treatment C).</li> </ul>
<p>Kovach et al., 2006</p> <p>United States</p>	<p>Multidisciplinary care</p> <p>Coordinated care</p> <p>Clinical information systems</p> <p>Evidence-based care</p>	<p>Dementia</p> <p>14 long-term care facilities</p>	<p>Sample Size (n): 114</p> <ul style="list-style-type: none"> <li>Women: 75%</li> <li>Men: 25%</li> </ul> <p>Sample Age (mean): 86.55</p> <p>Sample Age (SD): 6.91</p> <p>Other Health</p> <ul style="list-style-type: none"> <li>Behavioural symptoms.</li> </ul>	<p>Double-blinded randomized control trial</p> <ul style="list-style-type: none"> <li>Treatment size (n): 57</li> <li>Control size (n): 57</li> </ul>	<p>Serial Trial Intervention</p> <ul style="list-style-type: none"> <li>Daily logs were used to collect data regarding behavioral symptoms, assessments, and treatments. Nurses were trained to consistently record assessments and treatments on the daily logs using the vignettes until interrater reliability, calculated as percentage agreement, was <math>\geq .85</math>. Logs were checked for quality by advanced practice nurses. Nurses recorded 1 month for logging per resident.</li> </ul>	<p>Count of interventions used within STI steps</p> <ul style="list-style-type: none"> <li><u>Nurses at treatment sites completed a new visual analog scale on daily logs for each step of the STI. Interrater reliability, calculated as percentage agreement, was <math>\geq 0.85</math>; within intervention group, significantly more physical assessments (p&lt;0.001), more affective assessments (p&lt;0.001), and more overall interventions (p&lt;0.001).</u></li> </ul> <p>Discomfort</p> <ul style="list-style-type: none"> <li><u>Discomfort-Dementia of the Alzheimer's Type:</u> Significant difference over time (p&lt;0.001), average scores for pre-test to 4-wk for treatment group was 162.91 to 122.17 and for control was 158.39 to 197.92).</li> <li><u>BEHAVE-Alzheimer's Disease;</u> No significant difference in BEHAVE-AD scores. Decrease in scores in both groups over time (average scores for pre-test to 4-wk for treatment group was 7.43 to 4.68 and for control was 6.80 to 4.96).</li> </ul>
<p>Martinen &amp; Reundl, 2004</p> <p>United States</p>	<p>Multidisciplinary care</p> <p>Patient self-management</p> <p>Delivery system redesign</p>	<p>Congestive heart failure</p> <p>Skilled nursing home &amp; assisted living</p>	<p>Sample Size (n): 28</p>	<p>Prospective cohort study (6 months)</p> <ul style="list-style-type: none"> <li>Treatment size (n): 28</li> </ul>	<p>Protocol for monitoring congestive heart failure</p> <ul style="list-style-type: none"> <li>An interdisciplinary team that included the facility's medical director, director of nursing, and key nursing unit leaders developed a protocol for monitoring congestive heart failure. The protocol comprised of four parts: 1) diagnosis verification, 2) weight monitoring regimen, 3) preventive vaccination policy, and 4) patient</li> </ul>	<p>Availability of echocardiogram</p> <ul style="list-style-type: none"> <li><u>Chart review: options are Yes/No;</u> By September, echocardiograms were included in the records of 66% of residents with heart failure in the nursing home and 55% of those in assisted living. In November, there was a slight decrease to 50% of those in the nursing home while echocardiograms for those in assisted living remained unchanged. Echocardiogram use improved to 67% (n = 18) 5 months following the initial three assessment periods.</li> </ul> <p>ACE inhibitor use</p> <ul style="list-style-type: none"> <li><u>Chart review: options are Yes/No;</u> the use of ACE inhibitors for appropriate cases of heart</li> </ul>

	<p><b>Clinical information systems</b></p> <p><b>Evidence-based care</b></p>				<p>education. Nursing staff then received education regarding the specifics of the protocol. The protocol is initiated at admission or readmission from acute care for those with a diagnosis of heart failure. Admissions personnel play a key role in early recognition of potential cases by requesting supportive diagnostic information such as echocardiogram and cardiology consult reports from discharging hospitals and admitting physicians. Recent weight information is requested along with immunization history.</p>	<p>failure, increased in both settings from the baseline calculations. By the third assessment period, this group of medications was prescribed for 66% of assisted living and 50% of nursing home residents with systolic heart failure. In a re-evaluation 5 months following the initial three measurement periods, ACE inhibitor use improved even further to 83% in the skilled nursing residents (n = 18).</p> <p><b>Standardized nursing assessment</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review: options are Yes/No</u>; Nursing assessment and the response of physicians were not assessed at baseline. In the assisted living section, 66% of residents with heart failure were being appropriately weighed by September, and reports to physicians were made in an appropriate manner. By November, there was 100% success in both the nursing home and assisted living with monitoring residents' weight. During the November monitoring, none of the residents had worsened heart failure symptoms sufficient to require acute inpatient treatment; instead, all were treated in the long-term care setting. Five months after the third measurement period, a review of skilled nursing residents showed that of 18 heart failure residents, 11 were identified by staff as having episodes of clinical deterioration (n = 22 episodes), but only one episode led to acute hospitalization.</li> </ul> <p><b>Immunization rates</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review: Percentage</u>; The influenza vaccination rate improved to 90% in both residential and nursing home settings. The assisted living section achieved 100% compliance with pneumonia vaccination; the nursing home compliance with this indicator was 30%.</li> </ul> <p><b>Resident education</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review: Percentage</u>; The assisted living section reached 100% compliance with resident education by the September assessment, but during the November assessment, there was still only 30% achievement of resident education in the nursing home. An assessment conducted 5</li> </ul>
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						months after the November assessment showed no improvement in the area of resident education.
Opie et al., 2002	Multidisciplinary care	Dementia	Sample Size (n): 99 <ul style="list-style-type: none"> <li>Women: 73%</li> <li>Men: 27%</li> </ul> Sample Age (mean): 83.9	Step wedged trial (4 weeks [early consultation]; 4 weeks [late consultation]) <ul style="list-style-type: none"> <li>Treatment size (n): 48 (early consultation); 51 (late consultation)</li> </ul>	Early consultation <ul style="list-style-type: none"> <li>Consultancy team, comprised of four members with expertise in psychiatry, psychology and nursing, met weekly to discuss new referrals and formulate individualized care plans. Care plans were compiled in a clinically-based fashion after considering the history, observational data and other relevant material, and after discussion of 30 minutes or so of possible interventions. Individually tailored strategies targeting specific behaviours were presented to nursing home staff in the form of a structured written Behaviour Management Plan that listed each strategy's rationale, description, timing and responsible staff. Plans were delivered after the fourth observational day and reviewed at a case conference one week later, where they were modified if necessary.</li> </ul>	Frequency of 30 individual behaviours <ul style="list-style-type: none"> <li>Cohen-Mansfield Agitation Inventory; Hawthorne effect before intervention. Reduction in behaviour counts after intervention. Significant reductions for restlessness (<math>p &lt; 0.05</math>) and all behaviours combined (<math>p &lt; 0.05</math>).</li> </ul>
Australia	Coordinated care	42 nursing homes	Other Health <ul style="list-style-type: none"> <li>Moderately disruptive behaviour(s).</li> </ul>		Late consultation <ul style="list-style-type: none"> <li>Same as early consultation, only plans were delivered after the seventh observational day.</li> </ul>	Frequency and disruption score for four CMAI-derived groupings of behaviour: restlessness, physical aggression, verbal disruption, and socially or sexually inappropriate behaviour <ul style="list-style-type: none"> <li>Modified form of Behaviour Assessment Graphical System; BAGS scores for restlessness/anxiety, physical aggression, verbal disruption and inappropriate behaviours decreased among residents (in order of most to least prevalent). Significant reductions in restlessness (<math>p &lt; 0.05</math>), verbal disruption (<math>p &lt; 0.005</math>), inappropriate behaviours (<math>p &lt; 0.05</math>) and all behaviours combined (<math>p &lt; 0.0005</math>) were found in both groups. A main time effect was also found. Mean BAGS scores decreased before and after the intervention in both groups but scores in the early group decreased further after the intervention. Significant reductions in restlessness (<math>p &lt; 0.0005</math>), physical aggression (<math>p &lt; 0.01</math>), verbal disruption (<math>p &lt; 0.01</math>) and all behaviours combined (<math>p &lt; 0.0005</math>) were found. A significant time effect for all categories was also found.</li> </ul>
	Evidence-based care					Nurses' rating of change in target behaviours' frequency and severity <ul style="list-style-type: none"> <li>Four-point scale (increased, unchanged, decreased, not applicable); the frequency and severity of restlessness, physical aggression, verbal disruption and/or inappropriate behaviours decreased in most residents (in order for most to least prevalent).</li> </ul>
						Nurses' rating of interventions' acceptability

						<ul style="list-style-type: none"> <li>Most interventions were deemed very acceptable or acceptable.</li> </ul>
<p>Van de Ven et al., 2013</p> <p>Netherlands</p>	<p>Multidisciplinary care</p> <p>Coordinated care</p> <p>Clinical information systems</p> <p>Evidence-based care</p>	<p>Dementia</p> <p>14 care homes</p>	<p>Sample Size (n): 434 residents; 382 staff</p> <ul style="list-style-type: none"> <li>Women: 75.1% (residents); 98.4% (staff)</li> <li>Men: 24.9% (residents); 1.6% (staff)</li> </ul> <p>Sample Age (mean): 84.7 (residents); 43 (staff)</p> <p>Sample Age (SD): 6.3 (residents); 10.9 (staff)</p>	<p>Cluster randomized controlled trial (19 months)</p> <ul style="list-style-type: none"> <li>Treatment size (n): 73 (residents); 141 (staff); 7 (care homes)</li> <li>Control size (n): 119 (residents); 178 (staff); 7 (care homes)</li> </ul>	<p>Dementia-care mapping</p> <ul style="list-style-type: none"> <li>Dementia-care mapping (CDM) is a cyclic intervention consisting of three components: systematic observation, feedback to the staff, and action plans. Ten staff members, two from each intervention care home, attended the basic and advanced training given by DCM Netherlands and became certified dementia-care mappers [16]. Advanced users are able to observe, report, provide feedback to the staff, and instruct and support them in drawing up action plans. After the training, a member of DCM Netherlands and the researchers (AP and GV) gave the intervention care homes a DCM organisational briefing day. After completing the DCM training and attending the organisational briefing day, the trained mappers were to carry out at least two DCM cycles.</li> </ul>	<p>Agitation (residents)</p> <ul style="list-style-type: none"> <li>Cohen-Mansfield Agitation Inventory: No significant effect of the DCM intervention on our primary outcome measure, agitation. The mean difference between groups was 2.4 with a 95% CI of -2.76 to 7.6 and <math>p=0.34</math>.</li> </ul> <p>Neuropsychiatric symptoms (residents)</p> <ul style="list-style-type: none"> <li>Neuropsychiatric Inventory-Nursing Home: There was a significant interaction effect of group and time (<math>p=0.02</math>) for NPSs in dementia, measured with the NPI-NH. The total F times S score dropped in the control group over time, which means fewer NPSs, but this was not the case in the intervention group. The symptom 'delusions' in the NPI-NH also showed a significant interaction effect between time and group; fewer delusions were reported over time in the control group than in the intervention group (<math>p=0.01</math>).</li> </ul> <p>Quality of life (residents)</p> <ul style="list-style-type: none"> <li>Qualidem: Significant overall time effect (<math>p=0.01</math>); poorer quality of life was reported over time in both groups. The subscale 'social relations' in the Qualidem showed a significant interaction between group and time (<math>p=0.03</math>). The score in the control group decreased between baseline and T1, while between T1 and T2, the intervention group showed a decrease in quality of social relations.</li> <li>EuroQol5D: significantly decreased values, irrespective of the group (<math>p&lt;0.01</math> for time effect). There were no other statistically significant results at the resident level.</li> </ul> <p>Stress-related symptoms (staff)</p>

						<ul style="list-style-type: none"> <li><b>General Health Questionnaire:</b> Significant overall time effect, and fewer stress-related symptoms were reported over time in both groups (<math>p &lt; 0.001</math>). There were significant differences between all times: T1 compared to baseline (mean difference <math>-1.8</math>, 95% CI <math>-2.3</math> to <math>-0.2</math>; <math>p &lt; 0.001</math>), T2 compared to T1 (mean difference <math>-0.8</math>, 95% CI <math>-1.4</math> to <math>-0.2</math>; <math>p = 0.01</math>) and T2 compared to baseline (mean difference <math>-2.6</math>, 95% CI <math>-3.2</math> to <math>-2.0</math>; <math>p &lt; 0.001</math>).</li> </ul> <p><b>Job experience (staff)</b></p> <ul style="list-style-type: none"> <li><b>Questionnaire about Experience and Assessment of Work:</b> The group by time effect in the QEA was significant for the subscales 'autonomy' (<math>p = 0.04</math>) and 'work pleasure' (<math>p = 0.03</math>), but these differences were not straightforwardly in favour of the intervention group or the control group. On the subscale 'emotional reactions', staff in the intervention group reported significantly fewer negative emotional reactions (such as being hurried or nervous) and more positive emotional reactions (such as being optimistic and relaxed) over time than staff in the control group did (interaction effect <math>p = 0.03</math>).</li> </ul> <p><b>Job satisfaction</b></p> <ul style="list-style-type: none"> <li><b>Maastricht Job Satisfaction Scale for Healthcare:</b> No significant intervention effects in the MJSS-HC.</li> </ul>
Vida et al., 2012  Montreal, Quebec, Canada	Multidisciplinary care  Coordinated care  Clinical information systems  Evidence-based care	Dementia  1 long-term care centre	<p>Sample Size (n): 308</p> <ul style="list-style-type: none"> <li>Women: 73.4%</li> <li>Men: 26.6%</li> </ul> <p>Sample Age (mean): 86</p> <p>Sample Age (SD): 6.9</p> <p>Other Health</p> <ul style="list-style-type: none"> <li>Receiving regular antipsychotic medication.</li> </ul>	<p>Prospective cohort study (5 months)</p> <ul style="list-style-type: none"> <li>Treatment size (n): 53</li> </ul>	<p>Interdisciplinary education program about the behavioural and psychological symptoms of dementia</p> <ul style="list-style-type: none"> <li>Two education sessions on BPSD and APs were given to both physicians and nurses. The program update was adapted from the aforementioned 2004 interdisciplinary education program (Monette et al., 2008). The education sessions consisted of two lectures,</li> </ul>	<p>Discontinuations and dose reductions of antipsychotics</p> <ul style="list-style-type: none"> <li><b>Electronic pharmacy records review:</b> Discontinuation or reduction trials were made for 24 residents (52.2%). Of the 46 analyzable subjects, there were 10 (21.7%) AP discontinuations, 7 (15.2%) AP dose reductions and 7 (15.2%) unsuccessful discontinuations or dose reductions.</li> </ul> <p>Frequency of disruptive behaviours</p> <ul style="list-style-type: none"> <li><b>Nursing Home Behaviour Problems Scale:</b> There was a difference of 1.4 between the NHBPS scores at baseline and after intervention, which is</li> </ul>

					lasting approximately 60–90 minute in duration, on pharmacological and nonpharmacological approaches to BPSD. Each of these two lectures was given separately to groups of physicians and nurses with some content adjusted according to the learning needs of each group. Specifically, more information was given to physicians regarding contraindications and precautions with APs. Written reference materials were distributed to participants at the end of each education session which included a hard-copy of the slides being presented as well as consensus guidelines for clinical assessment, treatment and monitoring.	not statistically significant (Wilcoxon statistic = -1.166, p = 0.244).
Williams & Curtis, 2015  Toronto, Ontario, Canada	Clinical information systems  Evidence-based care	Diabetes Mellitus  1 long-term care facility	<p>Sample Size (n): 121</p> <ul style="list-style-type: none"> <li>Women: &lt;10%</li> <li>Men: &gt;90%</li> </ul> <p>Sample Age (mean): 87.4</p> <p>Sample Age (SD):5</p> <p>Other Health</p> <ul style="list-style-type: none"> <li>Physical and cognitive disabilities.</li> </ul>	Cross-sectional survey (16 months) <ul style="list-style-type: none"> <li>Treatment size (n): 121</li> </ul>	<p>Diabetes Mellitus management flow sheet for physicians in long-term care</p> <ul style="list-style-type: none"> <li>The diabetes mellitus management flow sheet used for this study incorporated all data elements required for physicians to bill the K030 Diabetes Management code. Attending physicians were asked to complete and update every 3 months the diabetes mellitus chronic disease management flow sheet for each of the study</li> </ul>	<p>Percentage of flow sheet items completed</p> <ul style="list-style-type: none"> <li><u>Chart review</u>: within 14 months of the study's commencement, 39% of the patients had expired. Flow sheet data were available for 43% of the expired patients. For the remaining active patients, 66% had flow sheets available. In total, 57% of the original sample had flow sheets available (69 flow sheets completed). For expired patients, 1 previously completed record could not be found. For 26 expired participants, the flow sheet could not be located in the chart.</li> </ul>

					participants on their units.	
Zwijzen et al., 2014	Multidisciplinary care	Dementia	Sample Size (n): 659 <ul style="list-style-type: none"> <li>Women: 69.7%</li> <li>Men: 30.3%</li> </ul> Sample Age (mean): 84 Sample Age (SD): 7.3	Stepped-wedge design (20 months) <ul style="list-style-type: none"> <li>Treatment size (n): 659</li> </ul>	<b>The Grip on Challenging Behaviour</b> <ul style="list-style-type: none"> <li>A care program that consists of 4 steps: detection, analysis, treatment, and evaluation. To ensure that no signs of challenging behavior were missed during daily observations, every 6 months the units' care staff filled in a screening tool to detect signs of challenging behavior that they did not already address spontaneously. If signs of challenging behavior were detected (either in daily care or by using the screening tool), a structured analysis form was used by the care staff. Following this, the unit psychologist or the unit elderly care physician was called in to undertake further analysis. Both the physician and the psychologist had their own analysis form, based on national guidelines. Later, a multidisciplinary team were trained to evaluate the forms using a flowchart on the evaluation form.</li> </ul>	<b>Severity and frequency of challenging behaviour</b> <ul style="list-style-type: none"> <li><u>Cohen-Mansfield Agitation Inventory</u>; CMAI scores of intervention group compared to control group were significantly different (-2.4, 95%CI -4.3 to -0.6).</li> <li><u>Neuropsychiatric Inventory</u>; There was no significant difference in the number of neuropsychiatric symptoms but there was an improvement in agitation scores over time in the intervention group (p=0.01).</li> </ul> <b>Psychoactive drug use</b> <ul style="list-style-type: none"> <li><u>Chart review</u>; the odds of being prescribed psychoactive drugs were significantly lower after the introduction of the care program.</li> </ul>
Pieper et al., 2016	Multidisciplinary care  Evidence-based care	Dementia  21 independent nursing home units	Sample Size (n): 288 <ul style="list-style-type: none"> <li>Women: 71.4%-72.3%</li> <li>Men: 27.7-28.6%</li> </ul>	Cluster randomized controlled trial (6 months) <ul style="list-style-type: none"> <li>Treatment size (n): 148</li> </ul>	STA OP! <ul style="list-style-type: none"> <li>Healthcare professionals received training of 5 meetings lasting 3 hours each in the stepwise working method and in</li> </ul>	<b>Severity and frequency of challenging behaviour</b> <ul style="list-style-type: none"> <li><u>Cohen-Mansfield Agitation Inventory</u>; CMAI scores of intervention group compared to control group were significantly different (-4.07, 95%CI -7.90 to -0.24).</li> </ul>

		<p><b>12 nursing homes</b></p>	<p><b>Sample Age (mean):</b> 83.3-84.3 <b>Sample Age (SD):</b> 6.9-7.4</p>		<p>enhanced clinical assessment for people living with advanced dementia. Specifically, challenging behaviors were identified, needs assessments were performed, medication was reviewed, psychologists were consulted when necessary, and management strategies (i.e. nonpharmacologic, analgesic, psychotropic as last resort) were trialed.</p>	<ul style="list-style-type: none"> <li>• <u>Neuropsychiatric Inventory -Nursing Home version</u>; NPI-NH scores of intervention group compared to control group were significantly different (-3.57, 95%CI -6.30 to -0.84).</li> </ul> <p><b>Depression</b></p> <ul style="list-style-type: none"> <li>• <u>Cornell Scale for Depression in Dementia</u>; CSDD scores of intervention group compared to control group were significantly different (-1.59, 95%CI -2.49 to -0.69).</li> <li>• <u>Minimum Dataset Depression Rating Scale</u>; MDS-DRS scores of intervention group compared to control group were significantly different (-0.96, 95%CI -1.40 to -0.52).</li> </ul> <p><b>Psychoactive drug use</b></p> <ul style="list-style-type: none"> <li>• <u>Chart review</u>; There was no evidence of a significant difference in the odds of being prescribed psychoactive drugs in the intervention group compared to the control group (OR 0.69, 95% CI 0.27-2.12).</li> </ul>
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