

SCOPE: Safer Care for Older Persons (in Residential) Environments: A Single Arm Pilot Study

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Keywords: Nursing Homes, Quality Improvement, Pilot Study, Care aide-led intervention, Facilitated Coaching, SCOPE

Posted Date: March 19th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-337193/v1>

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Abstract

Background: Nursing home residents require daily support. While care aides provide most of this support they are rarely empowered to lead quality improvement (QI) initiatives. A previous proof of principle study, called Safer Care for Older Persons in Residential Care Environments (SCOPE), demonstrated that care aide-led teams can successfully participate in QI interventions. In preparation for a large-scale study, this one-year pilot evaluated how well the bundle of SCOPE coaching strategies helped care-aide led teams to enact these interventions. A secondary aim was to determine if improvements in resident quality of care occurred.

Methods: Using a modified *IHI Breakthrough Collaborative Series* model in a prospective single-arm study design, we randomly sampled 7 nursing homes in Winnipeg, Manitoba from the longitudinal Translating Research in Elder Care (TREC) cohort. Each SCOPE team had 5-7 front-line staff led by care aides. Teams received coaching to enact the intervention (i.e., to create actionable aim statements, implement QI interventions using plan-do-study-act [PDSA] cycles, use measurement to guide decision making) during three learning congresses, networked and shared learning experiences during these sessions, and received additional support from quality advisors between congresses. We used self-report data to code intervention enactment ('poor', 'adequate', 'excellent'), and also measured improvement in team cohesion and communication. Secondarily, we observed changes in unit-level quality indicators using RAI-MDS 2.0 data.

Results: Most teams successfully enacted SCOPE. Five of 7 teams created adequate-to-excellent aim statements throughout the pilot (e.g., statements were specific, measurable, time-bound). While 6 of 7 teams successfully implemented PDSAs, only 2 reported spreading their idea to involve more than a few residents and/or staff on their unit. Three of 7 teams explicitly stated how measurement was used to guide decisions. Team cohesion and communication scored high at baseline, and hence improved minimally. Resident quality indicators improved in 4 of the 7 nursing home units.

Conclusions: Our bundled coaching strategies helped most care aide-led teams to enact SCOPE. Coaching modifications are needed in follow-up studies to help teams more effectively use measurement, and to spread successful interventions within the unit. More detailed and robust approaches are also needed to monitor treatment enactment.

Key Messages Regarding Feasibility

- In preparation for a large-scale study, this pilot was conducted to ensure that our bundle of coaching strategies helped care-aide led nursing home teams to enact a quality improvement intervention called Safer Care for Older Persons in Residential Care Environments (SCOPE).
- Five of 7 teams created adequate-to-excellent aim statements throughout the pilot, and 6 of 7 teams successfully implemented PDSA cycles. Only 3 of 7 teams explicitly stated how they used measurement to guide quality improvement decisions.

- Our coaching strategies successfully helped teams to enact SCOPE, and hence these strategies can be applied to larger follow-up studies. Coaching modifications are needed to help teams more effectively use measurement, and to spread successful interventions within the unit. More detailed and robust approaches are also needed to monitor treatment enactment.

Background

Older adults are the fastest growing segment of the worldwide population [1]. As life expectancy increases so does the number of people with dementia and other co-morbid medical conditions [2-6]. Annually, 1.7 million North Americans reside in nursing homes [7] and at least half of these residents have some form of age-related dementia, often combined with additional impairments (e.g., difficulties completing daily tasks, responsive behaviours, frequent incontinence) [8-10]. This vulnerable group requires complex health, personal, and social care, provided in ways that has meaning for residents [11] and that emphasize the importance of relational care and quality of life [12]. While media have highlighted the significant challenges with nursing home care during pandemic times [13-15], the quality of care provided in this sector has been recognized as suboptimal for decades, and many groups have called to improve nursing home structures and care processes [16-20].

Care aides (unregulated workers, also called personal support workers, orderlies or nursing assistants) provide 80% - 90% of direct care to nursing home residents [21]. These staff are best situated to observe, interpret and respond to residents' daily needs [22, 23], making them uniquely positioned to meaningfully participate in and, we contend, to lead quality improvement (QI) initiatives. However, research shows that care aides are routinely excluded from care planning processes, making them feel under-valued by other care staff and emphasizing the need to create more constructive collaborative care approaches [24]. Evidence shows that empowering care aides enhances their work performance and quality of work life [25-27], and that improving inter-professional collaboration can enhance nursing home care quality [28-30].

Given this knowledge, we had previously developed an intervention called Safer Care for Older Persons in Residential Care Environments (SCOPE) [31]. SCOPE is a multi-component intervention designed to empower care aides to lead, with coaching support, QI activities at the resident care unit level. SCOPE was designed to improve care aides' abilities to engage in QI initiatives, to facilitate the use of best evidence in their practice, and secondarily to improve their quality of work life and engagement. Enhancements in these areas should ultimately lead to improved quality of resident care and their associated health-related outcomes. In a proof-of-principle study, TREC researchers have shown that care aide-led teams can feasibly engage in SCOPE and learn about/apply QI interventions at the resident bedside, which in some instances resulted in unit-wide improvements in select clinical areas [32].

We undertook this pilot study in preparation for a larger trial. The aim of this pilot was to evaluate how well SCOPE coaching strategies helped care-aide led teams to enact their QI interventions, by specifically (1) creating actionable QI aim statements, (2) implementing their QI plans using plan-do-study-act (PDSA)

cycles, and (3) using measurement to guide decisions about the need to modify their intervention approaches. We also measured improvement in team cohesion and communication during SCOPE, and secondarily described changes in quality indicators (i.e., pain, mobility and responsive behaviours) at the resident care unit-level.

Methods

Study design

This was a single arm prospective pilot study, lasting one year.

Setting & Sample

The SCOPE pilot was conducted with a random sample of 7 of 16 nursing homes located in Winnipeg, Manitoba that are enrolled in the Translating Research in Elder Care (TREC) program. TREC is a multilevel, longitudinal program of applied health services research designed to improve the quality of care and quality of life for nursing home residents, and also the quality of work life for their care staff [33]. TREC applies these constructs at the clinical microsystem (care units) where quality is created [34, 35]. The overall TREC cohort was created using a stratified (owner model, size, region) random sample [33].

The SCOPE Teaching and Coaching Strategies

The SCOPE intervention is based on a modified *Institute for Healthcare Improvement (IHI) Breakthrough Collaborative Series* model [36]. It was also informed by knowledge translation theory, specifically focusing on the role that facilitation plays in implementation success [37, 38]. Details of these coaching strategies are provided elsewhere [31, 39] with each component shown in **Figure 1**. Components include (1) a 'Getting Started' evidence kit with clinical information and improvement strategies, specific to one of three clinical areas (reducing pain, improving mobility, reducing dementia-related responsive behaviours) selected by teams; (2) three 2-day learning congresses designed to train SCOPE teams in basic QI approaches, and importantly, to provide them with peer to peer (from other units and sites) networking and learning opportunities; (3) a quality advisor who helped to design and implement the learning congresses, and who supported teams (in-person visits, telephone calls) regularly between these sessions; (4) a quality coordinator who provided oversight to the quality advisor, and who led virtual and in-person discussions to help unit and facility managers support front-line QI teams; and, (5) a celebratory congress held at the end of the pilot.

The quality advisor was the main liaison with each team. Duties included: 1) meeting with each team at the beginning of SCOPE to review the 'Getting Started' information kit; 2) working with the quality coordinator and research team to prepare and facilitate learning congresses; 3) conducting face-to-face meetings with each team at least monthly, to help them enact their PDSA plans and brainstorm solutions

to challenges encountered; 4) being available for additional team consultation (phone, email) as needed; and, 5) keeping a diary of team interactions and progress.

Participants and Study Procedures

Executive Directors from each facility received a written invitation to participate in the pilot followed by an in-person meeting to answer questions, to explain nursing home responsibilities, and to discuss available support. Sites were selected randomly with replacement; 1 site declined to participate, stating insufficient staff levels to engage in research. No sites were lost to follow-up during the research.

Following written consent to participate in the pilot, the Executive Director identified a senior sponsor (usually the Director of Care) to help promote SCOPE to other management staff, and to remove implementation barriers throughout the pilot as needed. This individual identified, at their discretion, one unit from their facility to participate in the pilot, and selected a unit-level team sponsor (usually a unit-level clinical nurse manager) who was responsible to support day-to-day project activities. Senior and Team Sponsors collaborated to select a front-line team consisting of 5-7 members. At least 2 team members were care aides with one as team lead; other care staff (e.g., social workers) were selected as needed. Each team chose their intervention to focus on either reducing pain, improving mobility, or reducing dementia-related responsive behaviours. These three areas were selected based on a ranking exercise, completed by care aides before the pilot, using 4 criteria: (1) their perceived importance to care aides, (2) the ability to measure outcomes in these areas using the Resident Assessment Instrument-Minimum Data Set (RAI-MDS 2.0), (3) a distribution in the measures that demonstrated there was room for improvement, and (4) their modifiability [40, 41].

Each congress occurred three months apart (**Figure 1**); the agenda for each learning congress is provided in **Appendix 1**. In Learning congress 1, teams were coached to develop effective QI aim statements, while learning congresses 2 and 3 focused on measurement and strategies to spread effective QI strategies within each team's unit, respectively. Congresses also helped teams to problem solve and share solutions to challenges that they encountered (e.g., getting buy-in from peers), provided teams with knowledge sharing and socialization opportunities (e.g., through impromptu networking sessions and team presentations sharing their PDSA experiences), and provided dedicated planning time to integrate lessons learned into teams' upcoming daily care routines (action periods). During the celebratory conference teams celebrated their achievements, discussed lessons learned, and considered next steps. Examples of activities conducted during the congresses included storyboard sessions and team presentations (designed to help teams share their successes and opportunities to improve); technical training (creating aim statements, conducting PDSA cycles) using improv and simulation techniques, and interactive "games" designed to promote learning in specific quality improvement areas; and time dedicated for team reflection and planning.

Ethics

Approval to conduct the research was provided by the University of Manitoba Health Research Ethics Committee (reference number H2015:045). Each nursing home received \$3000 to help backfill participating team members who attended learning congresses. This study was funded by the TREC program (grant number PS 148582).

Measures

Treatment Enactment

Enactment is an element of treatment fidelity that measures the extent to which people actually implement a specific intervention skill, and differs from what is taught (treatment delivery), what is learned (treatment receipt), and the extent of its effect (treatment efficacy) [42]. Enactment is one of the most challenging aspects of treatment fidelity to measure [42]. Traditional approaches to measuring it include the use of questionnaires and self-reports, structured interviews, and activity logs [42].

Each team was asked to complete a self-assessment form every two months during the pilot (**Appendix 2**). Teams were asked to use this form to (1) create and refine their QI aim statement; (2) report how well they were able to implement QI interventions using PDSA methods (e.g., starting with one or two residents, and involving other residents and/or staff depending on their success); and (3) document how they used measurement strategies and data to guide team decision making (e.g., to assess whether they were making progress towards their aims).

Measures – care aides

Workgroup cohesion is the “degree to which an individual believes that the members of his or her work group are attracted to each other, are willing to work together, and are committed to the completion of the tasks and goals of the work group” [44]. We measured work cohesion using 8 items adapted to align with the pilot (e.g., *We have a lot of team spirit among team members; We know that we can depend on each other; We stand up for each other*).

Workgroup communication is the “degree to which information is transmitted among the members of the work group” [44]. It was measured using 4 items adapted to align with the pilot (e.g., *We frequently discuss resident care assignments with each other; We care share ideas and information*).

Each of these measures was scored on a seven-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’; item scores were averaged to provide an overall score ranging from 1 to 7, with the latter representing strong agreement team cohesion/communication). Scores of ‘4’ on these scales define groups with neutral agreement about group cohesion and communication.

Measures - residents

Quality indicators were assessed using RAI-MDS 2.0 [45], focusing on the percentage of people who showed improvements in mobility, the percentage of people whose responsive behavioral symptoms

improved, and the percentage of people with pain. Resident mobility was assessed using the third generation [46] RAI-MDS 2.0 quality indicator “MOB1a” (the percentage of residents whose ability to locomote on the unit improved). This indicator excludes residents who are comatose, have six or fewer months to live, and/or who were independently mobile during their previous RAI-MDS 2.0 assessment [45]. The quality indicator entitled “BEHI4” was used to identify the percentage of residents on each unit whose behavioral symptoms (i.e., wandering, verbally abusive, physically abusive, socially inappropriate or disruptive behavior) improved from the previous RAI-MDS 2.0 assessment [45]. This indicator excludes residents who are comatose or who had missing behavioral scores in their previous assessment. Resident pain was measured using the RAI-MDS 2.0 pain scale [45]. This quality indicator assesses the percentage of residents with any amount of pain in the last seven days, excluding those with missing or conflicting (no pain frequency but with some degree of intensity) item responses.

Data analysis

Treatment enactment

Each component of treatment enactment was scored using a 5-point scale ranging from poor (1) to excellent (5) (**Table 1**). Aim statements were scored by the extent they met the SMART criteria of being Specific, Measurable, Achievable, Relevant, and Timely [47]. Teams’ ability to plan and implement their intervention using PDSA cycles were scored based on the degree to which their reported plans aligned with aim statements, and by the extent to which they reported spreading their improvement strategies to involve other residents and/or staff within their unit. Teams were also scored by the extent that they documented using measurement strategies and data to guide intervention revisions and related decisions. Two authors (MD, LG) independently rated teams’ scores of treatment enactment, using bi-monthly data reported during the pilot. Scoring discrepancies were resolved through iterative discussions.

Team cohesion and communication

Descriptive measures of workgroup cohesion and communication are shown for months 1, 7 and 12 of the pilot, after verifying that results are equivalent to bi-monthly scores.

Table 1 Scoring System used to Rate Team’s Level of Treatment Enactment During SCOPE

Treatment Enactment Category	Scoring Based on Teams' Self-reported Progression Throughout the Pilot		
	Excellent (5)	Adequate (3)	Poor (1)
Creating Actionable AIM statements^a	The team developed an aim statement that reflects 4 of 5 of the SMART components including the 'specific' and 'measurable' categories.	The team developed an aim statement that reflects up to 3 of the SMART components.	The team's aim statement did not reflect any of the SMART components.
Intervention Progression using Plan-Do-Study-Act (PDSA Cycles)	(1) The team planned and implemented their intervention in a way that aligned with their aim statement, AND (2) reported using PDSA cycles to spread it to involve other residents &/or staff on their unit.	The team planned and implemented their intervention, but it (1) didn't align clearly with their aim statement, OR (2) was only conducted on a limited number of residents &/or staff on the unit.	The team provided no evidence of implementing their intervention, or using PDSA cycles to promote change
Use of Measurement to Guide Decision Making	The team included specific text documenting how measurement and data were used to guide improvement decisions in successive PDSA cycles.	The team made vague reference to measurement tools and/or strategies used to guide decision making in successive PDSA cycles.	The team did not report how measurement and data were used to guide decision making.

^a Team aim statements had to include operational terms (e.g., define responsive behavior) (*Specific*); contain a target goal (e.g., identify the degree of improvement sought) (*Measurable*); be realistic (e.g., initially focus on a smaller number of residents) and/or show progression throughout the pilot (*Achievable*); include information about how (e.g., by creating toolkits to support implementation) or when (e.g., during mealtime) the intervention would happen (*Relevant*), and; include a reference point/date by which intervention success would be measured (*Timely*).

Quality indicators

RAI-MDS 2.0 quality indicators were calculated at the unit-level using quarterly data collected during the pilot, using statistical process control (SPC) methods [48]. Data were not distributed normally and thus the following SPC zones were created using pre-SCOPE (January, 2013 to December 2016) data: a) zone ⁻3=1st-5th percentile; b) zone ⁻2=5th-34th percentile; c) zone ⁻1=34th-50th percentile; d) zone ⁺1=50th-66th percentile; e) zone ⁺2=66th-95th percentile; f) zone ⁺3=95th-99th percentile. Following the SPC Western Electric rules [49], non-random variation was detected if (a) one or more data points during the SCOPE pilot were beyond zone 3 of pre-SCOPE results, (b) two of three successive data points were beyond zone 2, or (c) four of five successive data points were beyond zone 1.

Results

Nursing home characteristics, team composition and QI focus.

The characteristics of SCOPE nursing homes, units and team composition are found in Table 2. Five of the 7 nursing homes in the pilot were (public or voluntary) non-profit, while 2 and 4 homes were medium (80–120 beds) and large (> 120 beds), respectively. Homes had between 1 and 6 units that ranged in size between 27 and 100 beds. A detailed analysis of the nursing home staff characteristics in TREC homes is available elsewhere [50–52].

Five of the seven SCOPE teams focused on reducing dementia-related responsive behaviors, 1 team focused on reducing pain, and 1 focused on improving resident mobility (Table 3). Team and senior sponsors were most often clinical nurse (unit) managers and Directors of Care, respectively. Team size (including the team and senior sponsor) ranged from 5 (n = 4 SCOPE sites) to 7 (n = 1 SCOPE site) individuals. With two exceptions (sites C and F), front-line SCOPE teams were comprised entirely of care aides.

Table 2
SCOPE Nursing Home and Unit Characteristics

Site	Owner-Operator Type	Facility Size^a	# of Units / Facility	Unit Size (# of beds)
A	Voluntary not for profit	Large	4	40
B	Voluntary not for profit	Large	5	27
C	Private for profit	Large	4	100
D	Public not for profit	Medium	2	40
E	Private for profit	Large	6	31
F	Voluntary not for profit	Small	1	57
G	Voluntary not for profit	Medium	4	29

^a Small (< 80 beds), Medium (80–120 beds), Large (> 120 beds)

Table 3
Team Composition and Quality Improvement Topic

Site	Quality Improvement Topic	Team Composition					
		Care Aides	Nurses	Other Staff	Team Sponsor	Senior Sponsor	Total Team Size
A	Responsive Behavior	4	0	0	Unit Manager	DOC	N = 6
B	Responsive Behavior	3	0	0	DOC	CEO	N = 5
C	Responsive Behavior	3	1	0	Unit Manager	DOC	N = 6
D	Responsive Behavior	3	0	0	Registered Nurse	DOC	N = 5
E	Responsive Behavior	3	0	1 Rec Therapy 1 Social Worker	Unit Manager	DOC	N = 7
F	Pain	3	0	0	Unit Manager	DOC	N = 5
G	Mobility	3	0	0	Unit Manager	DOC	N = 5

Acronyms: CEO = Chief Executive Officer; DOC = Director of Care

Intervention Enactment

We graded 3 of the 7 teams as creating excellent aim statements (rating of 5/5) during the course of the pilot (Table 4), 2 teams as creating adequate aim statements (rating = 3/5), and 2 teams as creating 'poor' (rating = 1/5) or 'poor-to adequate' (rating = 2/5) aim statements. To illustrate, Team D defined responsive behavior in their aim statement ('hitting, screaming, arguing'; *specific*), quantified their goals (reducing events by 60%; *measurable*), showed progression during the course of the pilot (reducing events by 60% at month 7, and 90% by Month 12; *achievable and timely*), and defined when the intervention would occur (during activities of daily living; *relevant*) (data not shown). While Team B (graded as adequate) satisfied the 'specific' (defined responsive behavior), 'measurable' (included a target goal) and 'relevant' (reported when the intervention would occur) SMART criteria, this team did not show progression in its aim statement, and nor did it identify a timeline for achieving intervention success. We

graded Team E as having a poor aim statement, as it met the ‘relevant’ SMART criteria only (defined when the intervention would occur).

Table 4
Ratings of Treatment Enactment During the SCOPE Pilot

Site	Quality Improvement Topic	AIM Statements	Intervention Progression	Use of Measurement to Guide Decisions
A	Responsive Behavior	5	4	3
B	Responsive Behavior	3	1	3
C	Responsive Behavior	3	3	1
D	Responsive Behavior	5	3	5
E	Responsive Behavior	1	1	3
F	Pain	2	5	5
G	Mobility	5	5	5

Scoring: 1 = Poor; 2 = Poor to Adequate; 3 = Adequate; 4 = Adequate to Excellent; 5 = Excellent.

We graded 5 teams as achieving adequate to excellent intervention progression (Table 4), however only Teams F and G reported scaling their intervention to involve other residents and/or staff on their unit (these teams received a score of ‘excellent’). Team F reported using ‘pain pocket card survival kits’ to remind and help staff to implement the intervention, and reflected on how they engaged with non-SCOPE providers on their unit to enhance their care processes. We graded Teams B and E as achieving poor intervention progression; both teams reported a ‘success story’ for only one resident at the end of the pilot (data not shown).

Teams D, F and G specifically reported how they used measurement tools (e.g., mobility tracking tools, use of RAI-MDS 2.0 data) to help make decisions throughout the pilot, and hence we graded these teams as excellent in this category (Table 4). Teams A, B and E vaguely referred to measurement (e.g., conducting baseline assessments) without providing details, and were graded as ‘adequate’. Team C did not make any reference to using measurement to guide decisions.

Care aide outcomes.

Team cohesion and communication results are shown in Table 5. Most teams moderately (an average score of '6' across all scale questions) or strongly (an average score of '7' across all questions) agreed with statements about their cohesion and communication throughout the pilot. As the only exception, Team C provided a score of 3.8 (a neutral opinion) for team cohesion at month 12 of the pilot.

Table 5
Self-reported Measures of Workgroup Cohesion and Communication During the Pilot

Site	Quality Improvement Topic	Workgroup Cohesion ^a		Workgroup Communication ^a			
		Month 1 [†]	Month 7	Month 12	Month 1	Month 7	Month 12
		A	Responsive Behavior	5.8	6.9	5.8	6.0
B	Responsive Behavior	5.6	6.4 ^b	5.9	6.5	† 7.0	6.0
C	Responsive Behavior	7.0	6.0	3.8	7.0	6.0	Not completed
D	Responsive Behavior	7.0	6.0	6.3	7.0	7.0	Not completed
E	Responsive Behavior	4.3	Not completed	6.0	4.5	Not completed	6.0
F	Pain	6.0	6.6	6.3	6.0	7.0	7.0
G	Mobility	7.0	6.0	7.0	7.0	6.5	7.0

^a One score provided per team.

^b Data were missing for month 7, and were replaced by month 9 (October, 2016) team responses.

† Month 1 = February, 2016; Month 7 = August, 2016; Month 12 = February, 2017

Resident outcomes.

SPC charts for quality indicators are shown in **Fig. 2**. Patterns of quality care indicator data were non-random during the pilot for Sites D and E (responsive behaviors; one data point beyond zone⁺3), Site G

(mobility; one data point beyond zone⁺3), and Site F (pain; 4 consecutive data points beyond zone⁻1). This non-random pattern for Site F commenced pre-SCOPE. During follow-up discussions Site F leaders disclosed that this was at least partly due to changes in their pain assessment approach (i.e., all residents receiving an analgesic were originally deemed as having pain).

Discussion

This pilot demonstrated that the bundle of SCOPE teaching and coaching strategies – a “getting started” information kit, learning congresses, quality advisor guidance, and discussions to help senior and team sponsors support front-line teams – effectively supported most care aide-led teams’ enactment of their QI strategies. Five of the seven teams provided adequate or excellent aim statements during the course of the pilot, 5 self-reported achieving at least adequate intervention progression (i.e., showed learning and refinement through PDSA cycles), and 3 teams specifically discussed how they used measurement to guide intervention decision making processes during the course of the pilot. While measures of team cohesion and communication did not change appreciably during the pilot, opportunities for positive change were limited by high baseline scores. While this pilot was not powered to detect statistically significant differences in measures of treatment efficacy, some trends for improvement in quality indicators were noted at the resident care-unit level.

These findings align with and are complemented by an earlier qualitative study conducted by Ginsburg et al. (2018) who analyzed data from 6 focus groups conducted during our final SCOPE celebratory congress [39]. The previous findings suggested that front-line providers saw great value in the bundle of SCOPE facilitated coaching strategies – and in particular the learning congresses, senior and team sponsor support, and interactions with quality advisors – for helping them to enact their interventions. While care aides in that qualitative study emphasized the many advantages of SCOPE, they also acknowledged the challenges with implementing QI interventions and offered solutions to them [39]. These include having (1) regular time dedicated for teams to plan and enact their PDSA cycles, (2) clearer team member and leadership roles, and (3) stronger support (e.g., from leaders) to help spread successful intervention strategies to other residents and/or staff on their units. Also complementing the findings reported here, Ginsburg et al. (2018) reported that front-line team members experienced considerable challenges with measurement, and recommended less didactic teaching approaches coupled with more measurement tools included in the Getting Started information kit [39]. Together, these two studies provide insights for adapting the SCOPE intervention in future trials.

Our pilot study findings contribute to the existing nursing home improvement and implementation research [53, 54] in three ways. These contributions apply to future SCOPE interventions, and can also help to transform QI interventions and care aide engagement in NH improvement work more broadly.

First, our results contribute to the growing body of literature showing that care aides can successfully lead QI initiatives, with the proper support. This is important, given care aides’ essential role in providing day-to-day nursing home support coupled with their high degree of knowledge about the wants and needs

of residents [21–23]. Actively engaging with care aides is important to enhance nursing home quality of care, particularly given the need to balance effective medical care with relational and social approaches [11, 12]. Several researchers have demonstrated the benefits of meaningfully engaging both care staff [25–27] and residents [55, 56] during care processes.

Second, these findings contribute to our understanding of the role of facilitated coaching to support quality improvement. Rycroft-Malone and colleagues propose that both task-oriented and enabling facilitation approaches are needed to support quality improvement, pending the improvement target and learning environment [38, 57]. Our SCOPE pilot results, combined with the findings of Ginsburg et al [39], suggest that a combination of technical (e.g., teaching teams to create and use measurement tools), education (e.g., enabling teams to apply these tools within the context of their care environment) and supportive facilitation (e.g., enabling teams to problem solve using simulation and allowing informal network time) approaches are likely needed. Additional research is required to understand how various combinations of facilitation techniques can best support improvement efforts both within the SCOPE intervention and more broadly.

Third, these study findings highlight the value of and need for detailed process evaluation work, including approaches to measure intervention fidelity that allows us to better understand both how and why interventions succeed or fail [58]. While intervention fidelity is traditionally measured using self-report strategies [42], these type of data are prone to information bias [59], and techniques are required to differentiate between what an intervention has taught (fidelity delivery), what is learned (fidelity receipt), and what is enacted (fidelity receipt). A compendium of data collection methods (e.g., self-report and researcher observations) are required to more effectively differentiate between these fidelity sub-components, and to determine their importance [58].

Limitations

SCOPE teams were recruited from a single Canadian health region, and hence lessons learned should be applied cautiously to other jurisdictions and countries. Teams also provided an overall description of treatment enactment without explaining how these scores were decided (e.g., by team consensus, by one person on behalf of the team). As suggested above, more detailed approaches to assessing fidelity enactment will help to provide more robust data on this important construct. Similarly, data on team cohesion and communication were captured at the team level and hence social desirability bias may explain the high scores on these measures. In future research, individual team-member responses may provide a more accurate data on measures of enactment, team cohesion, and communication.

Conclusion

This pilot provided guidance for a larger intervention trial. Results demonstrate that our facilitated coaching strategies supported most care aide-led teams to enact their QI interventions. To further

enhance SCOPE, we recommend modifying certain coaching strategies and improving select research/intervention evaluation tools.

Abbreviations

QI: Quality Improvement; SCOPE: Safer Care for Older Persons in Residential Care Environments; TREC: Translating Research in Elder Care; PDSA: plan-do-study-act; IHI: Institute for Healthcare Improvement; SPC: statistical process control

Declarations

Ethics approval and consent to participate

This study was approved by the University of Manitoba Health Research Ethics Committee (reference number H2015:045).

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available from Translating Research in Elder Care, c/o Dr. Carole Estabrooks, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Dr. Carole Estabrooks.

Competing interests

The authors declare that they have no competing interests.

Funding

This study was funded by the TREC program (grant number PS 148582).

Authors' contributions

AW, CE, PN, JK-S, LG, WB and MD conceived the study, implemented the pilot, and/or collected study data. MD, TB and CE led in preparing the manuscript, and all authors contributed to interpreting results and preparing the manuscript. All authors have read and approved the final manuscript.

Acknowledgements

The authors acknowledge the Translating Research in Elder Care (TREC) 2.0 team for its contributions to this study. Independent research funding was provided by partners in the Ministries of Health in

Manitoba, Alberta, and British Columbia, as well as, regional health authorities in participating British Columbia and Alberta regions.

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Figures

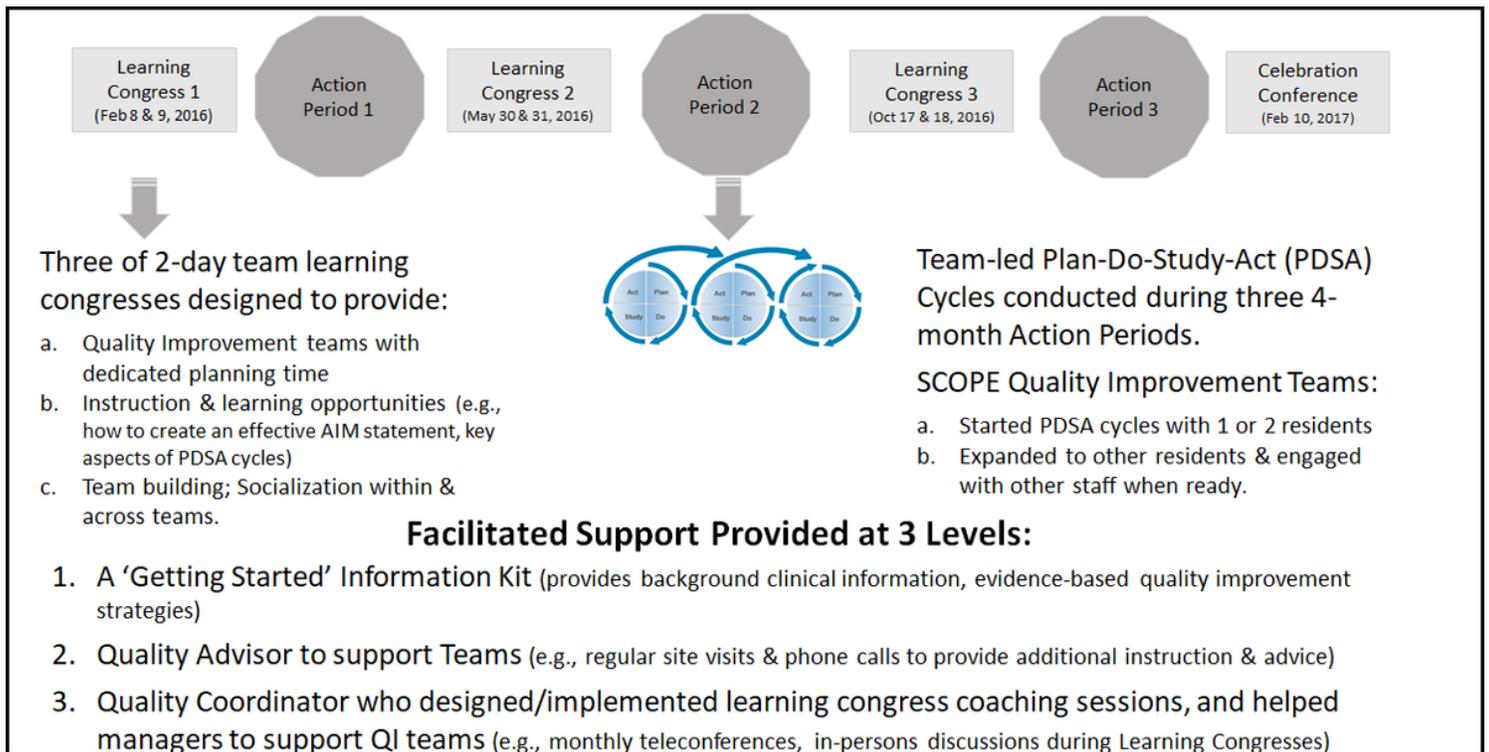
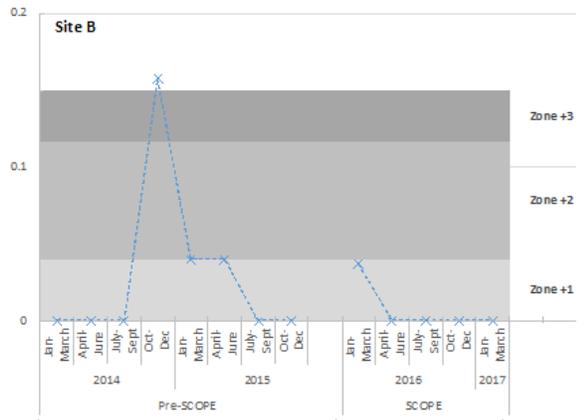
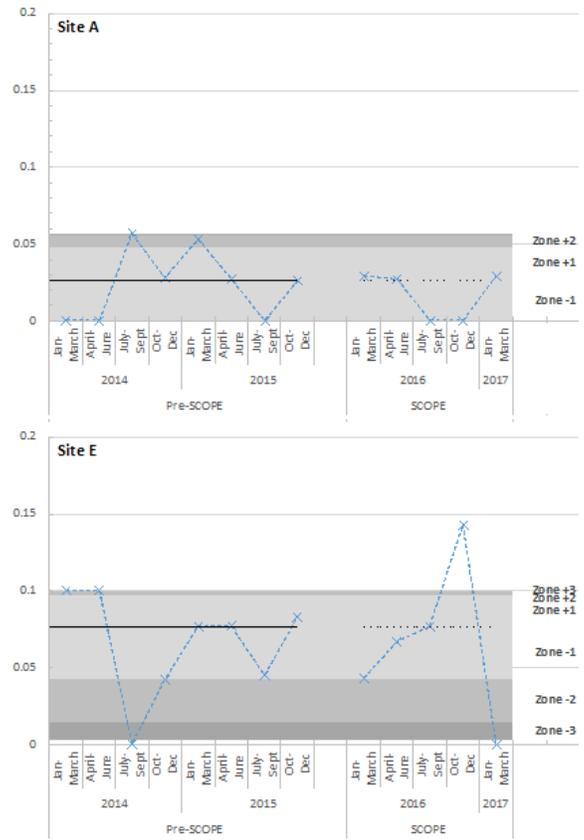


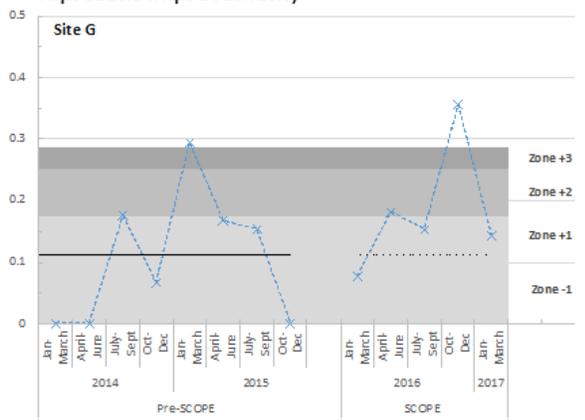
Figure 1

Safer Care for Older Persons in Residential Care Environments (SCOPE) Pilot Study Coaching Strategies (February, 2016 – February, 2017)

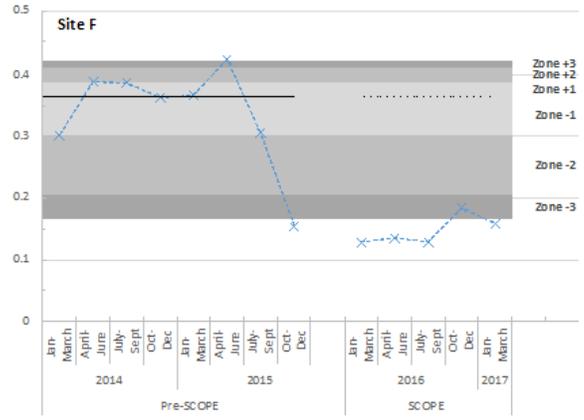
Part 1: Proportion of Residents who Experienced Improvements in Responsive Behavior (Sites A-E; higher scores represent improvement)



Part 2: Proportion of Residents who Experienced Improvements in Mobility (Site G; higher scores represent improvement)



Part 3: Proportion of Residents who Experienced Any Amount of Pain (Site F; lower scores are better)*



* Decreases occurred Pre-SCOPE & are at least partially attributed to changes in this site's approach to measuring pain.

Legend

- Pre-SCOPE Median
- Actual Scores

Zones (Based on & pending the distribution of pre-SCOPE data; e.g., for Site B zones -1 to -3 all equal 0)

- Zone -3: 1st to 5th percentile
- Zone -2: 5th to 17th percentile
- Zone -1: 17th to 50th percentile
- Zone +1: 5th to 83rd percentile
- Zone +2: 83rd to 95th percentile
- Zone +3: 95th to 99th percentile

Figure 2

Unit-level Clinical Outcomes Prior To and During the SCOPE Pilot

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix1.docx](#)
- [Appendix2.docx](#)
- [CONSORTextensionAbstractsChecklist.doc](#)
- [CONSORTextensionforPilotandFeasibilityTrialsChecklist.doc](#)