Promoting Quality Improvement in Long-Term Care: A Multi-Site Collaboration to Improve Outcomes with Pneumonia, Falls, Bacteriuria and Behavioural Issues in Dementia

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Abstract
The Bridges to Care for Long-Term Care research project aimed to facilitate improvements in outcomes for long-term care residents through the provision of knowledge-to-practice and quality improvement resources by trained facilitators. Point-of-care staff reported improved communication and collaboration, improved use of scope of practice and implementation of best practice knowledge. Overall, participating long-term care homes demonstrated an enhanced capacity for common care issues of the elderly (pneumonia, falls, bacteriuria and behavioural and psychological symptoms of dementia) and the ability to effectively engage in quality improvement processes with efficient and effective use of healthcare resources.

The long-term care (LTC) sector is a crucial component of our healthcare system and has distinct challenges. Physicians and LTC health professionals are increasingly challenged in responding to higher-acuity and more advanced disease processes. An additional concern is how to best minimize the occurrence of common safety issues and risks, such as nosocomial infections (Wagnar and Rust 2008). Research has revealed that the context of LTC homes in Ontario may include stagnant approaches to care, a lack of teaching resources, suboptimal quality of resident life and a lack of positive nursing role models (Gates et al. 2009).

A review of the literature combining the major headings of LTC, nursing homes and quality improvement (QI) revealed 140 scholarly publications. The search was refined to focus on research that had targeted issues such as professional roles, general methodologies for QI in LTC and reducing the potentially avoidable use of emergency rooms and acute care hospitals. Despite variability in topic areas and methodologies for implementation, there were common themes that influenced the design and implementation of the Bridges to Care initiative:

- There is an opportunity and willingness for process and practice improvement within LTC (Ouslander et al. 2009).
- The uptake of comprehensive evidence-based tools and multiple risk-based processes may be problematic (ColonEmeric et al. 2006; Ouslander et al. 2009).
- Change must be supported and endorsed at all levels of care within facilities (Capezuti et al. 2007).
- LTC staff and practitioners need additional supports in both initiating and incorporating new QI strategies into their normal work processes for sustainable change (Davies and Cripacc 2008).

The Centre for Studies in Aging and Health (CSAH) at Providence Care provided project leadership. This project was designed to foster improved care within LTC through facilitated introduction of evidence-based resources within a resident-centred collaborative care model linked to a QI framework. The project research question was, what is the effectiveness of a QI model for knowledge-to-practice resource delivery on collaborative practice, staff satisfaction, knowledge translation and resident outcomes?

Ethics Approval

The Queen's University Research Ethics Board, Providence Care Research Review Committee, Kingston, Ontario, and Research Ethics Boards of Lakehead University, Thunder Bay, and the University of Ottawa approved the project.

Methods

The research project was divided into five broad phases: (1) the recruitment of LTC homes, (2) the preparation of knowledge-to-practice resources (preliminary phase), (3) the learning collaborative (first workshop), (4) the initiation of the change process (action) and (5) the sharing of results (second workshop). Six LTC homes were recruited within three LHINs: South East, Champlain and North West, Ontario. Each site identified its internal QI team: a point-of-care staff caregiver (non-regulated), a regulated staff member and a manager. Each site also identified external facilitators to its QI initiative. Funds were supplied for appointment of a local resource consultant to facilitate the improvement initiative at the LTC home level and to liaise and coordinate interactions between local teams and CSAH.

The QI projects were defined for each home, and plans evolved to create resource tool kits for each topic (**preliminary phase**; topics included pneumonia, falls, bacteriuria and behavioural and psychological symptoms of dementia [BPSD]). Resource tool kits included recommended assessment and decision support tools, best practice guidelines, evidence summaries, fact sheets and electronic informational links to other resources. The tool kits were created in both electronic and hard copy formats, with selected resources translated into French, with this need determined by the homes that would use them.

The **first workshop** was held in Kingston over two days in November 2009, and all invited LTC home teams participated. The focus was to share information and training in best practices for the core topic areas and in QI methodologies, and to begin a process of a creating a learning collaborative network for the project.

Table 1. Quality indicators as selected by long-term care homes for individual projects

Pneumonia
Hospitalization rates of residents with pneumonia
Time from identification to treatment of pneumonia
Staff and family satisfaction surveys
Behaviours and psychological symptoms of dementia
Quality and content of communication and collaboration among staff around behaviours associated with dementia
Staff and family satisfaction surveys
Frequency of occurrence and type of undesired behaviours associated with dementia
Falls
Compliance with a post-falls assessment tool and implementation of physiotherapy assessment and treatment after a fall
Falls rate over a three-month period, from January to March 2010

Over a three-month period (**action phase**), LTC home teams applied the QI strategies designed for their topics. Each team refined aim statements for their QI projects, outcome targets, processes to achieve these outcomes and metrics to monitor progress to targets (Table 1). They applied rapid-cycle improvement methodology using the Plan-Do-Study-Act cycle. Feedback and discussion occurred between participating LTC homes, facilitators, resource consultants and the CSAH team through monthly videoconferences, webcasts and teleconferences.

The **second workshop** was held in March 2010 in Kingston, with representatives from all participating LTC homes. Homes demonstrated QI in action by presenting highlights, challenges and successes for their individual projects.

Results

The Collaborative Practice Assessment Tool (CPAT) is a standardized and validated tool

Table 2. Average Collaborative Practice Assessment Tool scores

	Workshop 1 (n = 35)	Workshop 2 (n = 21)	Difference	p Value
Goals, mission	5.7	6.1	+0.4	.020*
Relations	6.0	6.3	+0.3	.343
Leadership	5.7	6.0	+0.3	.185
Roles and responsibility	5.4	5.2	-0.2	.154
Communication	5.7	5.8	+0.1	.516
Community linkages	5.4	5.6	+0.2	.554
Decision-making	5.1	5.1	0.0	.964
Patient involvement	6.3	6.2	-0.1	.564

*Statistically significant at $p < .05$ level.

Table 3. Average scores from the Bridges to Care workshop evaluation

	First Workshop (n = 27)	Second Workshop (n = 18)	p Value
Goals, mission	6.1	+0.4	.020*
Relations	6.3	+0.3	.343
Leadership	6.0	+0.3	.185
Roles and responsibility	5.2	-0.2	.154
Communication	5.8	+0.1	.516
Community linkages	5.6	+0.2	.554
Decision-making	5.1	0.0	.964
Patient involvement	6.2	-0.1	.564

BPSD = behavioural and psychological symptoms of dementia.
*Statistically significant at $p < .05$ level.

(Schroder et al. 2010) that measures levels of collaboration between members of a healthcare team. The CPAT results showed increases in six of the eight domains of collaborative practice, with a statistically significant increase in the area of "goals, mission and meaningful purpose" (Table 2).

For all four topics combined, there were overall improvements for all three domains of knowledge: general knowledge, ability to identify and application to practice (Table 3). However, when each topic area was considered separately, differences were noted. Statistically significant increases were seen in all three domains for pneumonia, for two domains (knowledge and application to practice) for falls and a single domain (application to practice) for bacteriuria. Although there were trends to improvement in BPSD, they did not reach statistical significance. Project participants reported significantly better knowledge of the QI process, as would be expected, but no increased confidence. There was also a significant increase in participants' likelihood of recommending LTC to others as a place of work, and significance ($p = .061$) in their own increased workplace satisfaction.

Five of six participating LTC homes reported on the process and outcomes at the second workshop (Table 4). One LTC home was unable to report due to a number of staff changes, resulting in a disruption of the original QI team. Each of the five reporting LTC homes met or exceeded its QI target. All LTC homes reported ongoing sustainable activities.

Table 4. QI strategies and outcomes

Site Area of QI Focus	Aim Statement	Process	Outcome at Three Months
Pneumonia	Reduce hospitalization with pneumonia by 30% within three months	Implement Alberta Care Plan and Assessment Tool Educate registered staff, PSWs, family, residents and staff	No hospitalizations with pneumonia despite five diagnosed cases
BPSD	Educate 100% in use of three question template	Educate staff and implement use of three question template at daily reports	Stream-lined communication at daily reports Increased staff satisfaction Established secondary QI initiative at mealtime
BPSD	Improve atmosphere in dining room at meal times	Turn off the radio during mealtimes Repaint the dining room Nutrition and dementia information/ staff training delivered to resident care and dining room staff Eliminate stress factors such as drug trolley	Improvement in dining room atmosphere by 75% Improved awareness of resident-specific needs by 60% Reduction of stress level in dining room by 75%
Falls	Reduce number of harmful falls in one year	Introduce PFAT Improve post-fall documentation and care plan	100% completion of PFAT at 3/12 months PT assessment and treatment linked to PFAT
Falls	Reduce number of harmful falls by 6% in three months	Implement PFAT and PFOT with post-fall medication and PT assessment	100% completion of PFAT and PFOT at 3/12 months 55% reduction of harmful falls

BPSD = behavioural and psychological symptoms of dementia; PFAT = post-fall assessment tool; PFOT = post-fall observation tool; PSW = personal support worker; PT = physiotherapy; QI = quality improvement.

Qualitative data from focus groups supported that the roles and responsibilities of team members as adopted in the QI change processes were effective in ensuring success. There were three key themes from the LTC home teams:

1. The fact that they worked in "real teams on real issues," as opposed to using "fictitious" case studies, was very pertinent to their ability to apply their knowledge in their own working environments.
2. Project processes enabled a safe environment where there was a "meeting of equals" to share ideas and design team-built strategies in a spirit of mutual respect.
3. Group facilitators were highly credible, and physician engagement augmented the team's ability to move forward in their local QI processes.

Finally, staff satisfaction surveys were completed by two of the LTC home teams. The results showed that most staff members on each of the teams were highly satisfied with knowledge of their team's projects, the usefulness of the tools they chose and the implementation of those tools, and the levels of education and communication surrounding changes made as part of the project. Open-ended comments from staff showed a belief that the changes made led to improved communication and early identification and treatment of patients with particular need.

Discussion

At the end of three months, all participating LTC homes reported significant improvements in sustainable collaborative resident-centred care processes within the focus of their QI initiatives. These improvements were associated with improved resident care outcomes in terms of reductions in hospitalization with pneumonia, serious falls and troublesome behaviours associated with dementia.

These benefits are first attributable to the homes being strongly engaged in the development of their QI learning and applications from onset. They identified their own projects, their own teams, many of their own resources and the way and means of implementing best practices that would work within their own environments. They also identified and refined the measures and targets to determine their own successes. They worked with their teams on real issues and expressed feelings of ownership concerning their project.

Benefits are also attributable to the provision of combining facilitated knowledge-to-practice and QI processes through the use of internal champions, resource consultants and external facilitators. Home participants repeatedly stated that this personal contact and support were key to their success in moving resources from a "shiny tool kit gathering dust on a shelf" to successful changes in collaborative care practices. A number of complementary improvements in both collaborative care processes and the working environment were demonstrated:

- Increased knowledge, attitudes and skills of the participating individuals were confirmed in common care issues of the elderly in LTC and in QI processes.
- All homes reported that participants were empowered to use their new skills and to act as a both a resource and support to other staff members in improved collaborative care practices. The unregulated staff reported feelings of empowerment and being active contributors to the QI processes.
- There was evidence of an increased inter-professional approach to resident care in terms of clarification of scopes of practice and in both team and improved inter-organizational communication and collaboration. Respective roles and scopes of practice of champions within the process appear to have been enhanced beyond the team members' usual respective areas of influence.
- Improved health and safety outcomes for residents resulted within the three QI topic areas. This was likely a result of both access to and the expanded use of evidence-based, residentcentred, collaborative practice resources offered through the project. Participants accessed these resources through a variety of formats, including a web-based repository.
- There was evidence of efficient and effective use of both onsite and external health human resources through the transfer of evidence into relevant care plans that optimize clinical decision-making and care delivery skills of a variety of health-care providers.
- Sites that collected data reported that staff, family and resident satisfaction improved concerning the quality of care within LTC. This included an increased appreciation by staff that LTC homes are desirable places in which to work.

The Bridges to Care initiative was conceptualized and designed as a pilot project; this limits some of the generalizability of the results. The small sample of LTC homes limits the analysis and generalizability of the findings, although three distinct geographical communities were included. In addition to this, the relative contributions of the various components of the process have not been examined as independent variables. Future research might examine the relationships between the different components and levels of support provided and the outcomes examined through this initiative.

Conclusions

The participating LTC homes were positively influenced in the education and training of staff, with commitments for sustainability and spread within their sites and throughout their regions. All participating LTC homes reported success in achieving their primary QI outcomes.

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