Knowledge translation interventions to sustain direct care provider behaviour change in long-term care: A process evaluation

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Funding information
KT Canada (Edmonton Node); Canadian Institutes of Health Research, Institute of Aging, Grant/Award Number: #108891

Abstract

Rationale, aims, and objectives: Process evaluation can be used to understand the factors influencing the impact of knowledge translation (KT) interventions. The aim of this mixed methods process evaluation was to evaluate the processes and perceived outcomes of eight KT interventions that were used with healthcare aides (HCAs) to introduce a mobility innovation into their daily care practices. The study examined the perceived effectiveness of various KT interventions in sustaining daily performance of the sit-to-stand mobility innovation by HCAs with residents in long-term care.

Method: In-person interviews were conducted with four leaders across three long-term care facilities. Seven focus groups with 27 HCAs were conducted across the three facilities. All participants were asked to rank the eight interventions involved in the trial according to their perceived effectiveness and, for the leaders, their perceived ease of implementation. Focus group and interview questions asked participants to discuss the relative merits of each KT intervention. Two research assistants coded all of the transcripts independently using content analysis.

Results: Both HCAs and their leaders perceived reminders, followed by discussion groups, to be the most effective KT interventions to sustain practice change. Healthcare aide champions were deemed least effective by both leaders and HCAs. Leaders identified both the focus group discussion and audit and feedback posters in the study as the most difficult to implement. Participants valued interventions that were strategically visible, helped to clarify misconceptions about the new care innovation, supported teamwork, and made visible the resident benefits of the care innovation. Logistical issues, such as staff scheduling and workload, influenced the perceived feasibility of the various KT interventions.

Conclusions: Understanding how care staff in long-term care settings perceive KT interventions can inform the choice of future use of these interventions to move research evidence into practice.

KEYWORDS
evaluation, evidence-based medicine, experience, health services research

1 | INTRODUCTION

Knowledge translation (KT) is the synthesis, dissemination, exchange, and application of knowledge to improve health, health services, and health products. Knowledge translation interventions are an important mechanism by which evidence-based practices are introduced and sustained in practice settings. These include a broad range of strategies such as educational outreach, materials or meetings, local opinion
leaders, audit and feedback, reminders, marketing, and patient-mediated interventions.\(^2\) Evidence on the effectiveness and efficiency of these various KT interventions is small to moderate and further research is required to understand their effectiveness in differing contexts with different barriers and facilitators.\(^2,3\)

Process evaluation seeks to explain how and why interventions are effective or ineffective.\(^4\) When evaluating a new evidence-based practice, process evaluation can be employed to help researchers 'look inside the black box'\(^5\) and understand those mechanisms of action which, in clinical practice, influenced success. Although process evaluation has conventionally been used to describe the implementation of evidence-based practices\(^6\) it can also be used to evaluate the implementation of KT interventions. Examining key process evaluation components such as context, reach, dose and fidelity\(^4\) in relation to the implementation of KT interventions can help inform literature on the effectiveness of KT interventions.

An important element of evaluating implementation research is a comprehensive understanding of the perspectives and opinions of care providers. Although care provider perspectives of evidence-based interventions have been documented,\(^7\) their perspectives of KT interventions are less well known. Grimshaw et al\(^7\) recommended developing and tailoring KT interventions to suit individual audiences, however little is known about how different audiences react to various KT interventions. Understanding how care staff perceive KT interventions can inform understanding of their effectiveness in translating research evidence into practice. To our knowledge, no study has been conducted in long-term care (LTC) facilities to understand the perceptions of KT interventions by leaders and direct care providers, referred to here as healthcare aides (HCAs).

The aim of this study was to evaluate the processes and perceived outcomes of 8 KT interventions in a study that introduced a mobility innovation into the daily care practices of HCAs. The study examined the perceived effectiveness of various KT interventions in sustaining the daily performance of the sit-to-stand mobility innovation by HCAs in LTC.

2 METHODS

This mixed methods process evaluation was part of the Mobility of Vulnerable Elders (MOVE) clinical trial in which HCAs encouraged LTC residents to complete a simple sit-to-stand activity.\(^8,9\) Knowledge translation interventions were used during this trial to promote the sustainability of the sit-to-stand activity and improve its documentation by HCAs. This process evaluation included interviews, focus groups and a ranking exercise to elicit perceptions of HCAs and facility leaders about the effectiveness and ease of implementation of those KT interventions.

2.1 Setting and participants

Three LTC facilities in the treatment arm of the MOVE study participated in this substudy. Leaders were eligible to participate if they were a current manager of a participating study unit and were in that role during the MOVE trial. The HCAs providing direct care to LTC residents were eligible to participate if they had worked on a participating study unit during the MOVE trial and experienced at least five of the eight KT interventions. Leaders identified HCAs willing to participate in a focus group. A research assistant met with identified HCAs and explained the voluntary nature of the study, to preclude any possible feelings of coercion, prior to explaining the study and obtaining consent to participate. Leaders and HCAs provided written consent prior to data collection. The University of Alberta Health Research Ethics Board (Pro00029995) approved this study.

2.2 Knowledge translation interventions

During the MOVE trial, initial 20-minute education sessions were completed to introduce the sit-to-stand mobility activity to HCAs at three treatment facilities. Following the education, eight monthly KT interventions designed to support the sustainability of the sit-to-stand activity by HCAs were implemented sequentially in the first eight months of the trial. All treatment facilities received the interventions in the same order (Table 1).

2.3 Data collection

Data collection took place between October 2012 and January 2013. One-on-one in-person interviews were conducted with leaders of the four study units, within the three facilities. Seven focus groups were completed, ranging in size from two to six HCAs from both day and evening shifts.

The semistructured interviews and focus groups were designed to elicit participants’ perceptions of the eight KT interventions. At the beginning of each interview and focus group, the research assistant provided a description of each of the eight interventions and, in the case of posters or reminders, showed examples of the intervention to assist in recall. Participants then ranked the interventions according to perceived effectiveness. Effectiveness was defined as an intervention that clarified what was expected of the HCA in performing the sit to stand, increased completion of the sit to stand, or improved documentation. In addition, leaders ranked the interventions according to perceived ease of implementation. Ease of implementation was defined as requiring minimal manager time, planning, and cost to implement. Lower scores indicated more effective or easier to implement, with 1 being the most effective or easiest intervention.

Following the ranking activity, participants were asked open-ended questions about each intervention. The semistructured interview and focus group guides included comparative assessment questions such as “Which interventions were most helpful and why?” and “If you had to choose only two interventions, which would you choose and why?” Interviews and focus groups took place at the participating facilities when it was convenient for staff.

2.4 Data analysis

All interviews and focus groups were audio recorded and transcribed verbatim, checked for accuracy, and imported into Atlas.ti. These data were analyzed concurrently with data collection. Qualitative content analysis was used to identify codes and categories.\(^10\) Two research assistants coded each transcript independently using a data-driven


### TABLE 1
Monthly knowledge translation interventions from the Mobility of Vulnerable Elders study

<table>
<thead>
<tr>
<th>Month</th>
<th>Knowledge translation intervention</th>
<th>Description</th>
<th>Number of research team visits/site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flowsheet annotation and informal discussions</td>
<td>Research assistants reviewed flowsheets within the first 5 days of the month and made annotations if unclear, and research assistants held informal discussions about the mobility innovation with HCAs on the unit.</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Paper reminder system</td>
<td>Research assistants posted one 3” × 3” green arrow paper reminder in each bathroom and bedroom of participating residents.</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Focus group</td>
<td>A research assistant held 20-min focus groups with 2 to 4 HCAs. Mobility innovation facilitators and barriers were identified and discussed.</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Focus group poster and Strategies Sheet</td>
<td>Based on the focus group discussions, the research team developed posters and strategy sheets which were placed in nursing stations for HCAs.</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Flowsheet follow-up discussion</td>
<td>A research assistant held information sessions with HCAs during their normal documentation time to discuss the importance of the flowsheets.</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Leader endorsement</td>
<td>One facility leader from each site was asked to provide an endorsement of the mobility innovation during a staff meeting with HCAs.</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Healthcare aide champions</td>
<td>A research assistant identified and coached a HCA using a “train the trainer” approach to provide education and feedback to peer HCAs.</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Audit and feedback poster</td>
<td>The research team developed a poster containing a summary of the mobility findings. The poster was presented by a research assistant during shift report and then placed in nursing stations for HCAs.</td>
<td>1</td>
</tr>
</tbody>
</table>

Abbreviation: HCA, healthcare aide.

An inductive approach. Prior to coding the final transcript, the research assistants merged their code lists to develop a single code list. They then independently used the merged code list to analyze the final transcript to ensure accuracy and clarity of codes. Saturation was achieved as no additional codes were added during the coding of the final transcript.

Ranking results were entered in SPSS v23. Mean scores for effectiveness and, for leaders only, ease of implementation, were calculated for each intervention and compared across all interventions. Means were used to summarize rank order because some HCAs did not receive all eight interventions and thus could not rank all items.

### RESULTS

Two of the participating LTC facilities were not-for-profit and one was for-profit. Demographic characteristics of the 27 HCA participants are found in Table 2.

The HCAs had worked an average of 10.3 (SD, 8.1) years on the study unit and worked as HCAs on average for almost 12 years (SD, 7.6). The majority spoke English as a second language (63%) and had completed an HCA certificate (74.1%). Leaders, who were either a registered nurse or recreation therapist, had been working in LTC an average of 18.9 years (SD, 12.9; range, 6.7-30) and had been working at their facility for an average of 5.8 years (SD, 1.2; range, 4.8-7.5). Leaders oversaw units ranging from 72 to 75 residents. Focus groups ranged in length from 43 to 70 minutes; while interviews ranged in length from 31 to 54 minutes.

One HCA expressed interest in participating in the focus group discussion but was on a leave of absence during the MOVE trial. She was invited to participate in the discussion but did not complete the ranking exercise. In total, 27 of the possible 216 ranking instances (12.5%) were skipped by HCAs who did not experience that intervention. The most frequently skipped intervention was HCA champions (10 missing responses) and the least frequently skipped were paper reminders and informal discussions/flowsheet annotations, each with 2 missing responses. Of the 27 HCA participants, almost half (n = 13) were able to rank all interventions. A sensitivity analysis was conducted comparing those who ranked all interventions with those who did not. The overall rankings were similar or identical between the groups and therefore rankings are reported together.

The HCAs and leaders unanimously ranked paper reminders as the most effective and easiest interventions to implement. The HCAs and leaders also agreed that focus group discussions and flowsheet annotations with informal discussions were the next most effective. The HCAs perceived leader endorsement to be more effective than did the leader, with HCAs ranking it as fifth and leaders ranking it as least effective. Neither HCAs nor leaders felt that HCA champions were an effective intervention. Leaders identified both the focus group

### TABLE 2
Healthcare aide demographic characteristics (n = 27)

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years worked as HCA</td>
<td>11.7 (7.6)</td>
</tr>
<tr>
<td>Years worked on unit</td>
<td>10.3 (8.1)</td>
</tr>
<tr>
<td>Female</td>
<td>26 (96)</td>
</tr>
<tr>
<td>English as first language</td>
<td>10 (37)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>15 (55.6)</td>
</tr>
<tr>
<td>Completed HCA certificate</td>
<td>20 (74.1)</td>
</tr>
<tr>
<td>Completed other health care diploma/degree</td>
<td>7 (25.9)</td>
</tr>
<tr>
<td>Age group, years</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>1 (3.7)</td>
</tr>
<tr>
<td>30-39</td>
<td>8 (29.6)</td>
</tr>
<tr>
<td>40-49</td>
<td>9 (33.3)</td>
</tr>
<tr>
<td>50+</td>
<td>9 (33.3)</td>
</tr>
</tbody>
</table>

Abbreviation: HCA, healthcare aide.
The HCAs and leaders agreed that interventions helping to ensure the key messages of the project were properly communicated were important. Early follow-up after the initial education appeared essential for clarifying misconceptions about the activity and documentation. A leader noted challenges encountered in the first month: “there were issues with documentation at first, but you came back in and you retaught that. It wasn’t an issue after that” (L01). The informal walks around the unit to discuss the intervention and documentation with HCAs appeared to help: “I did speak to you and the confusion was over. It was just at the very beginning of it” (HCA01).

One HCA identified the HCA champion intervention as a potential source of clarification on the unit: “It’s good to have champions who would be very knowledgeable, knows what’s good and what’s not” (HCA27). Champions who are "knowledgeable" and located on the unit could be an immediate resource for HCAs, particularly new or casual staff, and help to clarify misconceptions about new initiatives.

### Logistics

Both leaders and HCAs described organizational challenges they anticipated arising as a result of the interventions. Primary issues described were scheduling and workload. The discussion groups were identified as a difficult intervention to implement by the leaders. As Leader 1 explained, “I just don’t know how we would do that because we wouldn’t have any coverage for the unit.” The HCAs similarly identified the challenge of leaving the floor to participate in discussion groups: “we just need somebody to cover up for some of the work you’re supposed to do” (HCA17). The HCAs were conscious of the impact that leaving the floor had on their colleagues: “We think about our co-workers who are there who might be having … a lot of work to do” (HCA18). This sentiment was echoed by Leader 4, who explained “if I have to pull them off away from their tasks, they don’t like it.”

Logistics also related to the HCA champion role. One champion who was also present in a focus group described difficulty in working with...
other HCAs because of shiftwork and different assignments. For example, she explained the challenges with working on a different unit than a new staff person: “You know there’s so many times that I have explained [the sit-to-stand], but if there’s somebody new on the other side, I wait until she comes to my side. I don’t have no time to go there and explain to her” (HCA07). Another HCA observed that “sometimes the [champion] might not be on duty when you have a new resident and new staff” (HCA21), which makes it difficult to promote an innovation. This reduced the perceived effectiveness of the HCA champion intervention.

When asked to identify which interventions would be easiest to implement, leaders described logistical issues and time as the primary reasons for their choices. Multiple leaders identified the manager endorsement as their top choice, because “we can pick our time, our date and when we’re going to do it” (L01). Leader 02 contrasted this to the focus group poster intervention, which she said “wouldn’t have been summarized” if left up to her to complete because of the time constraint. Another leader identified the green arrows as her top choice because “it’s fast; it’s easy” (L04).

3.4 Working together

The HCAs in this study described enjoying the KT interventions that supported and promoted teamwork. This was most often discussed in relation to the focus group intervention: “that focus group was one of the most helpful ones, I thought. It just gave another perspective” (HCA08). Similarly, HCA 23 explained, “that everybody shares their ideas and everybody has a different way maybe they’re doing it, and maybe that’ll work better for your resident”. All 4 leaders similarly described the benefits for HCAs of engaging in group discussions and working together, stating that “they love that group dynamic” (L01), and “it was a good opportunity to um kind of give each other feedback, to know what helped and what didn’t help” (L02).

One leader identified the champion role as another opportunity for HCAs to learn from one another, stating that the HCA champion “was really good too … they always like it when they can learn from each other, I think. Empowers them” (L01). HCAs also described the benefits of working together in relation to the HCA champion role. HCA 17 and 20 had this exchange:

HCA20: Maybe that champion, who is part of the sit-to-stand program will come and update me as to what was happening.

Yeah I think that would be beneficial.

HCA17: Yeah I mean especially when you don’t work in the same wing all the time and you know, when you rotate, you know. It’s good to get information about, you know, what has been happening.

The HCAs saw the champion role as an opportunity to receive updates about residents and the progress of the larger study. Having a peer take on this role was a logical extension of the culture of teamwork that was present in some of the participating LTC homes.

3.5 Wanting to make a difference

The HCAs wanted to know that the work they were doing had a positive effect on residents. One HCA explained that she wanted to know “whether the research was working or not” (HCA20). Another HCA stressed that it was important for her to know “I’m making a difference for this person” (HCA10). When examining the audit-and-feedback poster, one HCA explained that “I look at this poster, it really makes a difference because inside you realize that you’re doing something worthwhile for the residents” (HCA09).

Three of the four leaders similarly identified the HCAs need to see the tangible outcomes of their work: “I think over time they got to see the little bit of results […] ‘wow I am making a difference,’ so it could make a difference and so they encourage you to keep going on” (L01). Leader 03 echoed that sentiment, noting “the results was one that stood out too … that what they were doing, they knew they were making a difference.” The audit-and-feedback posters elicited a response from both leaders and HCAs that the work they were doing was benefitting the residents. Of the four leaders, there was one dissenting opinion; one leader did not believe that seeing the benefits to the residents was “necessarily significant to them [HCAs]” (L04).

The HCAs also wanted to know that the work they did made a difference to their coworkers and the research team. One HCA explained how she liked the documentation information session because “this way [the research team] get to know how the residents are doing” (HCA27). Her coworker agreed, pointing out that by looking through the flowcharts with the research team during this session, she is able to show “how [the residents] are doing today, yesterday” (HCA25). HCAs also liked to know that their ideas from the focus groups were being used by their coworkers. One HCA described looking at the focus group outcomes poster and realizing “Yes, I remember, those are my comments … That’s my poster!” (HCA27). She was proud that her comments were used in the poster intervention so that other HCAs could learn from her experiences.

4 DISCUSSION

Having participants experience multiple KT interventions provided a unique opportunity for them to discuss and compare the interventions. To our knowledge, this was the first study to compare KT interventions from the viewpoint of direct care providers and leaders who experienced the interventions firsthand in their care setting. Feasibility and resource requirements of implementation strategies have previously been examined in a study that included interviews with physicians and lecturers from primary and secondary care settings. Although those interviews focused on implementation strategies targeting physicians, many similar themes were identified. Those included concerns about logistics such as the time of day and length of meetings, and the challenge of varying shift patterns when trying to complete education or outreach. When reflecting on audit and feedback, those respondents similarly identified the extraction and synthesis of clinical data as a significant resource commitment and potential barrier to completion. Although those interviewees were asked to consider the interventions without firsthand experience and were describing changing physician behaviour, the strong parallels lend themselves to the potential transferability of our findings to other contexts or professional groups.
Paper reminders were perceived to be particularly effective by both HCAs and leaders, because of their visibility. Leaders appreciated their ease of implementation. In a systematic review of implementation strategies, reminders were the most frequently identified single KT intervention. Reminders were shown to have a moderate improvement in process of care, however, that review combined electronic and manual paper reminders. Little is known about the effect of manual paper reminders on behaviour change or care outcomes. One study compared electronic and manual paper reminders for outpatient mood disorder screening and found that electronic reminders were superior to manual paper reminders in completion of guideline-recommendations by senior clinicians. A systematic review to determine the effect of manual paper reminders on practice and health outcomes is currently underway.

The HCAs clearly wanted to make a difference in the well-being of residents. This is consistent with other study findings examining direct care staff motivations. For example, in their study of care aides, Feldman et al. noted that 80% to 90% of respondents expressed satisfaction with the “chance to help people” and “the chance to accomplish something worthwhile.” Other studies similarly identified wanting to help and improving the lives of their clients as important motivators for direct care staff. Harnessing this motivation through audit-and-feedback interventions may be an effective KT strategy. Indeed, in their audit-and-feedback review, Jamtvedt et al. suggested that practitioner motivation be considered when developing and implementing an audit-and-feedback intervention.

HCAs’ and leaders’ perceptions of the effectiveness of the leader endorsement were divergent. Of all eight interventions, leaders felt this was the least effective. Leaders in this study did not appear to appreciate the extent to which they influenced their staff. This stands in contrast to many theories of KT and organizational change, which suggest that strong leadership is essential to successful KT. Evidence also exists that nursing leadership is connected to nursing performance, suggesting that leaders do influence their staff. A lack of awareness of leaders’ influence over their staff may be a barrier to practice change. This may be related to leaders underestimating the power relations operating in LTC. Ethnographic research has documented the racialized and classed relationships between nurse managers and HCAs which operate in LTC homes. Although the leaders did not seem to be aware of their positions of power, the HCAs were.

It is evident that HCAs required follow-up after the initial education sessions. The HCAs explained the benefits of the flowsheet annotations and informal on-unit discussions to clarify expectations regarding the new practice. The flowsheet follow-up discussions were similarly necessary to clarify misunderstandings around the activity documentation. These experiences are consistent with Forsythe et al. systematic review outcomes, which concluded that educational meetings, without additional KT interventions, are not likely to be effective in modifying complex health provider behaviours. Future implementation plans should account for the need for follow-up and clarification sessions in the months following roll-out of new interventions.

Much of the discussion during focus groups centred on two key ideas: First, the elements of the knowledge translation interventions that facilitated practice change; second, the characteristics of the HCAs who were the knowledge translation recipients and implemented the practice change. These key ideas align with two core constructs in the i-PARIS framework, “facilitation” and “recipients,” that have been theorized to be essential to the successful implementation of new innovations. The three categories of “visibility,” “accuracy and clarification,” and “logistics” were perceived in relation to facilitating the implementation of the sit-to-stand innovation. The two remaining categories, “working together” and “wanting to make a difference,” were both individual and collective characteristics of the people who were charged with implementing the new care innovation. These people, the HCAs, were the recipients of the knowledge translation interventions.

This study has several limitations; not all participating HCAs were exposed to all eight interventions. However, all HCAs were encouraged to participate in the ranking exercise and discussion group. The inability of some of the HCAs to rank and compare all eight interventions limits our ability to fully interpret their data. They may have chosen other interventions as their most or least effective choices if they had experienced the full range of interventions. Another limitation is the sequential implementation of the KT interventions. The HCAs may have experienced recall bias because of the longer time lapse with the early interventions compared with the later interventions. The perceived effectiveness of the KT interventions implemented at the beginning of the study were higher than those at the end of the study, suggesting that participants may have had “rosy retrospection” of older interventions.

This study evaluated LTC staffs’ perceptions of eight interventions to support the adoption of a mobility care innovation. Both HCAs and their managers perceived reminders to be the most effective KT intervention. Logistical issues, such as staff scheduling and workload, influenced the perceived feasibility of the interventions. These findings could inform the choice of KT interventions for the successful adoption of future evidence-based practices in LTC settings by providing evidence of preferred interventions by HCAs and LTC leaders. Future research should triangulate the perceived effect of KT interventions by care staff and leaders with objective measures of practice change, to determine the degree of agreement between perception and performance.

ACKNOWLEDGEMENTS

This work was supported by KT Canada (Edmonton-Node) and the Canadian Institutes of Health Research, Institute of Aging (#108891).

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