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Implementing a Knowledge Translation Intervention in Long-Term Care: Feasibility Results From the Vitamin D and Osteoporosis Study (ViD*OS*)

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Abstract

Objectives—To evaluate the feasibility of implementing an interdisciplinary, multifaceted knowledge translation intervention within long-term care (LTC) and to identify any challenges that should be considered in designing future studies.

Design—Cluster randomized controlled trial.

Setting—Forty LTC homes across the province of Ontario, Canada.

Participants—LTC teams composed of physicians, nurses, pharmacists, and other staff.

Measurements—Cluster-level feasibility measures, including recruitment, retention, data completion, and participation in the intervention. A process evaluation was completed by directors of care indicating which process/policy changes had been implemented.

Results—Recruitment and retention rates were 22% and 63%, respectively. Good fidelity with the intervention was achieved, including attendance at educational meetings. After ViD*OS*, 7 process indicators were being newly implemented by more than 50% of active intervention homes.

Conclusion—Despite recruitment and retention challenges, the multifaceted intervention produced a number of policy/process changes and had good intervention fidelity. This study is registered at ClinicalTrials.gov NCT01398527.

Keywords

Long-term care; knowledge translation; osteoporosis; fractures; feasibility; process

Despite increasing emphasis on implementing evidence-based care in long-term care (LTC) homes, there has been a distinct lack of implementation research (ie, study of how to implement evidence-based practices[1]). Given the impact that organizational context has on

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research implementation[2] and the unique characteristics of the LTC practice setting,[3] it is imperative to evaluate strategies that mobilize "knowledge into action" (ie, knowledge translation) within this practice setting.

We designed a pilot, cluster randomized trial to evaluate the feasibility and effectiveness of a multifaceted knowledge translation intervention aimed at improving the uptake of appropriate vitamin D prescribing in LTC (the vitamin D and osteoporosis study; ViD*OS*). Although cluster randomized trials have been underused in the LTC setting,[4] this rigorous design is well-suited to LTC because care is naturally provided in clusters, contamination can be minimized (ie, professionals in the same home may alter their practice for all residents), and knowledge translation/quality improvement interventions such as ViD*OS* are targeted at organizational change (eg, changes to admission process). Thus, in this article our objectives were (1) to evaluate the feasibility of implementing an interdisciplinary, multifaceted intervention within LTC using a cluster randomized trial design, and (2) to identify any challenges that should be considered in the design of future studies.

Methods

Setting and Participants

Further details of the ViD*OS* protocol are described elsewhere.[5] The unit of randomization was the LTC home, and the target audience within each home was the Professional Advisory Committee at each LTC home, including the medical director, director of care, pharmacist, dietician, and other physicians, nurses, and staff. LTC homes were located in Ontario, Canada, and received medication services from Medical Pharmacies Group Limited, a large pharmacy provider.

Intervention

The 12-month, multifaceted intervention focused on both professional behavior change and organizational process changes. Intervention homes participated in 3, 1-hour, small-group, interactive educational meetings (at months 1, 6, and 12) including a standardized presentation, 10-minute DVD, question-and-answer session, action planning for quality improvement, and audit and feedback review. Meetings were facilitated by 1 of 6 expert opinion leaders, who were physicians specializing in osteoporosis or geriatrics. Experts facilitated sessions in person (meeting 1) or remotely; a study coordinator was onsite at the first 2 meetings. Educational materials (osteoporosis tool kits; process checklists; treatment alerts) also were distributed. Control homes received tool kits provided to all Ontario LTC homes (www.osteoporosislongtermcare.ca).

Measures

Feasibility outcomes were recruitment, retention, data collection, and intervention fidelity (participation, identification of action items, audit, and feedback review). LTC homes recorded falls and fractures for three 3-month periods (baseline, interim, and follow-up), based on electronic/paper-based charts, internal monitoring systems, and critical incident reports.[5] Directors of care completed process evaluations after 12 months, indicating which processes/policy changes had been implemented. Target indicators of success were chosen a

priori (Table 1). The study was approved by Hamilton Health Sciences/McMaster University Research Ethics Board.

Results

Forty LTC homes were randomized to control (n = 21) or intervention (n = 19) arms. Overall, 88% of homes were for-profit and 80% were affiliated with 1 of 7 multifacility chains that participated in the study. The median facility size was 122 beds (minimum = 43, maximum = 375).

Recruitment

Of 182 LTC homes approached for participation, 40 consented and were randomized into the study (22%). Of the excluded homes, 125 declined to participate (eg, lack of interest, competing demands), 4 were participating in another study, and 13 were municipal government homes who did not receive approval from internal ethics/regulatory boards.

Retention

Seven intervention homes did not receive the intervention as allocated: 6 withdrew before beginning the study and 1 withdrew after the first educational meeting. The main reasons for withdrawing active participation were logistical or scheduling difficulties (n = 5; eg, management changes, medical director rounds on weekends). In 2 homes, consent was initially provided by a representative but the medical director declined.

Fidelity

Participation—Most study meetings were scheduled to coincide with a regularly scheduled Professional Advisory Committee meeting. Overall, 164 participants from 12 active intervention homes attended at least 1 ViD*OS* educational meeting, including the following: medical directors (n = 12), director/assistant director of care (n = 21), administrators (n = 15), pharmacists (n = 10), other physicians (n = 11), nurse practitioners (n = 5), physician assistants (n = 3), registered nurses (n = 32), physiotherapists (n = 10), food services directors (n = 8), dieticians (n = 8), and other (n = 29). The medical director, director/assistant director of care, and consultant pharmacist attended at least 2 educational meetings in all homes (except for 1 home where the nurse practitioner attends Professional Advisory Committee meetings instead of the medical director; Table 1).

Action planning—All active intervention homes (n = 12) initiated at least 3 action items that either impacted process/policy (eg, implemented standard admission orders for vitamin D), or were assigned to specific individuals (eg, dietician reviewed dietary calcium intakes). All homes also identified several home-specific barriers (eg, cost of vitamin D; osteoporosis/fractures not recorded in electronic records), and facilitators (eg, posting audit and feedback reports around home; implementing falls/fractures check-list at admission).

Audit and feedback review—All active intervention homes reviewed audit and feedback reports at the 3 educational meetings.

Data Completion

Complete falls/fracture data spreadsheets were returned for 18 (86%) of 21control homes and 11 (92%) of 12 active intervention homes. A standardized data collection method was difficult, as LTC homes had various systems in place to collect falls/fractures data.

Policy/Process Changes

After 12 months, all active intervention homes completed a Process Indicator Checklist. Seven process indicators were being newly implemented by more than 50% of homes after participation in ViD*OS* (Table 2).

Discussion

Overall, the ViD*OS* intervention was successfully implemented and produced a number of policy/process changes. With the exception of recruitment and retention, we met or exceeded our a priori indicators of success (Table 1). Although not the focus of this article, the intervention resulted in significantly greater uptake of appropriate vitamin D and calcium prescribing (absolute difference between treatment arms of 15% for vitamin D and 7% for calcium in the intention to treat cohort; ie, all homes including nonactive participants included in the analysis).[6]

Intervention fidelity (ie, degree to which the program was implemented according to protocol[7]) is an important feasibility measure, allowing us to consider the “dose” of the intervention in which participants received. Good fidelity with an intervention can increase the chance of success of the intended outcome.[7] In our study, we had good compliance with all intervention components, including action planning, audit and feedback review, and participation in educational meetings. Despite busy schedules, nearly all homes had a medical director, director/assistant director of care, and consultant pharmacist present for at least 2 sessions. Maximizing participation in educational sessions is critical for properly evaluating the effectiveness of an intervention. Similar studies in LTC likely underestimated the impact of an educational intervention because of poor adherence and not necessarily because of an ineffective strategy.[8,9]

Despite having our partner pharmacy provider act as a liaison in approaching homes, recruitment was one of our challenges. LTC homes have numerous competing demands and may be reluctant to take on additional tasks. Gaining the support of corporate leaders within LTC chains was an important factor in encouraging participation among individual LTC homes. This was responsible for the high proportion of homes we recruited that were for-profit and part of multifacility chains. Further, several municipal homes faced additional legal/ethics board hurdles that prevented their participation. A noted limitation is whether our results are generalizable to nonprofit, nonchain facilities.

Six homes declined to actively participate before even beginning the intervention. To ensure cooperation by the entire team and avoid early withdrawal, a short presentation to the Professional Advisory Committee team could potentially boost recruitment/retention. Obtaining initial consent from both the medical director and director of care may also be beneficial. Furthermore, to overcome logistical challenges, particularly for homes in the far

north, providing an opportunity to view modules on a Web site or participate remotely may improve participation. Our return of data spreadsheets was reasonable (86%–92%); however, obtaining data took numerous reminders and it was difficult to follow-up on missing data fields. If falls/fractures were a primary outcome, trained research assistants would be necessary. A small incentive (gift certificates) was presented to the LTC staff who collected the data.

In conclusion, although we faced some challenges with recruitment and retention, fidelity with the intervention was good and all components were considered feasible to deliver. LTC homes reported implementing several process/policy changes after participating in the study.

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Table 1

Feasibility Results for the ViD*OS* Trial

Measure	Target, %	Observed, %	Description
Recruitment	40	22	■ Acceptance rate was low; took several months ■ Accomplished target sample size (n = 40)
Retention	80	63	■ 7 INT homes withdrew active participation.
Participation	80	25–100	■ Overall: n = 164 participants from 12 active INT homes; 56% attended at least 2 meetings [*] **Key roles:** ■ ≥2 meetings: Director/assistant director of care [†]; pharmacist = 100%; medical director [†] = 92% ■ 3 meetings: Director/assistant director [†] = 83%; pharmacist = 92%; medical director [†] = 25%
Action plans	80	100	■ Completed by all homes
Feedback reports	80	100	■ Reviewed at all INT sessions (months 0, 6, 12)
Data completion	80	86–92	■ All spreadsheets: 86% control/92% INT homes

INT, intervention.

[*] Exclude “other” (nonstaff/visitors).

[†] Due to role changes, may not have been the same person.

Table 2

Implementation of Osteoporosis/Fracture Prevention Best Practices in 12 LTC Homes

	Percentage of LTC Homes Implementing Best Practice		
	Implemented After ViD*OS*	**Implemented Before ViD*OS***	**Not Done**
Admission orders (vitamin D, calcium, bone health medications)	83	8	8
Have 1–2 staff as Osteoporosis Champions	75	0	25
Use “medication alerts” for vitamin D, calcium, bone health medications	67	0	33
Osteoporosis and fracture prevention are on agenda of Professional Advisory/Falls Prevention Committees	58	33	8
Use LTC-related knowledge resources: Toolkit, Web site, clinical guidelines, and so forth	58	25	17
Dietary enhancements for residents with osteoporosis: using calcium and vitamin D–enriched foods	58	17	25
Staff receive osteoporosis/fracture prevention education annually	58	17	25
Request on chest x-ray orders to rule out vertebral fractures	42	25	33
Monitor for fracture risk at least quarterly	33	58	8
Falls assessment includes fracture risk	33	58	8
Residents at high risk for hip fracture from falls wearing hip protectors	33	42	25
Osteoporosis and fracture risk is part of physical assessment on admission (eg, history of fracture)	25	75	0