A Novel Collaborative Care Program to Augment Nursing Home Care During and After the COVID-19 Pandemic

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A B S T R A C T

The 2019 novel coronavirus (COVID-19) pandemic created an immediate need to enhance current efforts to reduce transfers of nursing home (NH) residents to acute care. Long-Term Care Plus (LTC+) is a collaborative care program developed and implemented during the COVID-19 pandemic to enhance care in NHs both during and beyond the pandemic. It represents an important step toward health system integration that values the expertise within the long-term care sector and center them on the primary care provider (PCP) team to address unmet care needs representing a promising approach to care for NH residents in place.

Keywords: Nursing homes, quality improvement, models of care, implementation

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Innovation

LTC+ uses a hub-and-spoke model, where 6 acute care hospitals served as central hubs to support PCPs in 54 geographically associated NHs with 9574 beds (www.ltcplus.ca). Although not mandated by the regional COVID-19 pandemic task force, we assigned NHs to acute care hubs in part to align with provincially mandated relationships for other types of pandemic support (eg, infection control, COVID-19 testing, staffing), and also to strengthen local care networks and build relationships. To access the program, PCPs in all participating NHs were provided with a single phone number to call and once connected PCPs used an automated phone menu to select their desired service.

To inform the design of LTC+, we drew on multiple data sources to determine the services needed to enhance care delivery in NHs. These included the GEMINI database that captures clinical data for general internal medicine (GIM) admissions at 7 acute care hospitals in Toronto, a needs assessment survey conducted in March 2020 of LTC+ NHs in Toronto (response rate = 29/54), and data routinely collected for each acute care transfer from NHs by the Toronto Paramedic Service. Looking specifically at the subset of pre-COVID hospital admissions from NHs (n = 21,948) in GEMINI, 24% of these patients stayed in hospital for less than 72 hours and could be considered “potentially avoidable” admissions; 99.6% underwent laboratory testing and 87% plain radiography. The needs assessment survey demonstrated that only 7% of homes surveyed had access to GIM specialists on-call and

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**Fig. 1.** LTC+ program overview. The key LTC+ program elements are as follows: (1) Virtual specialist consultations: Acute care hospital hubs made virtual specialist consultation available to NHs, with GIM and palliative care specialists on-call 24/7 to field urgent request. (2) Nurse navigator: Available weekdays via phone or email during daytime hours to coordinate timely access to community-based services such as nursing outreach, behavioral support programs, and wound care. (3) Rapid access to laboratory and diagnostic imaging services: Coordinated with private sector laboratory and diagnostic imaging providers to expand access to these services. (4) Educational webinars: We codesigned and codelivered a series of educational webinars with NH Medical Directors and Administrators, archived on the LTC+ website (https://ltcplus.ca/primary-care-provider/#Education-and-Webinars). Clinical experts presented care delivery topics relevant to the pandemic (eg, Management of Residents with COVID-19 in NHs, Facing Decline and Death in the Time of COVID, Infection Prevention and Control in NHs). A downloadable PDF of this form is available at www.sciencedirect.com.
31% had routine access to phlebotomy services. The Toronto Paramedic Services showed that evaluating potential injuries constituted 31% had routine access to phlebotomy services. The Toronto Para-
ning context of the COVID-19 pandemic.

QI methods also allowed us to pivot quickly and respond to the

GIM specialist to maximize ef

cess, structuring the consultation discussion between the PCP and

numerous re

lationships with the hospital-based hubs, prior to broader imple-

optimize each component, beginning at 3 NHs with preexisting re-

hub hospitals (study #2020-0109-E).

improvement (QI), data analytics, and virtual care.

Application of rapid quality improvement (QI) approach

• Rapid testing and refinement at 3 nursing homes with preexisting relation-

ship with a hospital-based hub, prior to full implementation

• Plan-Do-Study-Act cycles to optimize individual LTC+ components

• Supported the identification and implementation of local solutions and the

ability to pivot in response to the COVID-19 pandemic


table 1

Summary of the Strengths, Enablers, Weaknesses, and Challenges of the LTC+ Program Design and Implementation

| Strengths and Enablers | Weaknesses and Challenges |
|------------------------|---------------------------|
| Data-driven design and implementation |
| • Data from a subset of hospital admissions in the multicenter GEMINI study of 7 acute care hospitals in Toronto and a cross-sectional needs assessment survey informed the design of LTC+ |
| • Utilization of a data dashboard that is updated weekly and reports on acute care transfer rates and delivery of program components to inform ongoing improvement activities |
| Composition of the LTC+ leadership team |
| • Cross-sectoral partnerships from the long-term care and acute care sectors supporting the development of an integrated care model |
| • Range of expertise on LTC+ leadership team including long-term care, primary care, internal medicine, geriatric medicine, palliative care, quality improvement (QI), data analytics, and virtual care |
| Application of rapid quality improvement (QI) approach |
| • Rapid testing and refinement at 3 nursing homes with preexisting relationship with a hospital-based hub, prior to full implementation |
| • Plan-Do-Study-Act cycles to optimize individual LTC+ components |
| • Supported the identification and implementation of local solutions and the ability to pivot in response to the COVID-19 pandemic |

Evaluation

From April 2020 to June 2021, LTC+ provided 381 virtual GIM consultations and fielded 65 nurse navigator calls (see Supplementary Box 1 for an example of a GIM consultation). Program uptake across NHs was variable; whereas 39 NHs (72%) requested at least 1 GIM consult or made at least 1 nurse navigator call, 7 high-adopter NHs (13% accounted for 81% of all consultation requests (Supplementary Figure 2). The mean number of GIM consults requested per NH was 9 (range 0-85), and the mean number of nurse navigator calls per NH was 2 (range 0-14).

GIM specialists completed brief, postencounter surveys to provide details about GIM consultations (347 surveys completed, response rate = 91%). The most common reasons for consultation included abnormal bloodwork (15%), cardiac problems (13%), and unexplained fever (11%). Twenty-nine (8%) of these consultations were specifically related to COVID-19. The most common issues addressed by nurse navigator calls included requests for non-GIM specialist consultations (34%), wound care assessments (14%), and system navigation (12%). GIM specialists and nurse navigators perceived that 177 (46%, 95% CI 41%-52%) of the consults and calls addressed care concerns sufficiently to avoid an acute care transfer.

PCPs responded to postencounter surveys that explored their perceptions of the LTC+ program (n = 35, 33% response rate). All 35 (100%) respondents were satisfied with the advice provided, and 34 of 35 (97%) would definitely call the program again. In 17 instances (49%), the consult reinforced the PCP’s original plan, whereas in 14 instances (40%), the consult provided a new suggestion that altered the NH resident’s care plan.

Our engagement activities included 7 education webinars attended by 111 individual participants representing 43 of the 54 NHs. Distribution of biweekly newsletters and emails that served as a reminder of available services and provided updates on new resources had an overall email open rate of 54%.
The pragmatic innovation described in this article may need to be modified for use by others; in addition, strong evidence does not yet exist regarding efficacy or effectiveness. Therefore, successful implementation and outcomes cannot be assured. When necessary, administrative and legal review conducted with due diligence may be appropriate before implementing a pragmatic innovation.
**Supplementary Box 1.**

LTC+ case example of a general internal medicine consultation GIM, general internal medicine; LTC+, Long-Term Care Plus; NH, nursing home.

An NH resident developed an acute episode of bright red blood per rectum. His past medical history included a diagnosis of deep vein thrombosis (DVT) in his legs for which he takes an oral anticoagulant. His bleeding was self-limited; he otherwise felt well and his vital signs were stable. Because the NH resident was clinically stable and preferred to avoid an acute care transfer if possible, the NH physician called the LTC+ program for a GIM consultation.

Through LTC+, the GIM specialist was able to order STAT laboratory tests for the NH resident, which confirmed that his hemoglobin level was stable, and unchanged compared with 1 mo ago. Because the DVT was remote (ie, 10 y ago), the GIM specialist felt it would be safe to hold the oral anticoagulant temporarily to control his bleeding. Further, because the bleeding stopped and he remained stable, an urgent acute care transfer was avoided.

The LTC+ program then facilitated a virtual consultation with a thrombosis specialist to provide guidance regarding the need for ongoing anticoagulation. After his assessment, the recommendation was that the NH resident’s ongoing risk of DVT would necessitate long-term treatment. However, he recommended a different oral anticoagulant that had a lower risk of bleeding.

The main benefits highlighted by this example include the timely access to laboratory testing to support clinical decision making, specialist support to provide guidance regarding medical care, and care continuity rarely experienced when NH residents are transferred to the emergency department to have urgent concerns addressed. Most importantly, the NH resident received the care he needed in place, in accordance with his wishes and goals of care.
Supplementary Fig. 1. Screenshots of LTC+ data dashboard that summarizes acute care transfer data from the 54 nursing homes enrolled in the program. LTC+ data dashboard: Top panel displays weekly acute care transfer data from the 54 nursing homes enrolled in the program (red line), alongside the number of LTC+ encounters per week plotted below (green line). Bottom panel displays a Pareto chart that summarizes the main reasons for acute care transfer—can be set to include data for the entirety of the program as well as for the past 7 days (not shown). LTC+, Long-Term Care Plus.
Supplementary Fig. 2. Number of LTC+ consults per nursing home between April 2020 and June 2021. Bar graph showing the number of general internal medicine (GIM) consults and nurse navigator calls by nursing home (data available for 335 GIM consults and 59 nurse navigator calls). LTC+, Long-Term Care Plus.