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Pragmatic Innovations in Post-Acute and Long-Term Care Medicine

Feasible new, practical products or approaches intended to improve outcomes or processes in post-acute or long-term care

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



Brian M. Wong MD^{a,b,c}, Leahora Rotteau PhD^{a,*}, Sid Feldman MD^{d,e},
Michael Lamb MD^{c,f}, Kyle Liang MSc^g, Andrea Moser MD^{e,h}, Geetha Mukerji MD^{c,g,i,j},
Pauline Pariser MD^e, Laura Pus MBA^g, Fahad Razak MD^{c,j,k}, Kaveh G. Shojania MD^{a,b,c},
Amol Verma MD^{c,j,k}

^a Centre for Quality Improvement and Patient Safety, University of Toronto, Toronto, Ontario, Canada

^b Division of General Internal Medicine, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

^c Department of Medicine, Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

^d Baycrest Health Sciences Centre, Toronto, Ontario, Canada

^e Department of Family and Community Medicine, Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

^f Division of General Internal Medicine, North York General Hospital, North York, Ontario, Canada

^g Womens College Hospital Institute for Health System Solutions and Virtual Care, Toronto, Ontario, Canada

^h Sienna Senior Living Canada, Markham, Ontario, Canada

ⁱ Women's College Hospital, Toronto, Ontario, Canada

^j Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario, Canada

^k Division of General Internal Medicine and Li Ka Shing Knowledge Institute, St. Michael's Hospital, Unity Health, Toronto, Ontario, Canada

ABSTRACT

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+), a collaborative care program developed and implemented during the COVID-19 pandemic, aimed to enhance care in the NH setting while also decreasing unnecessary acute care transfers. Using a hub-and-spoke model, LTC+ was implemented in 6 hospitals serving as central hubs to 54 geographically associated NHs with 9574 beds in Toronto, Canada. LTC+ provided NHs with the following: (1) virtual general internal medicine (GIM) consultations; (2) nursing navigator support; (3) rapid access to laboratory and diagnostic imaging services; and (4) educational resources. From April 2020 to June 2021, LTC+ provided 381 GIM consultations that addressed abnormal bloodwork (15%), cardiac problems (13%), and unexplained fever (11%) as the most common reasons for consultation. Sixty-five nurse navigator calls addressed requests for non-GIM specialist consultations (34%), wound care assessments (14%), and system navigation (12%). One hundred seventy-seven (46%, 95% CI 41%-52%) consults addressed care concerns sufficiently to avoid the need for acute care transfer. All 36 primary care physicians who consulted the LTC+ program reported strong satisfaction with the advice provided. Early results demonstrate the feasibility and acceptability of an integrated care model that enhances care delivery for NH residents where they reside and has the potential to positively impact the long-term care sector by ensuring equitable and timely access to care for people living in NHs. It represents an important step toward health system integration that values the expertise within the long-term care sector.

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B.W. and L.R. are co-primary authors.

LTC+ Implementation Group Authors: Hayley Baranek; Karen Born; Chloe Chow; Catherine Convery; Susan Deering; Irfan Dhalla; Hae Young Jung; Ben Kaasa; Philip Lam; Jeremie Larouche; Shelly Li; Lisha Lo; Peter MacLeod; Danielle Martin; Amanda Mayo; Fiona Menzies; Genny Ng; Tara O'Brien; Scott Ovenden; Katrina Piggott; Afsaneh Raissi; Dominick Shelton; Saeha Shin; Andy Smith; Tina St Louis; Ian Stanaitis; Rebecca Stovel; Ashley Verduyn; Riley Waters; Camilla Wong.

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* Address correspondence to Leahora Rotteau, PhD, Centre for Quality Improvement and Patient Safety, University of Toronto, 2075 Bayview Ave., Toronto, Ontario M4N 3M5, Canada.

E-mail address: leahora.rotteau@mail.utoronto.ca (L. Rotteau).

Problem and Significance

The 2019 novel coronavirus (COVID-19) pandemic created an immediate need to enhance existing efforts to reduce the number of unnecessary transfers of nursing home (NH) residents to acute care.¹⁻³ Models of care that bring previously unavailable services to NHs and center them on the primary care provider (PCP) team to address unmet care needs represent a promising approach to care for NH residents in place.⁴⁻⁶ This article describes the implementation and early impact of the novel Long-Term Care Plus (LTC+) program in Toronto, Canada, developed collaboratively by NH and acute hospital sector providers, in the context of the COVID-19 pandemic, to enhance care in NHs both during and beyond the pandemic.

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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,⁷ 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

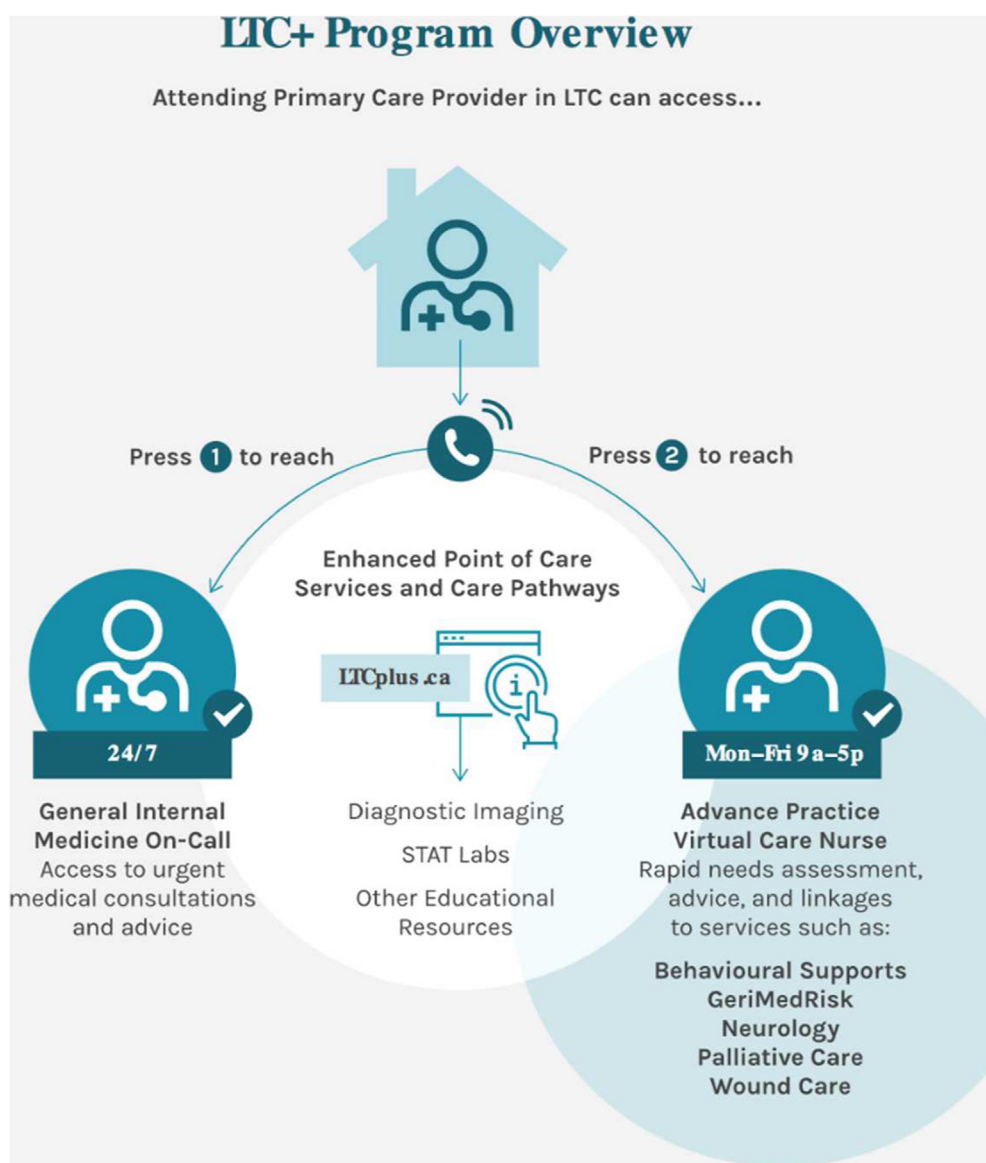


Fig. 1. LTC+ program overview. The key LTC+ program elements are as follows: (1) Virtual specialist consultations: Acute care hospital hubs made virtual specialist consultation available to NHs, with GIM and palliative care specialists on-call 24/7 to field urgent request. (2) Nurse navigator: Available 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. • Increased access to laboratory services whereby a phlebotomist was available 7 days per week to draw samples and deliver them to the lab for same-day reporting of results. • Mobile diagnostic imaging service technologist traveled to NHs to perform on-site radiography and ultrasonography. (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.

Table 1
Summary of the Strengths, Enablers, Weaknesses, and Challenges of the LTC+ Program Design and Implementation

Strengths and Enablers	Weaknesses and Challenges
<p>Data-driven design and implementation</p> <ul style="list-style-type: none"> 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 <p>Composition of the LTC+ leadership team</p> <ul style="list-style-type: none"> 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 <p>Application of rapid quality improvement (QI) approach</p> <ul style="list-style-type: none"> 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 	<p>Impact of shifting context of the COVID-19 pandemic</p> <ul style="list-style-type: none"> Rapid implementation was required to meet the pandemic related needs of the NHs, meaning some components were implemented prior to full refinement COVID-19 outbreaks in NHs required scaling back of some engagement and implementation activities owing to NH staffing capacity Visitor restrictions in NHs limited in-person stakeholder engagement <p>Sustainability challenges related to policies and funding models</p> <ul style="list-style-type: none"> Reliance on in-kind resources provided by acute care hospitals, NHs, and community service providers may be a threat to sustainability and scale up Need for system level funding changes to ensure NH access to diagnostic testing and other services <p>Variable uptake of LTC+ services across NHs</p> <ul style="list-style-type: none"> Seven high-adopter NHs accounted for 81% of all GIM consultation requests Many NHs did not use any LTC+ services Creates challenges for conducting a full evaluation of LTC+ effectiveness and impact

31% had routine access to phlebotomy services. The Toronto Paramedic Services showed that evaluating potential injuries constituted one of the most common reasons for transfer, underscoring the need for rapid access to diagnostic imaging. [Figure 1](#) provides a more detailed description of key program elements.

Implementation

The leadership team that designed and implemented the LTC+ program included members with expertise in primary care, long-term care, internal medicine, geriatric medicine, palliative care, quality improvement (QI), data analytics, and virtual care. Research ethics approval was obtained through the Research Ethics Board at one of the hub hospitals (study #2020-0109-E).

Given the complexity of the intervention and the need for rapid-cycle QI in the context of the pandemic, teams with NH and hospital-based members used the Model for Improvement framework⁸ to test and iteratively refine various program elements to optimize each component, beginning at 3 NHs with preexisting relationships with the hospital-based hubs, prior to broader implementation. For example, implementing GIM consults required numerous refinements, including establishing a reliable paging process, structuring the consultation discussion between the PCP and GIM specialist to maximize efficiency, and identifying local solutions for clinical documentation of the encounter. Application of rapid-cycle QI methods also allowed us to pivot quickly and respond to the shifting context of the COVID-19 pandemic.

To support QI activities, LTC+ used a data dashboard ([Supplementary Figure 1](#)) with data provided by Toronto Paramedic Services on acute care transfers for all NH homes including the reasons for each transfer, as well as data on delivery of program elements such as GIM and nurse navigator consults captured through postencounter questionnaires completed by GIM specialists and the nurse navigator, respectively. The dashboard was updated weekly, allowing for near real-time tracking of program impact as well as identification of program elements that required further refinement. For example, we identified the NHs with high acute care transfer rates that were not using the LTC+ program, allowing us to target our engagement activities to encourage program uptake.

Owing to the ongoing COVID-19–related visitor restrictions in NHs, we conducted virtual meetings with NH leadership and staff to

support implementation. Medical directors, PCPs, and staff from all 54 NHs attended on-boarding webinars to learn about LTC+ and how to access services. We also sent biweekly newsletters and emails that served as a reminder of available services and provided updates on new resources.

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%.

Comment

The LTC+ model was rapidly deployed during the COVID-19 pandemic to support the long-term care sector at a time of great uncertainty with respect to health system capacity. Although the program's emphasis on reducing avoidable acute care transfers had particular relevance during the pandemic, the LTC+ innovation is a promising integrated care model that could serve the broader needs of NH residents, caregivers, and providers and contribute to the reimagining of the long-term care sector. This collaborative effort bridged longstanding siloes that exist between hospitals and NHs and established relationships between PCPs working in NHs, clinicians in acute care hospitals, and community service providers. The program brought clinical services and expertise to the NH setting and sought to improve access and minimize the care fragmentation that often occurs when NH residents transition to and from the acute care setting. The cross-sectoral collaborative nature of our initiative that drew on NH expertise is consistent with recommended strategies to address the COVID-19 crisis in long-term care and laid the groundwork for the transformational change required to address ongoing care needs beyond the pandemic.⁹

Although early results demonstrate the feasibility and acceptability of this model, further work is needed to address the variable uptake across participating homes to promote sustainability and scale-up (Supplementary Figure 2). Challenges related to the rapidly shifting context of the COVID-19 pandemic meant that we introduced some aspects of the program before fully refining them. Visitor restrictions that precluded in-person implementation activities and staffing shortages in the face of COVID-19 outbreaks further hampered engagement efforts. We recently received funding to conduct a qualitative study to characterize program mechanisms and enablers, as well as barriers to implementation. This study, at the time of writing this article, is currently under way and will inform ongoing implementation efforts. Moreover, owing to the inconsistent program implementation across NHs, it was premature to evaluate the impact of our program on acute care transfers or deaths. Finally, the program relies on in-kind resources provided by various acute care hospitals, NHs, and community service providers, as well as virtual care physician billing codes newly introduced during the pandemic. Program

funding needs to be addressed as part of our ongoing scaling-up efforts. See Table 1 for a summary of the strengths and challenges of LTC+.

In summary, our integrated care model centered on PCPs serves NH residents where they reside and has the potential to positively impact the long-term care sector by ensuring equitable and timely access to care for people living in NHs. It represents an important step toward health system integration that values the expertise within the long-term care sector.

Supplementary Data

Supplementary data related to this article can be found online at <https://doi.org/10.1016/j.jamda.2021.11.018>.

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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.

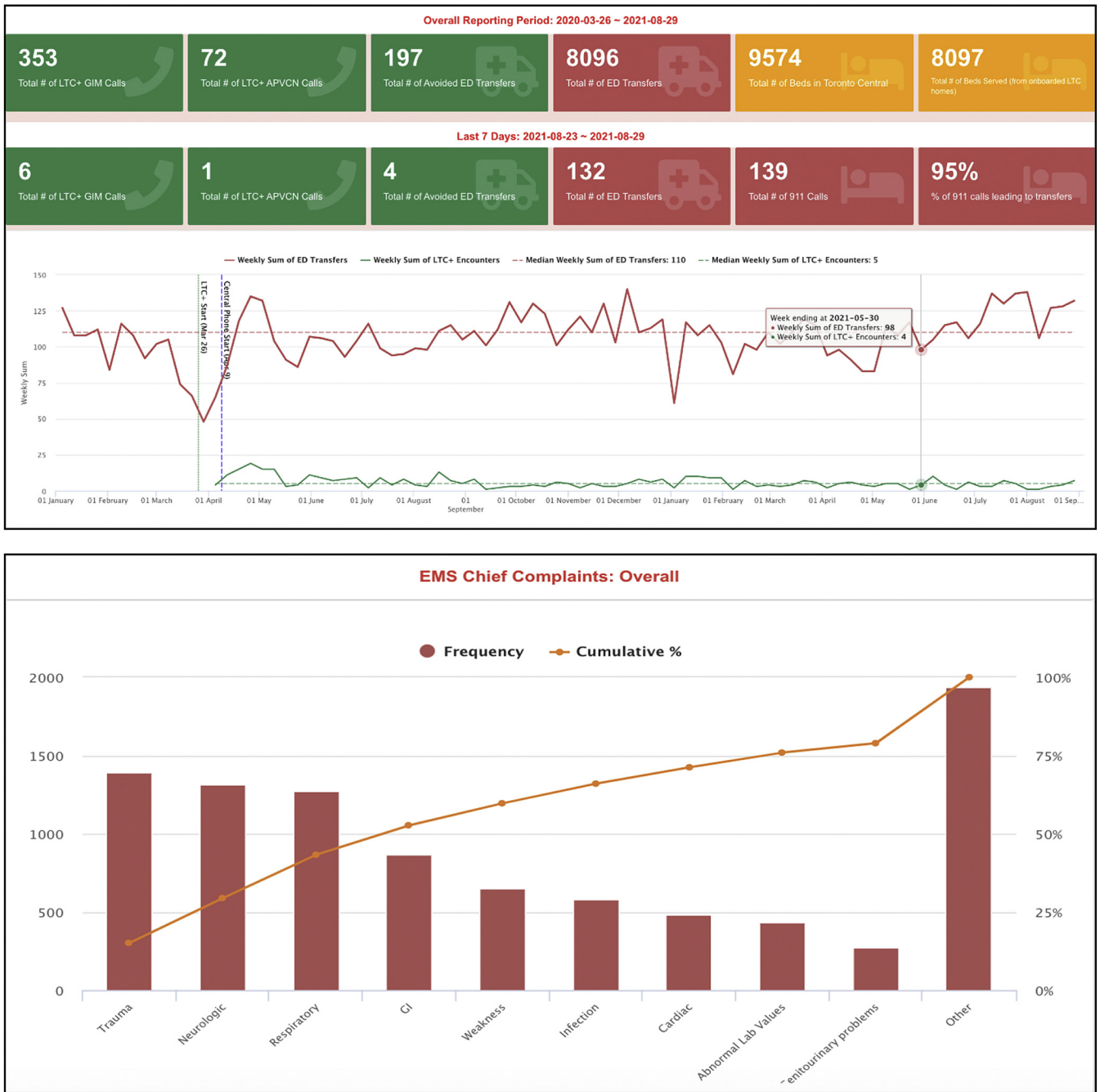
LTC+ case example of a general internal medicine consultation GIM, general internal medicine; LTC+, Long-Term Care Plus; NH, nursing home.

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.

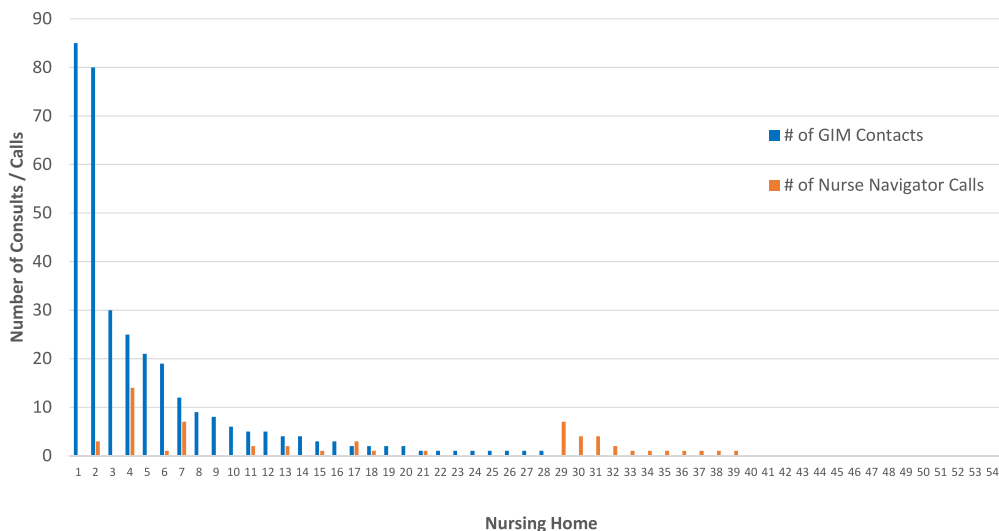
Through LTC+, the GIM specialist was able to order STAT laboratory tests for the NH resident, which confirmed that his hemoglobin level was stable, and unchanged compared with 1 mo ago. Because the DVT was remote (ie, 10 y ago), the GIM specialist felt it would be safe to hold the oral anticoagulant 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.