

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

The Feasibility of Using Electronic Consultation in Long-Term Care Homes



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ABSTRACT

Patients in long-term care (LTC) homes face barriers to accessing specialist advice. Electronic consultation (eConsult) has the potential to improve access for these patients. We used a multi-method approach to evaluate adoption of the Champlain BASE eConsult service in LTC homes across Eastern Ontario, Canada. We conducted a cross-sectional study of all eConsults submitted by primary care providers (PCPs) working at LTC homes between January 1, 2018 and December 31, 2018. Service use data were collected and descriptive statistics were calculated. We completed a thematic analysis of 4 focus groups with PCPs, senior leadership, and a nurse champion working in LTC homes where eConsult is used. Sixty-four cases were submitted to 23 specialty and subspecialty groups by LTC PCPs, most frequently dermatology (19%), geriatric medicine (11%), and infectious disease (9%). Specialists responded in a median of 0.6 days, and 70% of cases were resolved without the resident needing a face-to-face specialist visit. In 60% of cases, PCPs received advice for a new or additional course of action. Participants described complexities in the LTC context, the value of eConsult in LTC, and considerations for implementation. PCPs with experience using the service described increased access to specialist advice, ease of use, and benefits to themselves, residents, and families. eConsult is feasible in LTC and should continue to be used in this region and beyond to improve equity of access to specialist advice. Resolving the identified limitations in LTC, which hinder access to specialists and adoption of eConsult and similar innovations, should be of high priority to researchers and policy makers.

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Keywords: eConsult, long-term care, wait times, access to care

Problem/Significance

More than 115,000 people in Ontario, Canada currently reside in long-term care (LTC) homes.¹ Ninety percent of residents living in LTC suffer from some form of cognitive impairment, whereas 86% need assistance to complete basic day-to-day activities, such as eating or using the washroom.¹ The prevalence of these and other chronic conditions means that residents in LTC face an above-average need for specialty care; however, these same conditions make travel outside of the home to

attend such appointments extremely challenging, a problem further exacerbated by Canada's excessive wait times for specialist care.^{2,3}

Several approaches exist to improving access to care in the LTC setting, such as visits to the homes by specialists themselves, use of nurse practitioners for acute issues, telemedicine, and video visits.⁴ Video visits enable remote access to specialists through real-time appointments using video-enabled technology. This approach is feasible, can improve access, is effective, reduces external appointments, and improves care.^{4,5} However, video visits also require resources to organize and residents and staff to participate in the visit.

Innovation

Another approach called electronic consultation (eConsult) has demonstrated an ability to improve access to specialist advice in the primary care environment. eConsult is a secure web-based tool that allows primary care providers (PCPs) to communicate asynchronously with specialists concerning a patient's care. It often eliminates the need for a face-to-face visit, reduces wait times, and improves access to care for all patients, including older adult populations, factors that

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Ethics: The Ottawa Health Science Network Research Ethics Board has waived its review, as this project falls within the context of quality initiative, quality improvement, quality assurance, and/or program evaluation as defined by the Tri-Council Policy Statement, Article 2.5.

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make it particularly relevant for residents in LTC.^{6,7} However, despite its potential to improve care, little research has been done to assess eConsult's effectiveness in LTC settings or the facilitators and barriers to implementation in LTC.^{8,9}

In this study, we used a multi-method approach to evaluate the feasibility of implementing eConsult in LTC. To our knowledge, this article is the first to report on the potential for improving access to specialist advice in the LTC environment through eConsult. Our findings will be of interest to individuals practicing in LTC homes seeking methods to improve access to specialist care for their residents.

This study took place in the Champlain Local Health Integration Network, a health region in Eastern Ontario, Canada, with a population of 1.3 million. The region contains 58 LTC homes housing 7419 long-stay beds.¹⁰ Health services provided in LTC homes are publicly funded, but costs pertaining to accommodation are normally borne by the resident and their caregivers. While some LTC homes have full-time PCPs, most rely on PCPs who visit 1 or more homes on a part-time basis as an extension of their community-based practices.¹¹

The Champlain BASE (Building Access to Specialists through eConsultation) eConsult service is a secure online application that allows PCPs (eg, family physicians, nurse practitioners) to submit a non-urgent clinical question to specialists from more than 100 specialty groups (Supplementary Table 1), requesting PCPs submit cases to a regional or provincial managed specialty group (eg, cardiology). The case is assigned to a specialist based on availability and they are expected to provide an answer within 1 week. PCPs complete a mandatory 4-question close-out survey, which provides data about the impact of the eConsult on the provider's course of action, impact on referral behavior, and educational value (Supplementary Material 1). Specialists' self-reported billing time for responding to the question is used to calculate remuneration, prorated at \$200/hour. PCPs may also use an established billing code that remunerates them \$16 per eConsult.¹² This service is available to all PCPs practicing in Ontario and can be used in all care settings, including LTC. Extensive evaluation of the service has shown that eConsult improves population health outcomes, provider experience, patient experience, and cost-effectiveness, and it is sustainable.^{6,7,13}

Implementation

The approach to implementing eConsult in LTC involved identifying a clinician champion where possible, facilitating signup of all PCPs in the home, and assisting with setting up tailored workflows as needed. Intervention agents hosted clinical days for case review and 1-hour lunch-and-learn sessions at homes where there was interest in tailoring workflows or setting up a delegate(s), a central body—often a nurse, ward clerk, or administrative staff member—who submits eConsults on behalf of the home's PCPs.¹⁴ This was generally consistent across the region; however, some LTC PCPs created their eConsult accounts without direct or targeted engagement from the intervention agents.

Evaluation

Quantitative Data Collection

The eConsult service automatically collects use data from all cases, including patient age and gender, type of PCP (physician or nurse practitioner) submitting the case, PCP's practice location, specialty type consulted (eg, dermatology), response interval, the specialists' self-reported billing time, and the PCP's responses to the mandatory close-out survey (Supplementary Material 1). Descriptive data about the participating LTC homes (eg, number of long- and short-stay beds) were collected from the Ministry of Health and Long-Term Care's official website.¹⁰

Qualitative Data Collection

Ten PCPs, 4 administrators, and 1 nurse champion from 2 LTC homes participated in a total of four 1-hour focus groups held between September 5 and November 6, 2018. The objective of these focus groups was to explore the perspectives of early adopting PCPs on the use of eConsult in LTC. The sessions were semi-structured and moderated by the eConsult Research Team (Supplementary Material 2). Transcripts of audio recordings from the focus groups were transcribed and uploaded into NVivo 11 (QSR International Pty Ltd) to facilitate analysis.

Quantitative Data Analysis

Descriptive statistics were calculated to characterize the case data for analysis and evaluation. The number of long-stay beds in the region was used as a proxy for population size when calculating the population rate of eConsult in LTC.

Qualitative Data Analysis

Three of the study authors (C.F., M.G., M.H.) analyzed the focus group transcripts using a constant comparative approach. Reviewers met twice to discuss identified key themes and resolve differences. The full authorship team reviewed, interpreted, and further developed the themes until consensus was established.

Results

In 2018, a total of 34 physicians and 18 nurse practitioners in 18 LTC homes in the Champlain Local Health Integration Network, representing 47% of the 7419 long-stay beds in the region, were signed up to use the eConsult service. The number of long-stay beds in the home ranged from 71 to 450 beds, with a median of 177 beds.¹⁰

Between January 1 and December 31, 2018, PCPs working in LTC homes in the Champlain Local Health Integration Network submitted 64 eConsult cases, an amount equaling 8.63 cases per 1000 residents in the target region.¹⁰ Residents on whose behalf eConsults were sent had an average age of 80.09 years. PCPs sent eConsults to specialists from 23 specialty and subspecialty groups, most frequently dermatology (19% of cases), geriatric medicine (11%), and infectious disease (9%) (Figure 1). Specialists responded in a median of 0.6 days (interquartile range: 0.1–2.7 days) and reported a median billing time of 15 minutes, which translated to an average cost of \$50.00 per case.

Figure 2 displays the impact of eConsult on the PCP's course of action and referral behavior. In 60% of cases, eConsult provided PCPs with a new or additional course of action that they planned to implement, and 31% of cases confirmed the PCP's original course of action. Seventy percent of cases were resolved without the resident needing a face-to-face specialist visit. In 2% of cases, a referral was initiated when not originally contemplated by the PCP.

Thematic Analysis

Three main themes emerged from the focus groups: (1) contextual factors in LTC, (2) perceived value of eConsult, and (3) considerations for implementation and adoption.

Contextual factors

Participants reported that most LTC homes in Ontario are little understood; are under-resourced, with limited information technology (IT) and clerical support; and care for a patient population that is often medically complex. Many residents in LTC are frail or suffer from physical or cognitive impairments that make travel to a specialist appointment challenging: "Because of mobility reasons, dementia, . . .

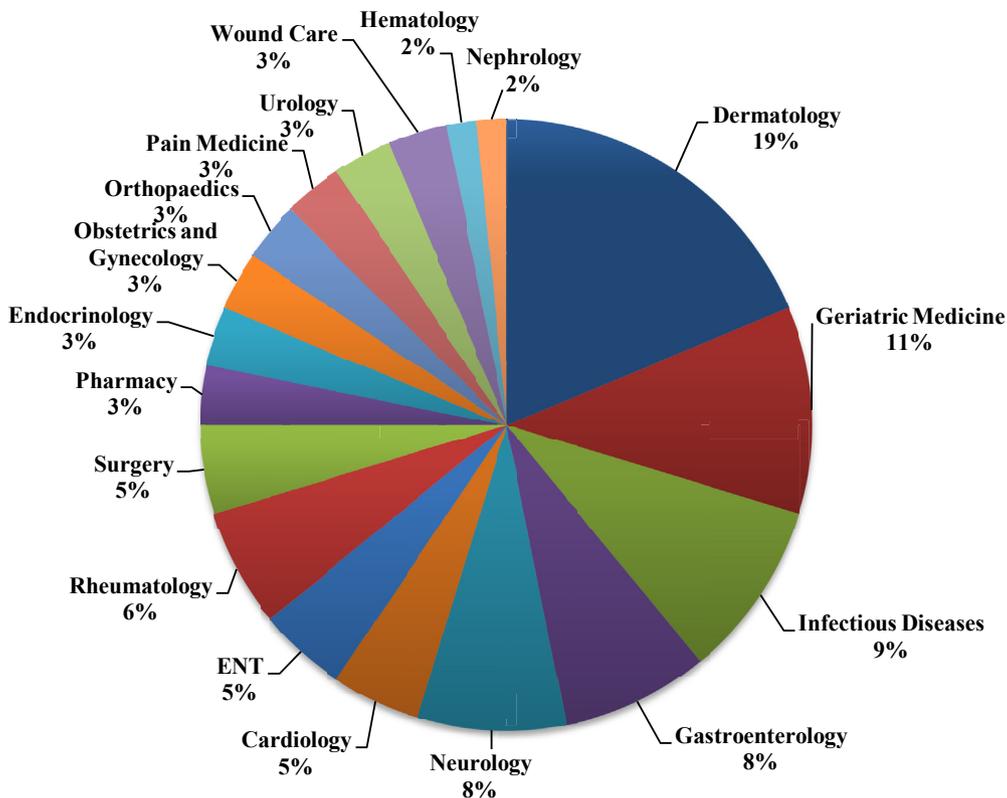
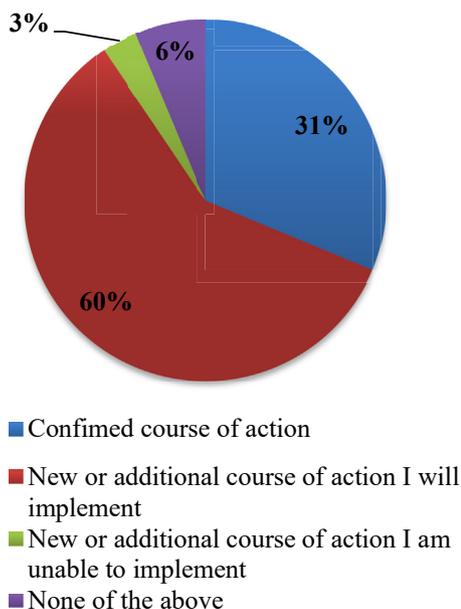


Fig. 1. Distribution of specialties accessed through eConsult by primary care providers working in long-term care. ENT = ear, nose and throat; a total of 23 specific specialties were accessed, which have been grouped into 18 general specialties in the above figure. A downloadable PDF of this form is available at www.sciencedirect.com.

it's stressful, it's a production . . . for us to send somebody out [for a specialist appointment] isn't a small feat." Participants stated that many residents are often not considered for referral and PCPs and the families prefer to avoid transferring the resident outside of the home

because of resident condition, goals of care, complexity of transfers, and cost, which is borne by the resident and family. One participant noted, "We jump through hoops to avoid [referrals] because . . . people do not travel well . . . and it is often not in line with our goals of care."

A Impact of eConsult on PCP Course of Action



B Impact on Need for Face-to-Face Referral

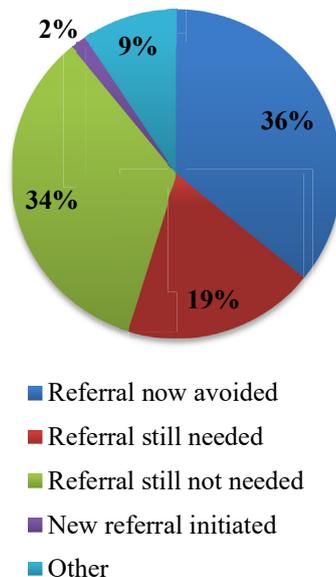


Fig. 2. Impact of the Champlain BASE eConsult service on the primary care provider's course of action and referral behavior. A downloadable PDF of this form is available at www.sciencedirect.com.

Another participant noted that the decision to refer often depends on the capacity of the resident's friends or family to bring the resident to the appointment, resulting in inequities between residents: "It all depends on who that substitute decision maker is . . . Do they have the time? Do they have the money? . . . Which is where you lose your equity . . . [residents are] not all receiving the same access to the same specialists."

When discussing their experience accessing specialist advice prior to eConsult, PCPs expressed that "most physicians don't understand long-term care" and that they often "get a response back [from specialists] that is not at all reflective of the complexity with which [they are] trying to work in" and may not be actionable or align with goals of care. This makes some hesitant to seek future specialist advice through any means. PCPs recommended the creation of an LTC-friendly specialty group to address this hesitancy.

Perceived value

PCPs who had used the service reported a number of benefits that eConsult offered, including improved access to specialist advice, cost reductions, improved continuity of care, enhanced quality of care, and increased ability to provide care that aligned with the resident's goals: "The major benefits for the resident are cost, travel, time. And really quality, because you know what, they might have gotten [advice] that they wouldn't have got if they would have had to travel out." Participants cited the service's speed as a chief advantage, with 1 participant noting: "It's months of waiting period for some other residents [for an appointment], so that was a week [with eConsult]." Participants also reported that eConsult allows them to seek advice when they may not have otherwise because of the resident's condition, a lack of availability of or access to local specialists, or the provider's experience with outpatient appointments. They reported that it increased their confidence in their course of action and allowed them to provide reassurance to family members. In addition, PCPs reported that eConsult avoids unnecessary resident transfers to external appointments, with 1 participant describing it as "a seamless, excellent way to communicate and to bypass that process of potentially the resident needing to go out to an appointment."

Focus group participants also included practitioners who had not used eConsult, or only did so infrequently. Those who had not used the service questioned the scope of eConsult and perceived challenges in writing the question, because of resident complexity; however, active users reported that they receive appropriate and actionable advice when they highlight the complexity of residents' needs and the limitations in the LTC setting: "I made it clear in my question that this is somebody with advanced dementia and the goals of care such and such. So, he gave me . . . A, B, C, all of the above would be fine . . . depending on what the family prefers. And I thought that was very useful."

Considerations for implementation and adoption

Focus group participants who were infrequent users of eConsult stated that the low volume of eConsults expected, given the number of residents under their care, limited their opportunities to familiarize themselves with the service. Additionally, their limited time made it difficult to prioritize integration of eConsult into their workflows. The lack of resources in LTC also limited some homes' capacities to adopt the intervention.

Participants identified a number of strategies they used to support eConsult's implementation, including engaging clinician champions, establishing delegates, and integration into existing workflows. Clinician champions consisted of those PCPs who were highly supportive of eConsult and eager to support its adoption by engaging key staff, including PCPs, personal support workers, nursing staff, senior leadership, and administrative staff. Participants highly favored the use of delegates in the home, which they said enabled use, improved

PCP efficiency, maintained a workflow similar to their referral workflow, and addressed challenges associated with PCPs learning a new platform: "The uptake was huge after [they set up a delegate]." In 1 home, simple creation of new progress note types in their electronic medical record (EMR) now allows PCPs to request an eConsult and see the specialist response directly in the EMR. A delegate facilitates transfer of data between the EMR and the eConsult service, simplifying the process for the clinicians and giving the perception of EMR integration for them: "For me, having it in the EMR is . . . essential. The best thing they've done is integrate [it into PointClickCare]."

Though eConsult is used by LTC PCPs in homes with varying staff support, resources, and IT services, participants stated that full EMR integration would greatly enable continued uptake of eConsult in LTC: "I really can't see how a physician wouldn't be able to do that if it was integrated [into the EMR]." However, participants noted that the service should be available to LTC homes regardless of the technology they have available. They also agreed that, at a system level, improved IT and resourcing to LTC homes would allow for more wide-spread use of digital health tools that improve care, such as eConsult.

Respondents from the focus groups highlighted the importance of understanding the LTC context and the setting-specific challenges while implementing eConsult in LTC. Homes with administrative support staff or ward clerks could more easily establish delegate workflows, and IT support enabled incorporation of eConsult into 1 home's EMR, as described above, which increased use. Participants expect that LTC homes with the most limited resources will have the most difficulty implementing a new model of care or health innovation, such as eConsult.

Comment

The eConsult service improved access to specialist advice, with a median response time of 0.6 days, 70% of cases resolved without the resident needing a face-to-face referral, and 60% of cases providing PCPs with advice for a new or additional course of action. These outcomes align with those of larger studies of the eConsult service, which reported a median response time of 0.9 days, 68% of cases resolved without a face-to-face specialist visit, and 57% of cases providing for a new or additional course of action.¹³ Compared with the average for a non-urgent face-to-face specialist visit in Ontario of 79 days, these reported response times also represent a significant reduction in wait times to access specialist advice.¹⁵

The average cost per case for eConsults from LTC was \$50.00, a figure that closely matches the average cost per case of \$47.35 calculated from a larger sample of eConsult cases.⁶ Both figures demonstrate significant savings compared with \$133.60, the average cost of an in-person referral.⁶ Indeed, the average cost for an in-person referral is likely higher for residents in LTC than the broader population because of the high levels of frailty and cognitive impairment among residents. These conditions make transit difficult and labor intensive, often requiring family assistance or specialized services that come at a cost to the resident.

Despite the benefits eConsult offers for residents in LTC homes, participants in the study's focus groups identified barriers to the service's implementation, most notably those associated with health records, IT support, operational funding, and staff resourcing. Other health care researchers, providers, and innovators implementing health interventions in LTC settings should be aware of the challenges unique to the sector and strategies to work around these challenges, which were identified.

We are in the process of implementing eConsult in LTC homes across Ontario. Between January 1, 2017 and September 30, 2019, PCPs practicing in LTC homes submitted 447 eConsult cases to the Ontario eConsult Service and 209 eConsults to the Champlain BASE eConsult Service, and we continue to see increased adoption of eConsult among

PCPs working in LTC. Further study is needed to evaluate eConsult's sustainability in LTC; however, the population rate (8.63 cases/1000) is promising. We will work to find sustainable solutions to the challenges identified by users, particularly during the focus groups discussed above. Future studies may explore use and impact in rural vs urban settings, how provider demographics or resident volume impact adoption, continuity of specialist care in LTC settings, impact on quality of care, a full-cost analysis, and evaluation of resident and caregiver satisfaction with eConsult.

Our study has several limitations. Evaluation was limited by the data available. Case data were only included for cases submitted by PCPs whose eConsult account is linked to the LTC home in which they work. Cases submitted by LTC PCPs with accounts linked to a primary care clinic may not have been included. Participants were not recruited for this study. Instead, a convenience sample was used. Further, qualitative data consisted of transcripts from interviews with early adopters in only 2 LTC homes. No nurse practitioners participated in the focus groups.

Conclusions and Implications

Our study demonstrates that it is feasible to implement eConsult in LTC settings. Specialist response times and referral outcomes reflected those seen in primary care settings, and participants in the study's focus groups spoke positively of the service's value. Participants identified contextual factors affecting implementation in LTC settings, leading us to consider potential facilitators, such as financial incentives, requirements for accreditation, and modernization of the digital health infrastructure, including EMRs. More LTC homes should consider adopting eConsult in order to improve access to specialist advice for their residents. As the expanding population residing in LTC advances in medical complexity and frailty, implementation of eConsult provides an avenue to improve access to specialist care for our most vulnerable seniors.

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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.

Appendices for manuscript entitled “The Feasibility of Using Electronic Consultation in Long-Term Care Homes”

Supplementary Material 1: Close-out Survey Questions Completed After Each eConsult Case by the Primary Care Provider

Q1: Which of the following best describes the outcome of this eConsult for your patient?

1. I was able to confirm a course of action that I originally had in mind
2. I got good advice for a new or additional course of action that I will be implementing
3. I got good advice for a new or additional course of action that I am not able to implement
4. None of the above (please comment)

Q2: As a result of this eConsult would you say that:

1. Referral was originally contemplated but now avoided at this stage
2. Referral was originally contemplated and is still needed
3. Referral was not originally contemplated and is still not needed
4. Referral was not originally contemplated, but eConsult process resulted in a referral being initiated
5. Other (please explain)

Q3: How helpful and/or educational was this response in guiding your ongoing evaluation or management of the patient?
Minimal 1 2 3 4 5 Very Valuable.

Q4: This eConsult addresses an important clinical problem that should be incorporated into upcoming CME events
Strongly Disagree 1 2 3 4 5 Strongly Agree.

Q5: We would value any additional feedback you provide [Comments for the specialist will be forwarded to her/him]:
(Comment Box)

Supplementary Material 2: Semi-structured Focus Group Guides

2.1. Semi-structured Guide for Physician Focus Groups—Questions

1. Think about a situation you have with a current resident where you might need or would like some guidance or support from a specialist colleague. What would the barriers or enablers be to accessing that advice?
Probe: Would you say that you are able to consistently access the advice and care that is needed?
Probe: Do you feel your specialist colleagues fully understand the long-term care sector?
2. Do you often have residents who could benefit from specialist advice but who aren't considered for specialist intervention due to their physical or behavioural condition? In your opinion, is eConsult an appropriate means for accessing specialist advice to inform the care they are given?

3. For those who have tried eConsult, what are the benefits? Are there any drawbacks?

Probe: When you think about eConsult, do you think about it as an opportunity for education and knowledge sharing?

4. Tell us about your experience when you were introduced to eConsult? What was positive about the process? What were the challenges? What still needs to be done?
5. As we are expanding eConsult services across the long-term care sector in Ontario, what advice would you have for your colleagues at other long-term care homes?

2.2. Semi-structured Guide for Administrator Focus Groups—Questions

1. Can you describe the process (workflow/risk management) you need to follow when you send a resident to a specialist's office? What happens if the resident is able to attend the visit, and what is the process if they are unable to travel because of frailty or behavioural issues? How do you manage?

Probe: What are the stressful points in the process for the resident, family members, or your team?

2. If you had a magic wand, what would an ideal specialist referral process look like for your residents? What are the most pressing issues from your perspective?

Probe: How has your workflow changed now that you are using eConsult?

Probe: What other adjustments could you make to further incorporate eConsult into your workflow?

3. Tell us about your experience in introducing eConsult into your home? What has excited you? What still needs to be done?

Probe: Has doing eConsults made a notable difference in the amount and types of referrals made at your home?

4. As we are expanding eConsult services across the long-term care sector in Ontario, what advice would you have for your colleagues at other long-term care homes?

2.3. Semi-structured Guide for Delegate Focus Groups—Questions

1. Can you describe the workflow that you follow when you make an eConsult on behalf of a provider and resident? How does a provider request the eConsult, what information do they give you, and how is that information provided?

Probe: What are the difficulties associated with this process?

Probe: What other adjustments could you make to further incorporate eConsult into your workflow?

2. In your roles as nurse champions, what has your experience been with introducing eConsult into your home? What worked well? What were the challenges? What still needs to be done?

3. As you have been using eConsult in your home, what have been the benefits? Have there been any drawbacks?

Probe: Has doing eConsults made a notable difference in the amount and type of referrals made at your home?

4. As we are expanding eConsult services across the long-term care sector in Ontario, what advice would you have for your colleagues at other long-term care homes?

Supplementary Table 1

Specialty Groups Available on the Champlain BASE eConsult Service as of September 30, 2019

Abdominal Wall Hernia	General Surgery	Pediatric Refugee and Immigrant Health
Addiction—Inpatient SUP	Neurosurgery	Pediatric Respiriology
Addiction—Opioids	Obs/Gyn—Menopause/Perimenopause	Pediatric Rheumatology
Addiction Assessment/Treatment Services	Obs/Gyn—Vulvo-Vaginal Disease	Pediatric Urology
Adolescent Medicine	Obstetrics	Plastic Surgery
Adult Refugee and Immigrant Health	Ophthalmology	Psych—Neurodevelopmental disorders
Allergy and Clinical Immunology	Orthopaedics	Psychiatry
Anesthesiology	Ostomy and Peristomal Complications	Psychiatry—First Episode Psychosis
Back and Neck	Palliative Care	Psychiatry—Perinatal
Bariatric Care—Dietitian	Parkinson's and Movement Disorders	Radiation—Radiotherapy Injury
Bariatric Care—Medical	Pediatric ADHD	Radiology—Abdominal
Bariatric Care—Surgical	Pediatric Allergy and Clinical Immunology	Radiology—Breast
Breast Cancer	Pediatric Anesthesiology	Radiology—Musculoskeletal
Breast Surgery	Pediatric Cardiology	Radiology—Neuroradiology
Cancer Genetics	Pediatric Chronic Pain	Radiology—Thoracic
Cancer Survivorship	Pediatric Complex Care	Respirology
Cardiology	Pediatric Dermatology	Rheumatology
CCAC—Champlain	Pediatric Endocrinology	Sarcoma
Chiropody	Pediatric ENT	Sexual Assault/Domestic Violence
Clinical Pharmacist	Pediatric Gastroenterology	Sleep Medicine
Concussion	Pediatric hematology/oncology	Spinal Surgery
Concussion—Pediatric	Pediatric HIV	Sports Medicine
Concussion—Rehabilitation	Pediatric Infectious Disease	Stroke—TIA
Dermatology	Pediatric Nephrology	Thoracic Surgery
Dermatology—Hair Loss	Pediatric Neurology	Thrombosis
Diabetes Education	Pediatric Neurosurgery	Transgender Care
Pain Medicine	Pediatric Obesity and Diabetes	Tropical Medicine
Endocrinology	Pediatric Ophthalmology	Urogynecology
Endocrinology—Osteoporosis	Pediatric Orthopaedics	Urology
ENT	Pediatric Palliative Care	Urology—Male Sexual Dysfunction
Fibromyalgia	Pediatric Plastic Surgery	Vascular Surgery
Gastroenterology	Pediatric Psychiatry	Wound Care
General Pediatrics	Pediatric Radiology	

ADHD, Attention-Deficit Hyperactivity Disorder; CCAC, Community Care Access Centre; ENT, Ear, Nose, Throat; Obs/Gyn, Obstetrics/Gynecology; TIA, Transient Ischemic Attack.