Introduction: The Evolution of Virtual Care in Ontario

Virtual care in Canada has undergone a rapid and sustained transformation, evolving from a supplementary access strategy into a central component of healthcare delivery. During the COVID-19 pandemic, approximately one-third of all patient encounters remained virtual between 2021 and 2022, including 38% of family physician visits, demonstrating enduring integration beyond the acute phase of the pandemic (Canadian Institute for Health Information [CIHI], 2023a). This rapid shift reflects broader global trends in which telemedicine emerged as an essential mechanism for maintaining access and continuity of care during public health crises (Hollander & Carr, 2020). The expansion was further supported by widespread adoption of digital infrastructure, including electronic medical records now used by most Canadian primary care providers, enabling new approaches to communication, documentation, and care delivery.

At a system level, virtual care aligns with Ontario's *Digital First for Health* strategy, which emphasizes improved access, system efficiency, and patient-centred care through digital innovation (Ontario Health, 2022). The scalability and flexibility of virtual modalities have positioned virtual care as a critical tool for addressing geographic disparities and improving timely access, particularly in rural, remote, and underserved communities. In this context, virtual care has transitioned from an emergency response to a sustained component of primary care delivery, with increasing expectations for integration within broader health system structures.

However, the rapid expansion of virtual care has also exposed significant structural limitations. Interoperability challenges persist, limiting the seamless exchange of patient information across providers and care settings. More importantly, current models remain largely episodic and transactional, focusing on single-point interactions rather than longitudinal care. This lack of integration undermines continuity and coordination, which are foundational principles of high-quality primary care, and highlights a critical gap between access and sustained engagement within the health system.

These limitations are particularly pronounced among unattached and equity-denied populations. Without integration into broader care pathways, virtual care risks reinforcing fragmentation rather than resolving it. As global primary care frameworks emphasize, access alone is insufficient; meaningful improvements in health outcomes require coordination, continuity, and comprehensiveness of care (World Health Organization [WHO], 2022). This underscores the need for models that move beyond access to intentionally design for integration and attachment within the primary care system.

ERVCC

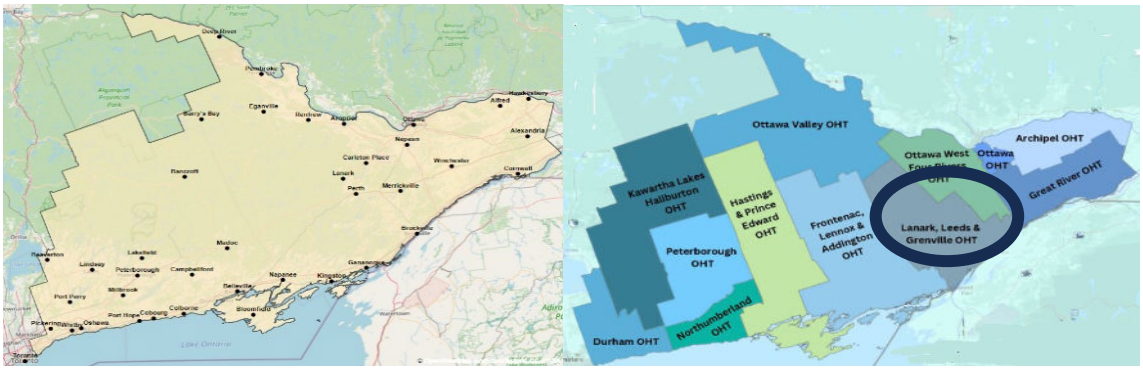
The East Region Virtual Care Clinic (ERVCC), launched in 2023, represents a Nurse Practitioner-led response to gaps in access across Ontario Health East. Designed as a publicly funded, no-cost service, the clinic provides episodic care for low-acuity presentations, aligning

with emergency department diversion strategies and improving timely access for unattached patients.

The ERVCC leverages established digital platforms, including OTN, Ocean® eReferrals, and Cortico®, to deliver synchronous virtual care across a geographically expansive region. Its inclusive model, serving patients regardless of attachment status or health card access and positions it as a critical entry point for marginalized populations.

Despite these strengths, the ERVCC also reveals inherent limitations of virtual-only care. The absence of physical assessment restricts diagnostic accuracy in certain presentations, while the lack of structured follow-up pathways limits its ability to support chronic disease management and medication continuity. These limitations reflect broader national findings indicating that virtual care, when not integrated with in-person services, may inadvertently perpetuate fragmentation (CIHI, 2023a).

From a professional practice perspective, this gap challenges the ability of Nurse Practitioners to fully enact competencies related to continuity, clinical judgment, and system navigation (College of Nurses of Ontario [CNO], 2024). Addressing these limitations requires a shift toward integrated models that extend beyond episodic access.



ERVCC: Key Service Parameters

- Open: 7 days a week, 1:00 pm-9:00 PM, including all statutory holidays
- Cost: Free to all clients, no health care required
- Mandate: Episodic care (CTAS 4&5); part of Ontario Health's ED diversion strategy
- Technology: OTN, Ocean® Referrals and Cortico® Video Platform

- The ERVCC serves two vast catchment areas.
  - 12 OHTs across Ontario Health East and 8 OHTs across Ontario Health Northeast making it one of the most geographically expansive virtual care initiatives in the province.
  - The Lanark, Leeds & Grenville OHT, TMN's primary partner, is clearly visible within the East catchment.

Problem: Access Without Continuity

Access to primary care remains a persistent challenge in Ontario, particularly for unattached populations. Many individuals rely on emergency departments (EDs) for conditions that could be managed within primary care settings. National data indicate that a significant proportion of ED visits are for ambulatory care sensitive conditions, reflecting gaps in timely, coordinated care (CIHI, 2024b).

This reliance on acute care services contributes to increased system costs, prolonged wait times, and fragmented patient experiences. Patients who access care through EDs often lack continuity, resulting in repeated visits, inconsistent management, and poorer long-term outcomes (CIHI, 2024c). These challenges are compounded for individuals experiencing structural vulnerabilities, including rural residence, socioeconomic barriers, and limited system navigation capacity (CIHI, 2024d).

Virtual care has improved access but has not addressed the underlying determinants of continuity. Patients requiring physical assessment or longitudinal management are frequently excluded from virtual-only models due to clinical appropriateness limitations. As a result, many individuals cycle between disconnected care settings without a consistent provider overseeing their care trajectory.

This represents a fundamental system misalignment. Access has been improved, but continuity has not been operationalized. Evidence consistently demonstrates that robust primary care systems are characterized by continuity, coordination, and comprehensiveness and are associated with improved population health outcomes and reduced acute care utilization (Basu et al., 2019). Addressing this gap requires integrated models that bridge episodic access and sustained engagement.

From a health systems perspective, this represents a dual-access failure: patients are either unable to access timely in-person care or are excluded from virtual care due to complexity. This gap highlights the limitations of siloed care models and underscores the need for integrated approaches that bridge episodic access and longitudinal care. Evidence consistently demonstrates that stronger primary care systems are associated with improved population health outcomes and reduced acute care utilization (Basu et al., 2019). Addressing this issue requires models that explicitly integrate access, continuity, and navigation within a coordinated framework.

Innovation: Telemedicine Neighbourhood Model (TMN):

The Telemedicine Neighbourhood Model (TMN) was developed in response to these structural gaps, representing a hybrid, system-integrated approach to care delivery. The model integrates virtual Nurse Practitioner care with in-person Telemedicine Registered Practical Nurse (RPN) assessment and dedicated Nurse Navigator coordination, creating a coordinated pathway for unattached patients.

Conceptually, TMN functions as a time-limited attachment bridge. Rather than viewing primary care attachment as an immediate outcome, the model supports patients through stabilization, follow-up, and system navigation, facilitating progression toward long-term attachment.

At the operational level, the model combines synchronous and asynchronous care modalities, allowing flexibility while maintaining clinical rigour. The integration of in-person RPN assessment addresses a key limitation of virtual care by enabling objective data collection, enhancing diagnostic accuracy, and supporting safe prescribing decisions.

The Nurse Navigator role is central to the model's effectiveness. By coordinating referrals, tracking investigations, and facilitating communication across providers, the Navigator ensures continuity and accountability within the care pathway. This role also mitigates barriers related to system navigation, particularly for vulnerable populations.

Together, these elements transform virtual care from an episodic service into a coordinated continuum. This aligns with best practice standards emphasizing clinical appropriateness, patient safety, and continuity across care settings (CNO, 2020; CMPA, 2021).

Roles and Interprofessional Functioning

The TMN is grounded in a clearly defined interprofessional structure that optimizes scope of practice and enhances care delivery. The Nurse Practitioner functions as the central clinical decision-maker, responsible for diagnosis, treatment planning, and ongoing clinical oversight. The integration of objective data from RPN assessments supports advanced clinical reasoning and evidence-informed decision-making.

The Telemedicine RPN serves as a clinical extender, conducting in-person assessments, collecting diagnostic data, and monitoring patient status. This role is critical in bridging the gap between virtual and physical care environments, ensuring that patients requiring hands-on assessment can be safely managed within the model.

The Navigator RN plays a pivotal role in coordinating care across the system. By managing referrals, follow-up, and communication, the Navigator transforms fragmented care experiences into structured patient journeys. This function is particularly important in addressing equity, as it supports patients who may otherwise face barriers to accessing and navigating the health system.

Model of Care and System Information

The TMN operates as a hybrid model embedded within community-based settings, functioning as a neighbourhood-level system enabler. By delivering care closer to where patients live, the model reduces barriers related to geography, transportation, and socioeconomic status.

Importantly, the TMN does not function as a standalone service but as an integration hub. It connects patients to primary care, specialist services, and community supports, facilitating progression from episodic access to sustained attachment. This aligns with broader health system priorities, including the development of Neighbourhood Health Homes and integrated care models.

Through structured workflows and coordinated navigation, the model enhances system efficiency while improving patient outcomes. It demonstrates how virtual care can serve as a platform for integration rather than fragmentation when appropriately designed.

System Enabler

Telemedicine Nursing Services embedded within community-based settings function as a key neighbourhood-level system enabler. By situating care within accessible, trusted environments, TMN reduces barriers related to transportation, geography, and socioeconomic status. This approach aligns with the Neighbourhood Health Home model and broader population health strategies focused on delivering care closer to home.

In addition, TMN serves as an integration hub, linking patients to primary care, specialist services, and community supports. Through structured workflows and coordinated navigation, the model facilitates progression from episodic access to sustained attachment. This not only improves individual patient outcomes but also enhances system efficiency by reducing reliance on acute care services.

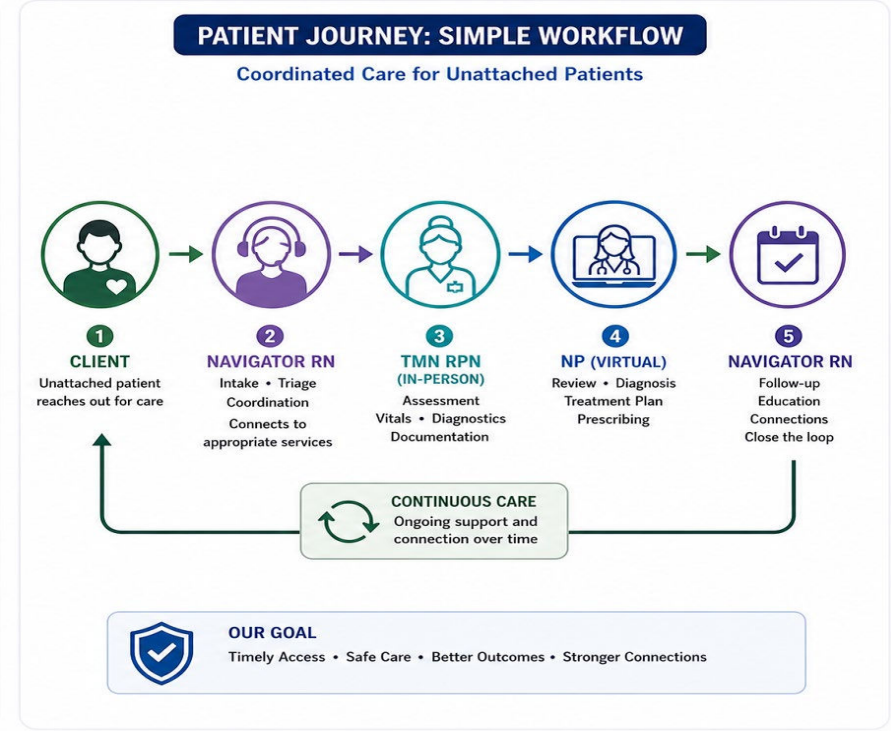
Case Studies

The TMN demonstrates effectiveness across diverse clinical scenarios, including chronic disease management, acute diagnostic assessment, and medication continuity for complex patients. Cases illustrate how hybrid care enables timely intervention, reduces emergency department utilization, and supports safe, patient-centered care within community settings.

These outcomes reflect the model's capacity to address both clinical and system-level challenges simultaneously.

Importantly, the cases highlight the value of coordinated care in managing complexity. Patients who would traditionally cycle through fragmented services instead experience continuity, stability, and progression toward attachment. This reinforces the model's role as a bridge rather than a replacement for primary care.

These cases exemplify evidence-based principles of integrated care, demonstrating how hybrid models can reduce emergency department utilization, improve clinical outcomes, and enhance continuity of care for unattached patients (CIHI, 2024b; WHO, 2022).



Case 1

An 81-year-old male living independently in a rural community. He is a former smoker, does not consume alcohol, and continues to drive, maintaining a high level of independence despite multiple chronic conditions. His medical history includes type 2 diabetes, hypothyroidism, heart failure, atrial fibrillation, and ulcerative colitis. His diabetes is well controlled, with a recent HbA1c of 5.9%, supported by a comprehensive medication regimen including semaglutide, gliclazide, metformin, and empagliflozin, alongside cardiac and endocrine therapies such as sacubitril/valsartan, furosemide, spironolactone, and levothyroxine, as well as supplements. He had been followed through a virtual care clinic for chronic disease management due to lack of

attachment to a primary care provider. On February 10th, during a virtual visit, he reported a worsening foot wound that had become increasingly erythematous and draining. Recognizing the limitations of virtual-only care for a high-risk diabetic foot wound, the NP transitioned him into the Telemedicine Neighbourhood Model for integrated in-person and virtual management.

He was seen by the Telemedicine RPN, where a comprehensive wound assessment was completed, including cleansing, measurement, and photographic documentation. A wound culture was obtained to guide treatment. Initial antibiotic therapy was started on February 12th based on clinical presentation. Once culture sensitivities were available, the antibiotic regimen was appropriately adjusted on February 13th to ensure targeted treatment. Concurrently, home care nursing was arranged for ongoing dressing changes, and a referral to a chiropodist was initiated to support pressure offloading and preventative foot care. The Navigator actively tracked results, coordinated care, and ensured communication between providers. The home care nurse was updated weekly to align wound management with the evolving care plan.

He was followed closely with weekly assessments through a combination of TMN in-person visits and virtual NP follow-ups. Care was collaboratively managed across the NP team, ensuring continuity and timely clinical decision-making. The home care nurse provided consistent wound care in the home, while the chiropodist supported long-term foot health. Over time, the wound demonstrated steady improvement, with reduction in drainage, resolution of infection, and progressive tissue healing. His chronic conditions remained stable throughout, with no exacerbation of heart failure or glycemic instability.

By March 25th, the wound had fully healed, and he was safely discharged from the Telemedicine Nursing wound care pathway. He was provided with education on ongoing foot care, monitoring, and red flags. He remained connected to the virtual NP clinic for continued chronic disease management and support toward primary care attachment. His journey highlights the effectiveness of the Telemedicine Neighbourhood Model in providing coordinated, timely, and patient-centred care that bridges gaps for unattached patients while ensuring safe clinical outcomes.

Case 2

A 75-year-old female presented to a virtual care clinic with escalating right ear pain that had progressively worsened over several days. She denied nasal congestion, hearing loss, ear drainage, or vertigo, and reported otherwise feeling well. Given the limitations of a virtual-only assessment for otologic complaints, she was referred into the Telemedicine Neighbourhood Model for further evaluation. Within 72 hours, she was seen through an asynchronous Telemedicine Nursing appointment, where the TMN RPN utilized appropriate diagnostic technology, including otoscopic imaging, to complete a focused ear assessment. Findings were consistent with acute otitis media of the right ear, with no red flag symptoms identified.

Based on the TMN assessment and transmitted findings, the NP confirmed the diagnosis and initiated appropriate antibiotic therapy. The patient was provided with education regarding symptom management, expected course of illness, and red flags requiring escalation.

The Navigator conducted a follow-up within two days to assess response to treatment, confirm symptom improvement, and ensure adherence to the plan of care. The patient reported reduction in pain and no progression of symptoms, indicating appropriate clinical response. This case highlights the effectiveness of the Telemedicine Neighbourhood Model in enabling timely, technology-supported assessment and coordinated follow-up, allowing safe and efficient management of acute conditions within the community while avoiding unnecessary in-person or emergency department visits.

Case 3

An 87-year-old female with advanced stage III ovarian cancer (malignant adenocarcinoma) was referred to the clinic for support with ongoing care needs and medication renewal. Her medical history is significant for cardiomegaly, heart failure, dysphasia, and endometriosis. She resides in an assisted living retirement home with daily on-site nursing support and is cared for closely by her son and daughter-in-law. Functionally, she uses a walker, experiences bilateral lower extremity and hip weakness, and naps frequently throughout the day. TMN RPN assessment, her vital signs were stable, with oxygen saturation at 94% on room air, no shortness of breath or wheeze, height 160 cm, weight 80.3 kg, and BMI of 31.4. Despite her complex condition, she appeared clinically stable and comfortable. She no longer has access to a primary care provider and had previously been discharged from palliative care services, leaving her and her family without consistent medical support.

She was initially seen on February 10th for multiple medication refills, including pain management. As part of the Telemedicine Neighbourhood Model, the Telemedicine RPN conducted a comprehensive in-person physical assessment, including vital signs and functional status, within her residence. These objective findings were reviewed by the NP to support safe and appropriate prescribing decisions. Prior to this model of care, the family reported needing to access the emergency department for short-term refills of controlled medications. Through coordinated NP oversight and clinical review of TMN findings, her medications were safely renewed, including hydromorphone-controlled release, with no increase in dosing and stable symptom control.

System Level Implications

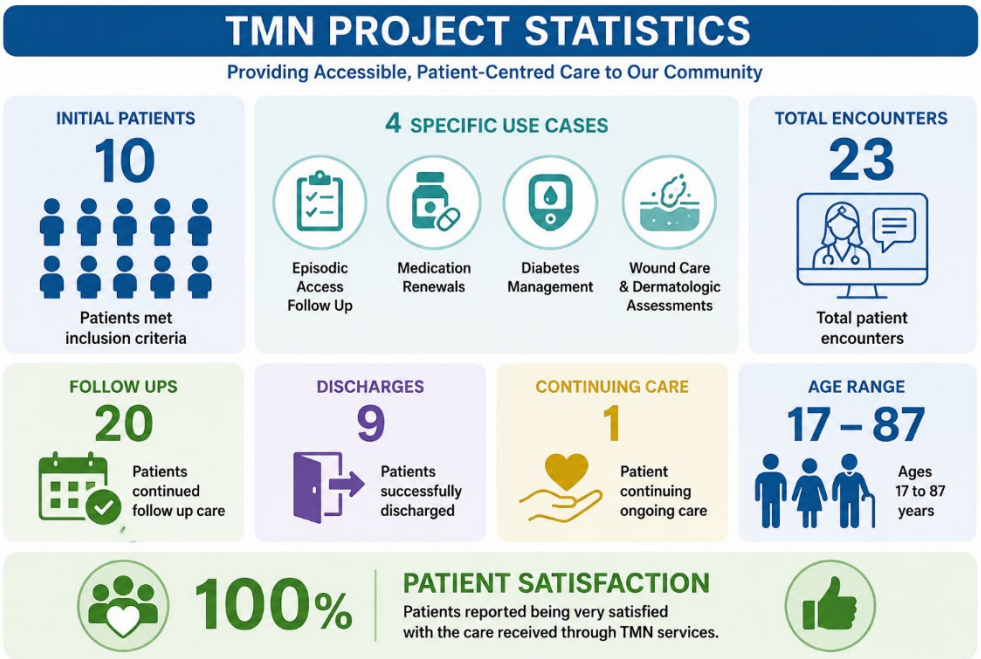
The expansion of virtual care has demonstrated clear potential to improve access; however, its impact on system efficiency and patient outcomes remains dependent on integration with broader care pathways. CIHI data highlight that while virtual care adoption is high, foundational challenges such as data standardization, interoperability, and equitable access persist across

jurisdictions (CIHI, 2023a). These limitations constrain the ability of virtual care to function as a comprehensive primary care solution and reinforce the need for system-level redesign.

Hybrid models such as TMN illustrate how virtual care can be effectively integrated within coordinated care frameworks to address these challenges. By combining virtual access with in-person assessment and structured navigation, TMN reduces avoidable ED utilization, improves chronic disease management, and enhances continuity of care. These outcomes align with broader system goals, including improved population health, reduced healthcare costs, and more efficient use of health human resources. Importantly, the model demonstrates that virtual care can serve as a platform for integration rather than fragmentation when appropriately designed.

To support scalability, performance metrics must evolve to reflect the value of attachment-bridging care. Traditional metrics focused on visit volume or service utilization do not capture the complexity of coordination, navigation, and continuity required to support unattached populations. Future indicators should include reductions in ED utilization for primary care conditions, improvements in attachment rates, and continuity of medication management. Recognizing these elements as core components of primary care delivery will be essential for advancing sustainable, integrated models of care across Ontario (CIHI, 2024b; Ontario Health, 2022).

Statistics



Key Learnings, Implications for Practice and Future Directions

The TMN demonstrates that patients previously excluded from virtual care can be safely and effectively managed through hybrid models integrating in-person assessment and virtual oversight. The model reinforces the importance of continuity, navigation, and coordinated care in achieving health equity and system efficiency.

The TMN highlights the need for a shift from access-focused models to continuity-driven system design. While virtual care has improved access, its full potential will only be realized when integrated within coordinated care pathways.

Hybrid models such as TMN demonstrate how this integration can be achieved. By combining virtual access with in-person assessment and navigation, the model addresses key system gaps, including ED overuse, fragmented care, and lack of attachment.

To support scalability, performance metrics must evolve to reflect the complexity of care coordination and continuity. Indicators such as ED avoidance, attachment progression, and medication continuity should be recognized as core measures of primary care effectiveness.

Future directions include expanding the model across regions, integrating additional partners, and strengthening equity-focused data collection. As health systems continue to evolve, models such as TMN offer a scalable framework for advancing integrated, patient-centred care.

Contact Information

Christina Lim, RN, MN, CMP
Manager- East Region Virtual Care Clinic (ERVCC)
Interim Director and Co-Lead- Integrated Care and Experience (IC&E)
Pronouns: she/ her
T: 905-723-0036 x1086 | clim@durhamchc.ca

DURHAM COMMUNITY HEALTH CENTRE
Our Health. Our Community. Our Durham.
115 Grassmere Ave | Oshawa, ON L1H 3X7

Marie Hamasoor
Program Coordinator, ERVCC
Pronouns: she/her
T: 905-723-0036 x 1109 | mhamasoor@durhamchc.ca

DURHAM COMMUNITY HEALTH CENTRE
Our Health. Our Community. Our Durham.
Formerly known as Carea Community Health Centre

115 Grassmere Ave | Oshawa, ON L1H 3X7

Basu, S., Berkowitz, S. A., Phillips, R. L., Bitton, A., Landon, B. E., & Phillips, R. S. (2019). Association of primary care physician supply with population mortality in the United States. *JAMA Internal Medicine, 179*(4), 506–514. https://doi.org/10.1001/jamainternmed.2018.7624

Canadian Institute for Health Information. (2023a). *The expansion of virtual care in Canada: New data and information*. https://www.cihi.ca/sites/default/files/document/expansion-of-virtual-care-in-canada-report-en.pdf

Canadian Institute for Health Information. (2024b). *Primary care and virtual care access: Emergency department visits for primary care conditions.* https://www.cihi.ca/en/primary-and-virtual-care-access-emergency-department-visits-for-primary-care-conditions

Canadian Institute for Health Information. (2024c). *Virtual care in Canada: Use and patient outcomes*. https://www.cihi.ca/en/virtual-care-in-canada

Canadian Institute for Health Information. (2024d). *Access to primary care: Many Canadians face challenges.* https://www.cihi.ca/en/primary-and-virtual-care-access-emergency-department-visits-for-primary-care-conditions/access-to-primary-care-many-canadians-face-challenges

Canadian Medical Association. (2020). *Virtual care: Recommendations for scaling up virtual medical services*. https://policybase.cma.ca/link/policy14440

Canadian Medical Association. (2021). *Virtual care playbook.* https://digitallibrary.cma.ca/link/digitallibrary52

College of Nurses of Ontario. (2020). *Practice guideline: Virtual care*. https://www.cno.org/Assets/CNO/Documents/Standard-and-Learning/Practice-Standards/practice-guideline-virtual-care-en.pdf

College of Nurses of Ontario. (2024). *nurse practitioners*. https://www.cno.org/Assets/CNO/Documents/Standard-and-Learning/Practice-Standards/41038_strdrnec.pdf

Ontario Health. (2025). *Virtual visit verification solutions standard*. https://www.ontariohealth.ca/content/dam/ontariohealth/documents/virtual-verification-solutions-standard.pdf

Government of Ontario. (2023). *Your health: A plan for connected and convenient care*. https://www.ontario.ca

Hollander, J. E., & Carr, B. G. (2020). Virtually perfect? Telemedicine for COVID-19. *New England Journal of Medicine, 382*(18), 1679–1681. https://doi.org/10.1056/NEJMp2003539

World Health Organization. (2022). *Primary health care measurement framework and indicators: Monitoring health systems through a primary health care lens.* https://www.who.int/publications/i/item/9789240044210