

Virtual Care in Undergraduate Medical Education: perspectives beyond the pandemic. How medical education can support a change of culture towards virtual care delivery in Canada

Perspectives des soins virtuels dans la formation médicale de premier cycle
au-delà de la pandémie. De quelle façon l'éducation médicale peut-elle
contribuer à un changement de culture en faveur de la prestation de soins
virtuels au Canada?

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Abstract

The pandemic has led to further the importance of telemedicine, teleconsultation, and technology as essential components for delivering of care in all settings. Prior to the pandemic, the instruction surrounding the safe delivery of virtual care in undergraduate medical education was sparse and informal. For care to be delivered to the high standards expected of Canadian physicians, the University of Ottawa undergraduate medical program (UGME) made the decision to define virtual care as a series of tools to facilitate and support the safe delivery of care. By focusing on virtual care as a set of tools, it provides the framework for skill development for future clinicians early in their careers and provides a critical thinking pathway to support the ever-evolving landscape of digital technology in the provision of safe, effective, timely and patient-centered care. This white paper shares our experience creating a virtual care curriculum and the possible implications for medical education.

Résumé

La pandémie a fait ressortir l'importance de la télémédecine, de la téléconsultation et de la technologie comme éléments essentiels de la prestation des soins de santé, et ce, dans tous les contextes. Avant la crise sanitaire, la prestation sécuritaire de soins virtuels n'était abordée que rarement et de façon informelle dans la formation de premier cycle. Pour garantir le respect des normes élevées en matière de prestation de soins auxquelles sont assujettis les médecins canadiens, le programme de formation prédoctorale de l'Université d'Ottawa a pris la décision de définir les soins virtuels comme une série d'outils destinés à faciliter et à appuyer la prestation sécuritaire des soins. En considérant les soins virtuels comme une série d'outils, il trace un cadre pour le développement des compétences des futurs cliniciens en début de carrière ainsi qu'une voie de réflexion critique pour accompagner l'évolution continue du numérique dans la prestation de soins sûrs, efficaces, opportuns et centrés sur le patient. Cet article présente notre expérience de la création d'un programme d'études en soins virtuels et ses implications potentielles pour l'éducation médicale.

Introduction

When the global pandemic emerged in March 2020, Medical Faculties across Canada faced major challenges to ensure the continuity of medical education. The significant acceleration in telemedicine services required prompt adjustments in medical education training. In March 2020, Clerkship students were removed from the clinical environment as it underwent a rapid and significant transformation at both the institutional and community level. Though virtual care has had its role in the delivery of care since the 1970s, the pandemic led to further the importance of telemedicine, teleconsultation, and technology in all settings.¹ Virtual care will likely remain a permanent fixture in the Canadian health care system post-pandemic.²

Prior to the pandemic, an important cultural shift towards the delivery of virtual care was already taking place. In 2019, the Federation of Medical Regulatory Authorities of Canada (FMRAC) started to provide guidance frameworks on the minimum regulatory standards to FMRAC members to help inform the development of the medical regulatory authorities' policies and guidance to physicians to promote pan-Canadian consistency in virtual care.³ In February 2020, a joint virtual task force led by the Canadian Medical Association (CMA), the College of Family Physicians of Canada (CFPC), and the Royal College of Physicians and Surgeons of Canada (RCPSC) released their report on virtual care. In their report, they made recommendations for scaling up virtual medical services as well as the virtual care handbook for Canadian physicians.^{4,5}

The pandemic precipitated the implementation of this shift. National certifying colleges such as the RCPSC and the CFPC organized resources for their members. They provided guides for the use of telemedicine and advanced and meaningful use of Electronic Medical Records (EMR).^{6,7} This initiative was supported by the Canadian Medical Protective Association (CMPA) in providing guidance and reassurance regarding virtual care as long as due diligence is maintained in professional practice.⁸

Shifts in office and virtual primary care during the early COVID-19 pandemic in Ontario were recorded and reported in the Canadian Medical Association Journal.⁹ It demonstrated that in primary care in Ontario, there was a large shift from office to virtual care over the first four months of the COVID-19 pandemic.⁹

In May 2020, the CFPC released data from their member survey on COVID-19 that found that 89% of family

physicians contacted their patients at home by phone, email, or other methods. Four out of five patient visits were virtual, with most consultations occurring by phone. Many virtual appointments were also using video conferencing tools such as Zoom or telemedicine services either integrated into their EMRs or through the Ontario Telemedicine Network (OTN).¹⁰ In the US, McKinsey & Company claims-based analysis suggested that up to 20% of emergency room visits could be avoided using virtual care, and almost a quarter of healthcare office visits and outpatient volume could be delivered virtually.¹¹ Additionally, a Deloitte pre-pandemic study found that 50% of health care executives thought that a least a quarter of all outpatient care, preventative care, long-term care, and wellbeing services would be delivered through virtual care by 2040.¹²

According to Deloitte, virtual care is more than just a trend. Virtual care has far-reaching implications beyond patient provider interactions but can also affect management at a health system level.¹³ For Deloitte, "rapid investments in virtual care solutions in response to the coronavirus crisis have accelerated Canada down a path that will have significant and long-lasting impacts on health care delivery in this country. Continuous investment will be required to sustain the change."

What does this mean for medical education?

According to the CMA's Virtual Care Task Force, virtual care is "any interaction between patients and/or members of their circle of care, occurring remotely, using any forms of communication or information technologies, with the aim of facilitating or maximizing the quality and effectiveness of patient care."⁴ Virtual care can be delivered in synchronous (video or phone) and asynchronous (messaging patients via secure portals) methods. For care to be delivered to the high standards expected of Canadian physicians, the University of Ottawa undergraduate medical program (UGME) made the decision to define virtual care as a series of tools to facilitate and support delivery of care. Virtual care as a set of tools has far reaching implications beyond the pandemic and immediate geographical location to support the educational concepts of collaborative care, addressing the needs of underserved populations, and providing health care to remote and rural areas where access to care is a significant barrier. Focusing on virtual care as a set of tools provides the framework for clinical skill development unique to the virtual

environment and the development of a broader set of competencies for future clinicians introduced early in their careers. It also provides a critical thinking pathway to support the ever-evolving landscape of digital technology in the provision of safe, effective, timely, and patient-centered care.

Medical education must take the necessary steps to provide physicians in training with the knowledge, skills, critical appraisal tools, and the attitudes required to integrate virtual care as a component in the delivery of safe, effective, and comprehensive patient care.

In 2019, Sharma et al. published an article outlining core competencies for the Medical Virtualist.¹⁴ Supported by recent opinion articles outlining the necessity and shift towards a hybrid model of delivery of care post pandemic, as well as significant industry investment in virtual care platforms and recruitment of health care professionals, medical education has a social accountable obligation to ensure that graduates are meeting the emerging standards of virtual care.^{13,15,16,17} The Medical Council of Canada (MCC) has an important role to play in solidifying these standards of care.

As outlined by Sharma et al., competencies and standards of care could fit within three domains: digital communication and “websites” manner, scope and standards of care, and virtual clinical interactions. For example, Sharma et al. describe the optimization of visualization, body language and speech as well as graphic assisted communication.¹⁴ The goal would be to incorporate these important communication skills within the clinical skills development programs. By focusing on these types of skill acquisition in order to provide virtual care safely and effectively, further curriculum development and integration into existing clinical skills development programs at both the medical school and residency years in a graduated fashion will be possible. Furthermore, the importance of Personal Health Information Protective Act (PHIPA) compliance, e-prescribing and virtual care pathways for follow-up and urgent situations can be reinforced during medical school.¹⁸ There is also evidence emerging on the appropriateness of virtual physical exam and that diagnostic accuracy or agreement of virtual care which appears to be similar to in-person visits in primary care.^{19,20} These skills can be introduced longitudinally and assessed appropriately.

It is no surprise that the medical learning environment has changed significantly over the last two years with the introduction of virtual care. As such new adaptations of existing frameworks are being proposed to help health professional learning environments prepare future physicians for this new clinical environment.²¹ Because of the complexity of virtual care for both the clinician and the learner, we elected that the foundational concepts and associated clinical skills must be introduced early in a learner’s educational journey to support successful and safe virtual care encounters. These foundational competencies are required to critically evaluate the rapidly evolving virtual care and digital health landscape. The CMA’s virtual task force report listed the following key components for virtual care development, which include interoperability as defined as the ability of EMRs, patients’ virtual charts and other stakeholders of medical information such as pharmacies to exchange and make use of information, governance, licensure, quality of care, payment models and medical education at all levels (undergraduate, post graduate, and continued professional development).⁴ At the University of Ottawa, they decided to focus primarily on the importance of quality of care and its implications for medical education.

As we prepared for the re-integration of the University of Ottawa clerkship students in May 2020 to the changed clinical environment, it was clear that we needed to provide an opportunity in a structured learning environment to introduce the concepts associated with quality virtual care. A virtual care curriculum was developed. The goal was to prepare learners for the changed clinical environment and to become familiar with virtual care tools. In return, learners could participate in the care to their patients and play a supportive role in the interdisciplinary care teams. Secondary gains could be anticipated as this would support change in practice through future training and in their practice decisions. Like others, we share the vision that virtual care/digital health is not simply a matter of moving to a new platform; it requires a cultural transformation.²²

Curriculum innovation at the University of Ottawa

After a review of our existing programs and learning objectives, a working group of clinical experts in virtual care was developed drawing from the expertise of practicing interprofessional clinicians with experience in virtual care, medical educational experts, experts from the Department

of Communications, and learner representatives. Seeing no learning objectives and limited educational activities in our curriculum, we developed a set of learning objectives that were linked to our MD Program objectives and the relevant CanMED competencies and roles. At the time of the development, there were no learning objectives in the literature. Considering the short timeline for the re-integration of the clerkship students in May 2020, we focused mainly on educational activities aligned to the following two key themes:

- The history and medical-legal implications of virtual care
- Communication, best practices, and clinical pearls in delivering virtual health care

These two themes fit within the competencies of patient safety, medical-legal requirements, appropriate use of technologies for the delivery of care, communication via virtual care, and clinical interactions and decision making in the delivery of virtual care. These themes and competencies helped drive the development of the 12 current virtual care objectives used at the University of Ottawa.

From conception, the vision for this program was a longitudinal curriculum, to be further developed using a spiral design, with program assessment and scholarship congruent with its goals and to be delivered in both French and English. It was first introduced to learners in Year 3 (MD2021), re-integrated into the clinical environment in May 2020. In August 2020, incoming Year 3 learners (MD2022) were started in the program and finally in spring 2021 Year 2 learners and Year 1 learners (MD2023 and MD2024) were started in the program. Though initially the program was intended for clerkship students, the benefit of introducing foundational concepts early in the learner's educational journey allowed for the program to be stretched out to introduce the curriculum during pre-clerkship.

The following is a list of the University of Ottawa Virtual Care Objectives:

1. Describe the technical requirements, proposed benefits and challenges of providing health care to patients through telemedicine.
2. Explain the differences between the various categories of telemedicine (teleconsultation, tele-expertise, medical telemonitoring, tele-medical assistance and emergency telemedicine).

3. Describe the technical requirements that must be in place to provide patient care safely through a telemedicine platform.
4. Describe the patient groups that would benefit from participation in a telemedicine program.
5. Describe the components of a telemedicine patient consultation.
6. Demonstrate effective communication skills with individual patients or family members during a telemedicine consultation.
7. Demonstrate effective listening and motivational interviewing skills during a telemedicine patient consultation.
8. Develop a management plan (additional investigations, treatment options, consultations) for patients assessed through a telemedicine platform in an ambulatory care setting.
9. Demonstrate effective communication skills with other healthcare team members caring for patients through a telemedicine platform.
10. Describe the emotions that facilitate rapport with patients during virtual care visits.
11. Explain how the principles from social-behavioral sciences can assess the impact of accessing or seeking care using telemedicine.
12. Describe how a hybrid model of virtual care and in person visits complement each other and provide value to the patient and the clinician experience.

The curriculum was structured into two components.

Part 1: Theoretical component (learning objectives 1-5)

- Two sessions covering the history of telemedicine, best practices in telemedicine, preparing for a teleconsultation (communication skills, physical exam skills, the physical environment and follow-up) and finally, challenges encountered in telemedicine with practice tips. These sessions are delivered through online facilitated sessions by interprofessional health care providers and physician experts and include videos, patient testimony and existing modules.

Part 2: Practical component (learning objectives 6-12)

- Five sessions of teleconsultation with a standardized patient. Cases are developed in

house with an interdisciplinary team and focus on history taking, physical examination skills, management plan development and case conference/collateral information gathering. Physician facilitators provide feedback and lead a group debriefing session at the end of each teleconsultation.

Our experience to date

Currently 95 francophone and 235 anglophone students from the MD2021 and MD2022 cohorts complete the virtual care program with 48 francophone and 121 anglophone students from the MD2023 program partially completing the program, their participation is ongoing. As all our course material is evaluated through feedback forms, our initial feedback form from students indicated increased confidence in the use of teleconsultation as a tool to deliver patient care and agreement that virtual care is an important educational topic to be discussed and explored further. Practically speaking, learners can seamlessly integrate into the learning environment when virtual care opportunities are present.

With the recent appointment of the inaugural Faculty lead for the longitudinal virtual care curriculum, we expect there to be further expansion of the current learning objectives to encompass further competency-based language, aligning the curriculum to the national Entrustable Physician Activities (EPAs) and developing an appropriate assessment strategy to ensure students have acquired the knowledge, skills, attitudes, and behaviours required to be entrusted to deliver virtual health care. Furthermore, there will be continued expansion of the program to include faculty development and program evaluation. Research will be conducted to identify emerging themes and educational trends in the evolving learning environment. A working group on curriculum renewal is currently re-assessing the program and making recommendations for true integration within the curriculum. Ideas around artificial intelligence, analytics/machine learning, remote monitoring of patients, collaborative interprofessional care, ePrescribing, digital health tools, electronic triage tools, treatment optimization and digital communication tools will need further definition and discussion to see how it can best integrate into medical education. Finally, we will continue to explore and expand on the role that virtual care plays to respond to local, provincial, national, and international

community's needs to hopefully help bridge gaps to accessing care.

There is a lack of research at this time on the assessment of medical students and virtual care. However, the use of written examination questions, standardized patients, OSCE and simulation in the assessment of learners is well established and accepted as an important part of assessment throughout a learner's medical education. The competencies outlined based on the current curriculum objectives could be demonstrated through written and simulated patient care scenarios. Training in virtual care can be integrated within the physician activities already evaluated by medical schools in areas of patient communication, suitability for patient encounters as well as professional behaviors demonstrated through EPAs in the learning environment.

Advantages, challenges, and recommendations for a virtual care curriculum

Virtual care adds a new layer of complexity and expands on the competencies currently expected of all physicians for entry into practice.

Virtual care competencies will enable our educational and assessment systems to incorporate digital communication, patient interactions in a digital world, virtual clinical interactions, and adjustment of the physical exam in the existing curriculum structure. As tools that need practice depending on the learning environment, Faculty will be well positioned to support the learner to apply these skills to promote safe and appropriate clinical care in a virtual environment. Discussions around virtual care tools also expand on already established areas covered in medical education such as privacy, security, medico-legal and patient safety which are cornerstones to ensure the safe and effective practice of future physicians. Given that professional behaviors are already integrated into most medical programs such as EPAs, the direct observation of the application of these tools and skills can help assess these behaviors in a virtual care platform. It is hoped that it will contribute to our collective commitment to excellence, respect, integrity, empathy, accountability, and altruism within the Canadian healthcare system.²³ Because medical schools provide the foundational training of future physicians; content must reflect the changing landscape of health care delivery in Canada. It will ensure that students are prepared and can further support the cultural

transformation of the health care system through learned lived experiences. As learners graduate from programs, we hope that they will have developed the critical reasoning skills necessary to apply technology safely and effectively, and evaluate resources and tools available to them critically. More importantly, we also hope that learners will put into practice these skills to provide more equitable access to care for patients, improve patient engagement and outcomes, and help decrease existing barriers to care and transportability of the health care system.

There are some important high-level barriers to moving forward with virtual care training. As identified by the Virtual Care Task Force, regulatory authorities and industry must follow and provide the necessary incentives, support, and engagement to ensure the longevity and portability of the program.⁴ It is reassuring to see in the last two years that these organizations are evaluating these issues and calling into action governments to support this cultural shift. Most recently in Ontario, virtual care billing codes have been included in the recently ratified physician's agreement, solidifying virtual care permanence as an option for health care delivery.²⁴ It is important to note that it is possible that the industry may look to profit from the ease of accessibility of virtual care by charging patients premiums for access. Significant technological barriers also exist for patients, and it is naïve to think that all patients are technologically savvy, have adequate equipment, or have fast enough Wi-Fi. Virtual care should not become an all-or-nothing approach to clinical encounters. It should be an option, when appropriate, and not only reserved for those with financial or technological means. Creative approaches may be needed to ensure health care equity and access. Finally, virtual care tools and technology are ever-changing and rapidly evolving. There is no standardization of digital technology or lexicon which can be overwhelming for both patients and practitioners. Knowing this, we feel that our role as educators is to focus on the critical appraisal of these technologies and competencies that give the clinical foundations to provide the best care regardless of the tool used. Hence, medical schools play an important role in assessing the important communication aspects of virtual care and the professional behaviors associated with them.

Conclusion

Virtual care curriculums longitudinally offered throughout medical schools can train future physicians to offer high-quality virtual care in a generalizable and sustainable way.

Stakeholders such as the AFMC Virtual Care in Medical Education Task Force, curriculum leads and national organizations such as the CMA, CFPC, RCPSC, and patient advocacy groups recognize the value and importance of the clinical application of virtual care tools for the care of patients.

By acknowledging the need to incorporate virtual care training in medical education, we can set expected standards, deliverable and expected outcomes as learners graduate medical school. Virtual care competencies can be integrated into current assessment models with emphasis on the communication skills, critical reasoning skills and physicians' behaviours required to ensure safe, effective and appropriate virtual care for patients. By doing so, it may help with the development of national virtual care accreditation standards which can help medical schools not only create programs and learning opportunities to support the shift in the culture for delivery of care, but also hold future physicians to the excellence and standards of care expected of Canadian graduates.

The University of Ottawa undergraduate medical program will continue to develop and evolve the current virtual care curriculum based on ongoing research within our school and across the country. We plan a robust program of research to support further publications on the development of the program, modifications over time, and measurable outcomes. We acknowledge the need for further research on this important topic.

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