Impact of COVID-19 on postgraduate medical education in British Columbia

Residency training in BC has required significant adaptation during COVID-19, particularly in the areas of education, technology, examinations, occupational health and safety, and wellness.

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Early public health measures in BC received international recognition for their relative success in managing the COVID-19 pandemic.[1] As part of the pandemic response, resident physicians have been recognized as essential front-line workers.[2] However, the unique position of residents as both physicians providing essential care and trainees requiring continuing medical education necessitates special consideration of the impact of COVID-19 on postgraduate medical education.[3,4]

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Resident Doctors of BC (RDBC) is a professional association that represents over 1300 resident doctors provincially on issues relating to resident education, wellness, and labor relations.[5] RDBC collaborated with key stakeholders, including the BC Ministry of Health, provincial health authorities, local hospitals, and the University of British Columbia, throughout the pandemic to advocate for residents' needs. As a key interface between individual residents and the health system at large, RDBC is uniquely positioned to comment on provincial resident issues. Over the past year, five themes summarize the impact of COVID-19 on residency training in BC: education, technology, examinations, occupational health and safety, and wellness. On behalf of the RDBC Board of Directors, we aim, in this article, to analyze these issues with the goal of guiding future emergency preparedness and ongoing quality improvement of residency education in the context of our rapidly evolving health care landscape.

Education

Residency, or postgraduate medical education, is a multifaceted effort to train an adult learner to become an independent physician. The overall process varies as each residency training program is uniquely tailored to specialty-specific competencies. However, in general, residency involves on-the-job learning through patient interactions within set time frames or rotations, didactic teaching on clinical cases, and journal clubs to keep abreast of the latest scientific evidence, all of which were significantly affected by COVID-19.

During the first wave of the pandemic in BC, numerous outpatient and private clinics were closed, elective surgical procedures were canceled, out-of-province electives were suspended, and the number of non-COVID-related visits to hospitals declined sharply.[6] Additionally, residents in numerous training programs were redeployed to clinical areas of need including emergency medicine, acute inpatient wards, and critical care.[7] While some changes reverted within months, such as the resumption of elective surgeries, other training opportunities, such as out-of-province electives, remained canceled over a year later.[8,9]

The disruption of traditional clinical experiences interfered with residents' ability to achieve their educational goals. For those just beginning residency, their transition was imposed by rapidly shifting pandemic-associated policies, rules, and expectations. For residents nearing critical milestones in their training, such as subspecialty applications, electives for employment prospects, and graduation, this situation posed unprecedented challenges.

Residency training programs, hospitals, and Canadian medical education at large recognized these issues, and many positive solutions emerged. The pandemic occurred at a time when many programs were already shifting

toward competency-based medical education (CBME), in which training focuses on attaining skill-based milestones rather than traditional time-based requirements. During COVID-19, many training programs embraced the spirit of CBME, espousing flexibility by modifying existing policies to compensate for missed training time because of, for example, redeployment or illness.[10] In addition, many educational opportunities were transitioned to effective virtual formats, as described below. Hence, although many residents experienced the loss of valued learning opportunities, educational adaptations that emerged from the pandemic may continue to benefit future generations of trainees.

Technology

Social distancing measures implemented during the pandemic necessitated adoption of technological solutions to minimize interruptions to patient care and resident education. Video-based teleconferencing emerged as the most-used platform, with many institutions adopting new technology services or expanding their existing infrastructure. Because of its provincially distributed medical education program, UBC was well positioned to leverage its established video teleconferencing infrastructure to support a smooth transition to online learning during the pandemic.[11-13]

Other successes in implementing new technologies stemmed from adaptability and responsiveness. Traditional in-person patient care and teaching transitioned to well-received virtual solutions, such as three-way teleconferencing between patient, staff physician, and resident physician, as well as virtual flipped classrooms or simulation teaching.[3,14,15] Continuous quality improvement processes were implemented to ensure the use of novel technologies underwent iterative improvement.[11]

Commonly described challenges included a need for faculty training on how to teach or provide patient care virtually, and "Zoom fatigue" or exhaustion associated with overusing virtual platforms. Some residents also described that their virtual curriculum was inundated with online resources without appropriate curation to guide their learning.[13,14]

Overall, the benefits of virtual technologies extended beyond the preservation of patient care and learner education. With the accessibility and convenience of virtual conferencing, residency programs noted increased engagement and attendance with teaching, reduced barriers to checking in with learners on their wellness, and greater ease in coordinating projects.[3,15] As a result, many departments noted record attendance in virtual noon rounds, others capitalized on recruiting expert lecturers outside their geographic location, and some clinics embracing this new technology were able to function more efficiently with fewer no-shows.

Examinations

To become an independent medical practitioner in BC, residents must successfully complete several licensing examinations. For Canadian trainees, until the disruption of the pandemic, these included the Medical Council of Canada Qualifying Examination (MCCQE) consisting of a written knowledge test (Part I), typically completed immediately prior to residency, and a practical oral exam (Part II), typically completed during residency.[16] These were then followed by either the Royal College of Physicians and Surgeons of Canada or College of Family Physicians of Canada examinations, which typically consist of both written and oral components.

Due to COVID-19, administration of these exams necessitated finding a delicate balance between maintaining the safety of examinees and the public, while also accomplishing their traditional credentialing role. Early in the pandemic, many exams in spring 2020 were postponed or outright canceled until virtual alternatives were established.[17-19] However, over a year later, repeated postponements and cancelations of the MCCQE Part II continued to occur due to a variety of logistical and technical challenges.[20,21] In response to this, numerous provincial licensing bodies, including those in British Columbia, Ontario, and Nova Scotia, temporarily granted provisional licences for independent practice without MCCQE certification. This contributed to a national reconsideration of the need for this exam, especially in the context of the broader movement toward competency-based medical education, in which residents' clinical competence is iteratively evaluated rather than judged on standalone exams, in addition to advocacy from national organizations questioning the value of this particular examination.[21] Ultimately, the Medical Council of Canada decided to cease delivering the MCCQE Part II in response to recommendations from national stakeholders,[22] underscoring how COVID-19 magnified a broader re-examination of high-stakes physician assessment and examinations in Canada.[23]

Occupational health and safety

Many health care workers developed an increased appreciation for occupational health and safety issues during COVID-19, from the need for personal protective equipment to the importance of airborne isolation protocols. However, the increased focus on occupational health and safety also revealed gaps in the coordination of these protocols for resident physicians.

Residents have a unique position as health care workers given their constantly evolving scope and settings of practice. For example, their employment is temporary, lasting anywhere from 2 to 8 years; they are geographically distributed, often working in multiple hospitals and health authorities; and they work for multiple departments, rotating between services in 4-week cycles. Although residents have multiple clinical preceptors, they do not have a single manager as in traditional hospital reporting structures. This means residents may be excluded from typical channels of communication targeted toward other hospital-based staff, such as departmental emails, as was the case for early memos about COVID-19 vaccination scheduling. These interrelated factors make it challenging to administer appropriate oversight and education of occupational health and safety matters for resident physicians.

For example, contact tracing for residents who were potentially exposed to COVID-19 was a challenge in the early phase of the pandemic. Exposed residents were often contacted through informal, patchwork channels outside of structured hospital and public health systems, relying on colleagues or preceptors to recall their recent contacts in the event of an outbreak. To address this issue, RDBC collaborated with UBC Postgraduate Medical Education and provincial health authorities to develop a database

that could track residents across the province. This allowed residents to be identified by their site and rotation across health authorities and facilitated timely communication to potentially exposed residents in the event of COVID-19 outbreaks.

Overall, the pandemic offered valuable insight into how future occupational health and safety preparedness for resident physicians can be enhanced. Since 2018, RDBC has incorporated mandatory occupational health and safety training for all residents during their first-year orientation. Future avenues for improvement include collaborating with health authorities and hospitals to offer additional training and developing supports to help residents appropriately navigate hospital communication and reporting structures (e.g., in the event of work-related injuries).

Wellness

The negative impact of COVID-19 on resident physician wellness relates closely to the unique training demographic in BC. In contrast to about 25% of residents in other provinces, over 45% of BC's incoming residents originate from outside the province. As support from friends and family plays a critical role in maintaining wellness, residents new to BC and without pre-established social networks are predisposed to social isolation. Residents have expressed a reduced sense of community during the pandemic as well as increased difficulty integrating into their new training programs.

Prior to COVID-19, social events for residents were mostly in person, with occasional online offerings. Larger interspecialty events were concentrated in Vancouver and, therefore, inaccessible to distributed residents in other parts of the province. The gaps in this support system were highlighted by COVID-19, in which most events were transitioned to an online format. Virtual gatherings, including at-home cooking or fitness classes, created an opportunity to reach residents in the entirety of the province, including those in smaller training programs.

Accessible counseling is another critical pillar of resident wellness. In response to COVID-19, UBC has enhanced these supports with the addition of programs such as peer-to-peer support networks and weekly virtual wellness rounds. Furthermore, more counselors are now offering telephone and virtual appointments to increase provide-wide access to these services.

While social events and counseling aim to enhance the resident experience, it is also important to consider the root causes of why resident physicians become unwell. Resident wellness is intrinsically tied to their overall training experience, such as their daily clinical encounters and licensing exams. Therefore, addressing the underlying, systemic causes of why residents experience burnout, depression, and wellness challenges is critical to creating a safe and positive physician training environment in BC.[24]

Conclusion

The traditions of residency training in BC have required significant adaptation during COVID-19, particularly in the areas of education, technology, examinations, occupational health and safety, and wellness. However, although the pandemic was disruptive to postgraduate education in many ways, it also served as a catalyst for positive change, with many innovations likely to persist in the years to come **[Table]**. However, many advances in these areas remain in their infancy. We hope that this article serves as a starting point for ongoing discussion

TABLE. Residency training in BC: Barriers to and enablers of effective response to COVID-19.

	Barriers	Enablers
Education	• Relatively rigid residency scheduling for core rotations and electives. • Residents' varying roles in outpatient and private clinics without virtual options.	• Training program flexibility in adapting to unforeseen circumstances. • Integration of residents in the implementation of and transition to virtual health care delivery. • Continuous quality improvement processes.
Technology	• Lack of training and established processes for educators in transitioning to virtual mediums.	• Pre-existing provincial infrastructure for teleconferencing due to distributed teaching sites across BC. • Innovative and adaptable faculty with institutional support to adopt new technologies.
Examinations	• Traditional delivery of in-person examinations. • Reliance on high-stakes examinations to assess readiness for independent practice.	• Development of virtual alternatives for credentialing examinations. • Exploration of how competency-based medical education and traditional examinations may complement each other for licensure. • Flexibility of licensing bodies to adapt requirements in response to evolving situations.
Occupational health and safety	• Lack of established infrastructure and processes to manage resident-specific occupational health and safety issues. • Dual role of residents as both employees and learners working in multiple departments, hospitals, and health authorities across BC.	• Mandatory occupational health and safety training in first year of residency. • Collaboration with stakeholders to create occupational health and safety reporting structures that operate across health authorities and residency training programs. • Informal but nimble communication channels between resident physicians.
Wellness	• Reliance on traditional in-person wellness and social events. • Pre-existing levels of resident burnout. • Social silos between residents in distributed sites and different training programs.	• Ongoing investment into institutional support systems for resident wellness. • Improving the overall training experience to address the underlying causes of why residents are unwell. • Responsive residency groups and advocacy organizations.

and collaboration on how to support residency education and encourage excellence in clinical teaching in BC. ■

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