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COVID-19 – Considerations and Implications for Surgical Learners

Oluwatomilayo Daodu MD FRCSC
Department of Surgery, Cumming School of Medicine, University of Calgary

Nikhil Panda MD
Department of Surgery, Massachusetts General Hospital, Harvard Medical School
Safe Surgery & Safe Systems Program, Ariadne Labs, Brigham and Women's Hospital, Harvard T.H. Chan School of Public Health

Steven Lopushinsky MD MSc
Department of Surgery, Cumming School of Medicine, University of Calgary

Thomas K. Varghese Jr. MD MS
Division of Cardiothoracic Surgery, Department of Surgery, University of Utah

*Mary Brindle MD MPH**
Safe Surgery & Safe Systems Program, Ariadne Labs, Brigham and Women's Hospital, Harvard T.H. Chan School of Public Health
Department of Surgery, Cumming School of Medicine, University of Calgary

**Corresponding author*

Drs Brindle, Daodu, Panda, Lopushinsky, Varghese have no disclosures or conflicts of interest

The COVID-19 pandemic is an unprecedented global crisis. Surgical providers have been forced to reconsider almost every facet of their daily clinical practice. Elective surgeries are cancelled, and clinics scaled back drastically irrespective of healthcare system or geographic boundary. Surgical trainees stand side-by-side with all members of the healthcare team to confront the ever-changing clinical demands of the pandemic. While the full magnitude of COVID-19 remains to be seen in North America, we cannot ignore the impact of this new and evolving "normal" state on surgical training. Does aiming to flatten the curve necessarily mean a loss for surgical education?

Surgical education aims to provide resident physicians with a foundation of surgical knowledge, clinical judgment in the management of surgical patients, and technical competency. In the course of their training, residents are confronted with increasing complexity and take on graded responsibility. Even before the current global pandemic, surgical education has needed to respond to dynamic changes in knowledge of surgical disease, new technologies, new treatments, and new procedures. Simultaneously, public demand for greater accountability, oversight, and patient safety, has pushed programs to re-examine their training practices. Experience suggests the usual slow-paced response to changing training models will prove ineffective in the face of a rapidly escalating global crisis that is forcing many trainees to stay home, and a greater number to shift their attention from the management of surgical patients to preparing to manage critically ill medical patients.

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The question then becomes: how do we maintain the integrity of surgical training while also protecting our trainees and simultaneously ensuring the sustainability of a critical workforce for our healthcare systems? Potential issues related to trainee education, wellness and contributions have been identified in the communications of licencing bodies and training programs worldwide as well as from the trainees themselves through social media platforms and publications[1,2,3,4]. This article was composed in collaboration by a group of surgeons, surgical trainees at different stages of training, and surgery program directors from Canada and the USA. Here are lessons informed by approaches from around the globe:

1. **Trainee wellness and safety must remain a priority**

The health and safety of trainees must remain a core value of all training programs. Unnecessary transmission risks associated with educational activities should be eliminated[3]. Face-to-face educational activities should be adapted for remote learning[5]. Learners should be instructed to stay home if they feel unwell and should be provided with a hospital contact to call for instruction on isolation and COVID-19 testing. Each learner should be updated on the appropriate use of personal protective equipment (PPE) and ensure up-to-date fitting of N95 masks. Efforts should be made to restrict trainees from non-essential clinical activities and to limit the number of individuals rounding on any given day on service. Programs should remain mindful of not only the physical health of surgical trainees but also psychosocial and behavioural health. Attending staff should encourage well-being in their residents and role-model healthy behaviours as best as possible. Resources to support all aspects of resident wellness should be readily available.

2. **Harness the opportunities to learn from the COVID-19 pandemic**

For current surgical trainees, the COVID-19 pandemic will hopefully be a once-in-a-lifetime event. Effective social distancing does not prevent trainees from learning necessary administrative skills through the day-to-day responses to COVID-19 from the surgical community. The rapid availability of new data, guidelines and considerations, provides trainees with an opportunity to cultivate skills in processing and translating up to date evidence in a timely manner. Advocacy and responsible communication skills can be developed through the use of digital platforms (e.g., social media, blogs)[6], which not only influences surgical peers but potentially also health system leaders, law- and policymakers. Learning opportunities should be developed for residents within and outside of the hospital, allowing for remote learning.

Restructuring of workflow and use of house staff to provide needed support in different areas should be anticipated and therefore developed with an aim to protect and preserve the surgical workforce while providing unique opportunities for education. Redeployment strategies involving trainees should be developed that consider the training needs of the residents, building on core competencies while addressing clinical demand. For instance, senior surgical residents can develop their critical care expertise through expanded roles in intensive care units, while junior residents can further develop their diagnostic, triage, and resuscitation skills in the emergency department. The

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opportunity for trainees to expand their skill set in crisis response, resource allocation, and other areas of frontline or critical care work should not be missed.

Trainees learn by the example set by their surgical teachers. Through role-modelling effective leadership in response to the pandemic, attending surgeons can inspire and foster effective and appropriate skills in future surgical leaders.

3. **Restructure surgical learning**

Despite the public health crisis, a formal educational curriculum for residents should not be abandoned[5]. Attending physicians who are well but not actively engaged in clinical work due to quarantine or workforce restructuring, should make themselves available to lead and participate in remote surgical training. Programs should collaborate and iterate on curricula development during the pandemic. Remote learning allows for the sharing of resources and activities between different programs and provides opportunities to develop expanded educational relationships beyond the usual confines of a single institution. Educational conferences and didactic sessions should be offered virtually. Programs should invest in virtual platforms available to all trainees. Although simulation or hands-on technical skills training may be difficult, innovative approaches to these activities should be pursued, such as task training with video feedback. Teaching and testing related to surgical knowledge, diagnostic and therapeutic approaches involving both oral and written formats can be expanded.

Programs should provide increased support for trainees' clinical development in non-technical skills, including providing opportunities and courses related to teamwork development, crisis management, leadership, and residents as educators. Professional development can also be supported in terms of research and academic productivity, career planning, or financial literacy. Residents approaching graduation can continue to prioritize completing case logs, preparing for board examinations, and career transitions (e.g., credentialing/licensing paperwork).

An important consideration for all programs is the diminished capacity for learners to take part in educational opportunities due to competing professional and personal priorities, such as ongoing clinical service on the "frontline" or coping with the very real impacts of illness, caregiver responsibilities, and financial considerations. All restructured curricula should be sensitive to the vulnerability of trainees during a crisis within a traditional surgical hierarchy.

4. **Adapt current educational milestones**

Surgical certification and qualifying examinations have been postponed globally. The demoralizing impact of this decision on senior trainees is evident: for many residents, the satisfaction of completing years of training and personal sacrifice has been indefinitely delayed. As the entire graduate medical education community mobilizes around the COVID-19 response, appropriate adjustments should be made, when possible, to the format and timing of examinations to allow competent trainees to graduate and join the workforce. In addition, educational requirements may require modification given the changing opportunities and demands. The American Board of Surgery[7] and Royal College of

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Surgeons[1,4] have led the way by announcing hardship exemptions for case log minimums and plans for rescheduling certification examinations this spring and summer. The ACGME has directed Program Directors and all of their Residency Review Committees to remember that:

> *"ACGME visit/case minima were not designed to be a surrogate for the competence of an individual program graduate, and are not utilized in that manner by Review Committees. It is up to the program director, with consideration of the recommendation of the program's Clinical Competence Committee, to assess the competence of an individual resident/fellow as one part of the determination of whether that individual is prepared to enter the unsupervised practice of medicine."*[3]

Maintaining a rigorous standard for surgical competency while adapting expectations of trainees during a pandemic will require a thoughtful national approach.

5. Prepare for post-COVID-19

At some stage, there will be an effort to return to "business as usual." This will involve a second phase of restructuring surgical education. Surgical systems will face backlogs of clinical and operative cases, and programs will have a considerable increase in operative experiences available to trainees. These changes may, once again, necessitate a restructuring of clinical and academic curricula to allow residents to meet essential milestones.

The return to "normal" may be graduated, and clinical systems may become operational before other community services and businesses are re-established. For instance, school closures may continue to have an impact on trainees with young children. Programs will need to remain flexible for an extended time to allow adjustment to another "new normal." Financial and physical strain will likely take their toll on trainees. Additionally, the emotional and mental stresses of the pandemic are likely to have lasting impacts on healthcare workers, including trainees. The importance of providing wellness support and resources for trainees, even after the peak of the pandemic has passed, cannot be overstated.

For many health systems in North America, it is likely that the worst impact of the pandemic is yet to come. This global pandemic has catalyzed the evolution of surgical training culture. During these times, the priority of surgical systems will be to provide the best possible care to the population while protecting and preserving the surgical workforce. However, despite the strain on our health systems, surgical education should not be abandoned. There are many opportunities for surgical trainees to expand their experiences in collaborative work, health system management, and leadership. In addition, residents will have the opportunity to contribute to the community at the front lines during one of the most pressing public health crises in history.

References:

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1. Royal College of Physicians and Surgeons of Canada. "Update on Coronavirus Impact to the Royal College." Last Update, March 24, 2020. Available at: http://www.royalcollege.ca/rcsite/documents/about/update-coronavirus-e#s2. Accessed March 18, 2020.

2. Royal Australasian College of Surgeons. "Coronavirus information hub." Available at: https://www.surgeons.org/media-centre/coronavirus-information-hub#Exams. Accessed March 20, 2020.

3. Accreditation Council for Graduate Medical Education. "ACGME Response to Coronavirus (COVID-19)". Last Updated, March 18, 2020. Available at: https://acgme.org/Newsroom/Newsroom-Details/ArticleID/10111/ACGME-Response-to-the-Coronavirus-COVID-19. Accessed March 20, 2020

4. Royal College of Surgeons. "Coronavirus (COVID-19). Last Updated, March 24, 2020. Available at: https://www.rcseng.ac.uk/coronavirus/. Accessed March 20, 2020

5. Centers for Disease Control and Prevention. "Interim Guidance for Administrators of US K-12 Schools and Childcare Programs". Available at: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fguidance-for-schools.html. Accessed March 19, 2020

6. Santella, T.M., Kaneva, P., Petrucci, A., Lebedeva, E., Feldman, L.S., Fried, G.M., Vassiliou, MC (2013). "Using Social Media For Surgical Education: Distraction or Opportunity?". (Abstract). *Sages 2013 Abstract Archive.* Available at: https://www.sages.org/meetings/annual-meeting/abstracts-archive/using-social-media-for-surgical-education-distraction-or-opportunity/. Accessed March 18, 2020

7. American Board of Surgery. "ABS Statement on Training Requirements During COVID-19". Last Updated, March 19, 2020. Available at: http://www.absurgery.org/default.jsp?news_covid19_training. Accessed March 19, 2020