


Educational Alternatives for the Maintenance of Educational Competencies in Surgical Training Programs Affected by the COVID-19 Pandemic

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ABSTRACT: Along with the socio-economic burden the COVID-19 pandemic carried, the strain it brought upon our health care system is unparalleled. In an attempt to conserve much needed personal protective equipment (PPE) as well as to free up available hospital beds to accommodate the significant influx of COVID-19 patients, many elective surgical cases were essentially put on hold. Furthermore, to taper the spread of this highly contagious virus and to protect the medical staff, surgical clinics were limited to urgent care that could not be managed through virtual platforms. Surgical trainees, such as residents and fellows, who solemnly rely on clinical and surgical exposure to hone their operative and clinical skills, were evidently left deprived. As the pandemic rapidly progressed, medical staff in the emergency departments and what is now known as the COVID wards and COVID ICUs quickly became overwhelmed and overworked. This new reality required surgical trainees to rapidly redeploy to help meet the rising hospital needs. With no clear end to this pandemic, surgical trainees worry they will not reach the appropriate milestones and acquire the amount of surgical experience required to become competent surgeons. As a result, a rapid solution should be found and applied to remedy this newly created gap in surgical education. The measures we recommend include access to regular webinars from world-renowned experts, increased implementation of surgical simulation, selective redeployment of residents to favor level-appropriate learning opportunities and lastly, the active participation of trainees in telemedicine with an increase in surgical exposure as soon as the restrictions are lifted.

KEYWORDS: COVID-19, surgical education, simulation, collaboration, redeployment, telemedicine

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The coronavirus disease (COVID-19) caused by the SARS-CoV-2 has been declared a global health emergency by the World Health Organization (WHO).¹ Despite the implementation of strict social distancing protocols and increasing evidence about acceptable public's compliance with public health guidelines,^{2,3} the numbers of COVID-19 cases continue to rise. As of July 26th, 2020, over 16 million cases tested positive, amongst which are many healthcare professionals.^{4,5} As the situation continues to evolve, most healthcare systems have implemented certain measures in response to this pandemic.

Following the recommendation of surgical societies, many hospitals across the world have canceled or significantly diminished their elective surgical services.⁴⁻⁷ Several surgeons and surgical residents have been redeployed to COVID-19-related medical services.^{6,8,9} This reassignment has been argued to be a transient but necessary act, yet de-specialization of surgical trainees had negative effects on their surgical training and psychological wellbeing.¹⁰⁻¹² With no clear end to this pandemic, trainees worry they will not reach the appropriate milestones and achieve the level of surgical competence desired.^{13,14} As a result, a rapid solution should be found and applied to remedy this newly created gap in surgical education. The measures we recommend, many of which have been already implemented in various institutions include access to regular webinars from

world-renowned experts in each surgical specialty as well as the implementation of surgical simulation, selective level-appropriate redeployment that fosters learning opportunities, and the active participation of trainees in telemedicine with an increase in surgical exposure as soon as the restrictions are lifted.

Online webinars and surgical simulation

As the majority of in-person surgical teaching sessions have been canceled during this pandemic, educational institutions have promptly responded by converting their lectures to online platforms in order to provide a safe learning environment and promote social distancing.¹⁵ Additionally, and in collaboration with experts in the field, many surgical societies have made online webinars and talks available to surgical trainees, regardless of their geographic location.¹⁶ Put differently, the COVID-19 pandemic triggered an epoch where surgical trainees have an unprecedented access to a multitude of educational resources from experts around the world. Through this global exchange of knowledge, trainees are able to learn different surgical perspectives and techniques used by international experts—an invaluable experience for future surgeons.¹⁷ While several previous studies have clearly demonstrated the benefits of simulators as an adjunct to surgical training, their implementation in



surgical curricula has been slow.^{18,19} When we eventually contain this disease and surgical training resumes its normal course, we hope that memory of this pandemic will be a sufficient catalyst to implement surgical simulators as an integral part of surgical programs and encourage the international medical community to continue sharing knowledge across institutions.

Selective level-appropriate redeployment

Many of the surgical trainees have been reassigned to other medical services that care for COVID-19 patients.^{6,8} While this reassignment can negatively affect surgical training by decreasing residents' operative time and exposure, it can also present a unique opportunity for further professional development and interdisciplinary teamwork. Redeployment provides a fertile ground to further enhance communication and teamwork skills through joining different teams across services in which they would traditionally not be part of.²⁰ Moreover, treating COVID-19 patients usually requires collaboration between different medical teams and allied healthcare professionals, which provides an opportunity to work within a multidisciplinary environment—an experience that will ultimately shape the trainees into better collaborators and communicators.²¹

While combatting the current pandemic takes the highest priority, the optimization of resident training and the available educational opportunities should not be forgone. With the right redeployment strategies, responding to the population's healthcare needs and medical education should not be mutually exclusive processes. By understanding the overarching educational milestones that residents at varying levels need to achieve, different trainees can be redeployed to services where they can continue cultivating the skills required to achieve these milestones; this is what we label as selective level-appropriate redeployment. For example, junior residents who are expected to master the art of history-taking and performing physical examinations could continue developing these skills on COVID-19 wards, while surgical residents who are expected to be competent in diagnostic workups and basic resuscitation skills could attempt to master these skills in the emergency departments or the intensive care units.²² Given that residents in their final year should have already achieved these milestones in their surgical training and should be more focussed on becoming experts in their respective fields, an attempt shall be made to redeploy them as a last resort to maximize their operative time. Finally, it is important to remember that different surgical residents have varying levels of confidence caring for acutely ill patients and therefore all redeployed surgical residents should receive basic training on how to safely care for these patients.

Telemedicine and increased surgical exposure post COVID-19

As surgical trainees have less clinical responsibilities during this pandemic, this additional time can be used toward

pursuing alternative educational streams, reinforcing both their medical and surgical knowledge. One way to do this is by having residents actively participate in telemedicine consultations.²³ Up to 90% of surveyed primary care physicians reported that electronic consultations enhanced their knowledge of new conditions and improved their clinical confidence when managing subsequent similar patients.²⁴ This can be seen as an excellent alternative while awaiting the reopening of in-person clinics. Despite the obvious clinical benefits of telemedicine, it won't remedy the lack of surgical exposure. While adding an extra year to residency programs has been previously proposed to increase residents' surgical exposure, we see this measure as a last resort option since it comes with many disadvantages. To name a few, doing so will prevent residents in their last year to undergo their planned fellowships and will limit the available workforce that comes with graduating residents. As an alternative, we recommend simply increasing surgical exposure as soon as the hold on elective surgical cases is lifted.²⁵ The COVID-19 pandemic has had a massive impact on waitlists for elective surgeries, as tens of thousands of scheduled surgeries have been canceled or postponed across Canada. Provincial governments will likely not only reopen elective surgical capacity when it is deemed safe, but will also target new funding to address the backlog of cases.²⁶ The increase in the availability of surgical cases can be taken advantage of, in order to compensate for the lost surgical exposure during the pandemic.

Conclusion

The COVID-19 pandemic has undoubtedly affected surgical education across the world. As many trainees are exposed to less operative time and clinical exposure, an obvious dent presents itself within their training curriculum. With no clear end to this pandemic, surgical trainees worry they will not reach the appropriate milestones and achieve the level of surgical competency required to be knowledgeable surgeons. As a result, a rapid solution should be found and applied to remedy this newly created gap in surgical education. The measures we recommend to remedy the situation include access to regular webinars from world renowned experts as well as the implementation of surgical simulation. Moreover, by implementing elective level-appropriate redeployment of residents that foster learning opportunities appropriate to their level of training, we can ensure that our trainees continue to cultivate the necessary skills they require to become competent surgeons. Finally, our last recommendation is the active participation of trainees in telemedicine with an increase in surgical exposure as soon as the restrictions are lifted. Despite the hard times we are facing, the lessons learned from this experience will be vital to our response in the face of future pandemics.

Author Contributions

All authors contributed to the drafting of manuscript and approved the final version.

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