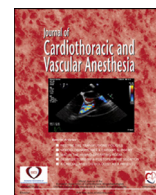


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Editorial

Survey Says. . . The Effects of the COVID-19 Pandemic on Graduate Medical Education



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THE CORONAVIRUS disease 2019 (COVID-19) global pandemic has had wide-reaching international impact. At the time of this writing, 221 million cases and 4.5 million deaths have been recorded worldwide¹. Healthcare systems across the world have felt both direct and indirect impact; a symptomatic COVID-19 case has been estimated at \$3,045 of direct medical costs during the course of infection². Indirect impact on the medical profession; however, remains difficult to quantify. Graduate medical education trainees present a particularly vulnerable subpopulation. In this issue of the *Journal of Cardiothoracic and Vascular Anesthesia*, Tahan et al. explored the impact of the COVID-19 pandemic on fellowship training in cardiothoracic and vascular anesthesiology across the globe.³ Their survey results found 82.4% of respondents reported cancellation of elective surgeries; 79.6% of respondents reported termination of program-specific educational activities including clinical rounds, echocardiography rounds, morbidity and mortality conferences, and fellowship assessments; and 55.6% reported that fellowship pedagogy was “interrupted” at their training center. These findings mirror previously reported challenges in postgraduate anesthesiology education that described decreased caseload, altered subspecialty clinical rotations, and changes in supervision that alter learning and advanced provider skill development.⁴

A limitation of this study was the way the surveys were distributed. The authors distributed surveys to current European Association of Cardiothoracic Anaesthesiology and Intensive Care (EACTAIC) fellows, subscribers to the EACTAIC newsletter, and followers of EACTAIC social media platforms, including LinkedIn, Twitter, Facebook, and Instagram. The majority of addressees were through these social media platforms. Although this method of distribution is an excellent way to garner a large number of responses, it does little to

ensure the quality of those responses. The authors leave a great deal of uncertainty if these responses are from physicians with direct knowledge of how EACTAIC training has been altered during the COVID-19 pandemic or are they from individuals speculating on how training was impacted. Had the qualifications of the respondents been part of the initial data collection, the results from the survey would have been more robust.

Even with this limitation, the results compiled by the authors were congruent with what other graduate medical education programs have reported. Many subspecialties reported a decrease or cancellation of elective procedures, reducing trainees’ direct procedural learning opportunities.^{3,5,6} Barberio et al. discussed the decrease in endoscopic training for gastroenterology fellows. Even centers that continued with a portion of their elective outpatient schedule, eliminated fellow involvement from the procedures.⁵ Rana et al. also noted that surgical trainees felt more disruption to their training than medical trainees, presumably because of the relative ease of transition to telemedicine for medical trainees.⁷ Although anesthesiology training has both medical and surgical aspects, it does not lend itself well to being able to transition to telemedicine.

Notably, 83.9% of survey respondents in the index article reported sufficient time to participate in webinars or online teaching modules, and 88% of respondents suggested that encouraging fellows to participate in online learning activities was a good solution to cope with the interruption of postgraduate subspecialty training. This response identified the path forward for subspecialty medical training in Cardiothoracic and Vascular Anesthesiology in postpandemic medical education. A curriculum with e-learning as a core tenant can maintain the flexibility to be implemented in a variety of settings while decreasing exposure of the learner.⁸ The “New Normal” for graduate medical education should leverage simulation, asynchronous learning, and online modules to replace traditional

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case minimums and clinical service.⁹ This type of education is not just convenient in the postpandemic world, but has been shown to be more successful than didactic lecture with regard to retention of knowledge and skill.¹⁰ Further, regional, national, and international collaboration for web-based e-learning has the potential to bring content experts to every fellowship program in the world.

An interesting point that this article raised was competency-based training. As the number of cases have been limited by the pandemic, the authors proposed a solution of competency-based training over the current definition of training based on its duration. Competency-based training centers the focus on the learner, which differs from the current practice of time-based training.¹¹ This is something that the American Board of Anesthesiology has addressed tangentially with its *Revised Absence From Training Policy*.¹² This policy allows residents to qualify for up to eight additional weeks of absence from training due to reasons covered under the Family Medical Leave Act, such as childbirth or caring for a sick loved one. A thoughtful redesign of case minimums, milestones, and service requirements should align graduate medical education with emerging changes in technology and infrastructure, allowing for evolution of graduate medical education in a postpandemic world.

Another aspect of training and medical advancement that has been altered because of the COVID-19 pandemic has been medical research. Multiple centers discussed research resources being diverted to help with the pandemic.^{5,6} Chau et al. reported clinical trials coming to a standstill as patients are avoiding nonessential medical encounters.

The authors discussed at length how the COVID-19 pandemic has interfered with the professional lives of trainees. However, how COVID-19 has affected the personal lives and mental health of trainees was not discussed. Fortunately, other authors have asked these questions when administering similar surveys to trainees. Rana et al. reported significant increase in stress among residents during this time. One source of this stress was the inadequate personal protective equipment available to residents.⁷ Tahan et al. also found that EACTA Cardiothoracic and Vascular Anaesthesia trainees also experienced personal protective equipment shortage.³ Female respondents reported a greater amount of stress compared with their male counterparts. One theory behind this is the role strain that women face regarding childcare, though both male and female residents reported a heavy burden regarding childcare.⁷

The COVID-19 pandemic has affected every aspect of daily life, but it particularly has impacted graduate medication. *Challenges in the Cardiothoracic and Vascular Anesthesia Fellowship Program Since the COVID-19 pandemic: An Electronic Survey on Potential Solutions* shows similar hardships in the graduate medical education of cardiothoracic anesthesiology trainees as was shown by other specialties and subspecialties. Though not one of the objectives of the survey, it also raises the question of competency-based training. With the

announcement of the Adult Cardiac Anesthesiology subspecialty certificate, could competency-based training be something that the Society of Cardiovascular Anesthesiologists and the American Board of Anesthesiologists considers adopting?¹³ If so, cardiac anesthesiology could be creating a new frontier in graduate medical education and perhaps influence the Accreditation Council for Graduate Medical Education and graduate medical educations across multiple specialties.

Conflict of Interest:

The authors have no conflict of interest to declare.

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