Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

See Article page 980.

Commentary: Adaptations to COVID-19 or permanent reforms in the "new normal"?

Castigliano M. Bhamidipati, DO, PhD, MSc, and Howard K. Song, MD, PhD

Drs Bhamidipati and Song practice social distancing using a virtual meeting platform.

CENTRAL MESSAGE

Cardiothoracic surgery education is adapting to the COVID-19 pandemic, and some of these changes could turn out to be useful permanent reforms.

The coronavirus disease 2019 (COVID-19) pandemic has affected all societal institutions in a way that we are all still struggling to understand. The experiences of our colleagues from the front lines of the pandemic are useful as we assess the downstream effects of the pandemic on our specialty. In this issue of *JTCVS*, Caruana et al[1] have provided a useful portrayal of the lives of cardiothoracic trainees in the United Kingdom in the early stages of the outbreak during the national lockdown and with the healthcare system strained by the pandemic.

Cardiothoracic surgery trainees have contributed impressively to the National Health Service response to the pandemic. More than one half of the trainees were redeployed, most often in other surgical or medical specialties outside of cardiothoracic surgery. Most trainees have had clinical contact with or operated on patients with COVID-19, despite concerns for their own physical wellbeing, limited training in the use of, and access to, personal protective equipment, and limited availability of testing. Cardiothoracic surgery training has been disrupted to the point that most trainees believe that their training period should be extended if the current disruption lasts >3 months.

The professionalism exhibited by trainees from all fields during the pandemic should be a source of pride for the medical profession. The pandemic has presented an opportunity for us all to contribute directly to the efforts against this disruptive force. As educators, it is our duty, first and foremost, to ensure the wellbeing of our trainees and their families through the provision of adequate personal protective equipment and testing. We must also safeguard their professional wellbeing by preserving educational opportunities whenever possible, prioritizing training, especially in the operating room, and developing creative solutions to meet and teach while maintaining social distancing.[2] If the effects on cardiothoracic surgery education are prolonged, the specialty should reaffirm our commitment to training the affected trainees until their mastery of the field has been achieved. Some adaptations to the pandemic might prove to be permanent reforms to cardiothoracic surgery training, such as developing a competency-based assessment rather than relying on arbitrary case numbers or a certain period. The specialty could also develop a pathway to accommodate trainees taking a 6-month period off from training to tend to family emergencies, pregnancy, and pandemics.

The work of creating a "new normal" for cardiothoracic surgery education is already underway.[3,4] The COVID-19 pandemic has been accelerating reform in traditional institutions such as cardiothoracic surgery. We might do well to keep some of our adaptations to the COVID-19 pandemic as permanent reforms when the "new normal" arrives.

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Disclosures: Dr Song serves as a consultant for Medtronic. Dr Bhamidipati has reported no conflicts of interest.

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See Article page 980.

Commentary: COVID-19: "There is no education like adversity"

Elizabeth H. Stephens, MD, PhD

"There is no education like adversity."
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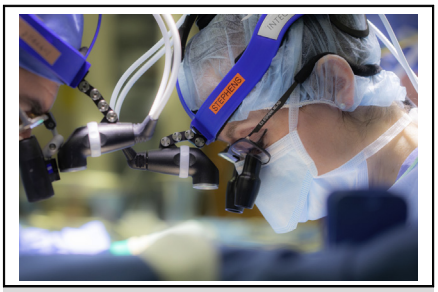

Elizabeth H. Stephens, MD, PhD

CENTRAL MESSAGE

The trainee experience has been drastically impacted by COVID. Learning from these experiences as institutions enter reactivation and beyond will be critical for the improvement of surgical training.

COVID-19 has drastically impacted every part of our world as we once knew it. Cardiothoracic surgery training is no exception, and in fact has faced distinct challenges during the pandemic. Hands-on experience in the operating room on actual patients is fundamental to training in surgery, yet during this pandemic, the health and safety of trainees, patients, and staff must be considered. In response to staffing shortages, the broad scope of skill sets of cardiothoracic surgical trainees have been required in capacities outside of our specialty to care for patients with COVID. This is not to mention the far-reaching impact of COVID on the entire clinical care team, including trainees.

Caruana and colleagues[1] are to be congratulated on their study that surveyed cardiothoracic surgery trainees in the United Kingdom. Almost two-thirds of trainees (64%; 76 of 118) responded between April 12 and 15, 2020, and their responses quantify many of the concerns anecdotally expressed by trainees worldwide. It is clear that trainees are a critical part of the front line, with 86% having cared for COVID-positive or suspected-positive patients, including 33% who have operated on such patients. The respondents raised some glaring safety concerns, with only 55% reporting having adequate personal protective equipment (PPE) during encounters with COVID-positive or suspected-positive patients, 24% feeling they had not received suitable training on PPE when treating COVID-positive patients, 30% not having been fitted with an appropriate mask at the time of the survey, and >50% concerned about the availability of PPE.

In terms of the direct impact of COVID on postgraduate surgical training, respondents reported a cumulative 78% reduction in operating room time and a 44% reduction in outpatient clinics. In addition, 55% had been deployed to other specialties, and 33% had been quarantined. As a result, 71% were concerned that they may require extended time in residency training. Interestingly, there was a substantial diminishment of the trainee's role as "primary surgeon" when surgical opportunities were present, with

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