DOI: 10.1111/jocs.14769

EDITORIAL

JOURNAL OF CARDIAC SURGERY WILEY

The COVID-19 crisis: reflections on cardiothoracic surgery training

The COVID-19 pandemic has impacted profoundly on all aspects of our life, including our surgical specialty. Cardiothoracic surgical trainees and fellows had a particularly challenging time as most training programs were put on hold in the UK and worldwide.

The cessation of training was multifactorial. First, some areas of the UK, that were disproportionately more affected than others required redeployment of cardiothoracic surgery trainees to the front line, predominantly in critical care areas, due to their unique skillset.[1] In the less-affected regions, the volume of cases was significantly impacted by the reduced critical care bed capacity hence the reduced training opportunities. Most cardiothoracic surgery units have decided, from the onset of the crisis, to switch to a consultant-led practice model. One argument is that the consultant outcomes might be better than those of the trainee, and overall, this results in less time spent in critical care and better patient flow. However, for standardized procedures such as coronary artery bypass grafting, there is data to show that there is no difference in clinical outcomes between trainees and consultants.[2] A prerequisite to this is that operations should be performed in a center with a dedicated training program and under the direct supervision of a consultant.

Nevertheless, we also must be aware that trainees might take longer to perform specific operative steps compared to consultants, resulting in more prolonged exposure of theater staff and pressure and fatigue of the team during a critical period. Moreover, performing these operations with the dedicated cumbersome personal protective equipment might be more challenging for a trainee than for a consultant (Figure 1).

However, part of the return of the services to normal is also the return of cardiothoracic surgical training, and each unit will have to decide the best timing to reintroduce gradually training, depending on their circumstances.

Cardiothoracic surgery training continues to attract very ambitious individuals, and it remains by far the most competitive surgical specialty during national training application in the UK.[3] Therefore, getting a training number in cardiothoracic surgery is preceded by lots of hard work and preparation.[4] To become competitive enough to get a national training number in cardiothoracic surgery, trainees spend a few years in nontraining posts, and research positions than in other specialities and any pause in their long-awaited progression can be very daunting. Surgical trainees want to be active in the management of patients and particularly in the operating theater from which they draw satisfaction and a sense of achievement. Getting cases from consultants to operate on is probably the highest reward for a trainee. As a consequence, cardiothoracic surgery trainees are willing to put extra work and goodwill by coming to work in their days off or even weekends to review patients for tomorrow's list or perform a more mundane task. Therefore, the withdraw of the training opportunities has significantly impacted the trainees drive on motivation.

While nothing compares to the first hand, theater exposure, the pause in training was also an opportunity for some trainees to catch up on writing research papers or to get involved in local management projects. Examples of such projects include developing COVID-19 assessment protocols for patients referred for cardiothoracic surgery, developing practical preop assessment and follow-up patient clinics, or managing the inflated elective pool list of patients. Working in the front line was also a rare opportunity to train in extreme circumstances such as disaster management and management of complex patients. During such, one hope, once in a lifetime events, many trainees would have acquired valuable leadership and resilience skills.

FIGURE 1 Cardiac surgery operation performed in personal protective equipment during the COVID-19 pandemic

Sadly there were high prices to pay, and one cardiac surgical trainee has unfortunately passed away due to COVID-19 infection.[5]

Many cardiothoracic surgical conferences have been canceled or postponed while others have moved online and are an excellent virtual learning resource for trainees.[6] There are now many more resources online, such as training courses or webinars. While COVID-19 has brought a lot of disruption to training, it has also stimulated the creativity and the collaboration of both the surgical trainees and trainers. Local teaching programs have now moved to online platforms permitting inter-deanery regional collaboration. Some trainees collected data for global collaborative studies that looked at the outcome in COVID-19 positive patients undergoing surgery, thus contributing to a massive pool of research patients.[7] Many of these initiatives will likely remain and shape our future practice even in the post-COVID-19 era.

As services return to normal, the training bodies will have to address the deskilling of the trainees during this period. Furthermore, the postponed certification exams, the delayed award of the certificate of completion of training (CCT) and postponed fellowships will add more disruption to the training infrastructure. Specific arrangements are now in place to deal with the Annual Review of Competency Progression process for surgical trainees.[8] For example, outcome 10.1 designates that trainee progress has been satisfactory, but the acquisition of specific competencies had been delayed by the COVID-19 pandemic. Similarly, outcome 10.2 flags that the trainee is at a critical progression point (eg, near CCT for example) and needs additional training. After all, trainees were all in the same difficult situation, and a tailored approach to each of them is the best way forward to address their specific needs.

There was a wide disruption to academic cardiothoracic surgery trainees too. Most of them were encouraged to use their dedicated research time to support the NHS during the peak of the pandemic. Funding bodies such as the National Institute of Health Research are willing to be flexible and extend research funding where needed once services return to normal.[9]

From the perspective of a trainee, the restarting of the training is an essential part of returning to normality and going back to a more fulfilling role. From a trainer's perspective, sharing your knowledge and being able to train and influence the future generation of cardiac surgeons is equally important.

> *"What I hear, I forget. What I see, I remember. What I do, I understand" (Confucius).*

FUNDING INFORMATION

This study was supported by the NIHR Biomedical Research Center at University Hospitals Bristol NHS Foundation Trust, the University of Bristol and Bristol Heart Foundation (CH/1992027/7163 to Gianni Angelini).

KEYWORDS

cardiothoracic surgery, COVID-19, training

Daniel P. Fudulu PhD
Gianni D. Angelini MD

Bristol Heart Institute, Bristol, UK

Correspondence
Daniel P. Fudulu, PhD, Bristol Heart Institute, Bristol, BS2 8HW, UK.
Email: daniel.fudulu@bristol.ac.uk

ORCID

Gianni D. Angelini http://orcid.org/0000-0002-1753-3730

REFERENCES

1. NHS England. *Redeploying Your Secondary Care Medical Workforce Safely*. 2020. https://www.hee.nhs.uk/coronavirus-
2. Balmforth D, Jones D, Gallagher S, et al. Consultants or Trainees: Whose patient's do better following surgical coronary revascularisation? *J Cardiothorac Surg*. 2015;10(S1):2015. https://doi.org/10.1186/1749-8090-10-s1-a348
3. NHS Health Education England. Specialty recruitment competition ratios 2019. *Spec Train | NHS*. 2019; 65-68. https://specialtytraining.hee.nhs.uk/Portals/1/CompetitionRatios2019_1.pdf. Accessed May 26, 2020.
4. Rayner TA, Fudulu D, Nashef S. A career in cardiothoracic surgery. *BMJ*. 2019;367:l5914. https://doi.org/10.1136/bmj.l5914
5. Beresford J. 'A beautiful human being' - Tributes paid to Belfast doctor who died from suspected coronavirus. *The Irish Post*. April 22, 2020. https://www.irishpost.com/news/beautiful-human-tributes-paid-belfast-doctor-died-falling-ill-suspected-coronavirus-183979. Accessed 26 May 2020.
6. AATS. 100th Annual Meeting: A Virtual Learning Experience. https://www.aats.org/aatsimis/AATSEvent/PROGRAM_HIGHLIGHTS.aspx. Accessed 26 May 2020.
7. Collaborative C, Nepogodiev D, Bhangu A. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *Br J Surg*. 2020. https://doi.org/10.1002/bjs.11746
8. NHS Health Education England. COVID-19 and annual reviews of competency progression for specialty training programmes 2020. 2020. https://pgme.info/wp-content/uploads/2020/05/ARCP-Supplimentary-Guidance.pdf. Accessed May 26, 2020.
9. NIHR. Q&A on the impact of COVID-19 on research funded or supported by NIHR. https://www.nihr.ac.uk/documents/qanda-on-the-impact-of-covid-19-on-research-funded-or-supported-by-nihr/24467. Accessed 26 May 2020.