



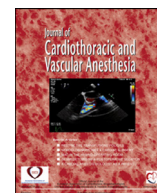
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Special Article

Interruption of the European Association of Cardiothoracic Anaesthesiology (EACTA) Fellowship Program During the Coronavirus Disease 2019 Pandemic: Consequences and Solutions

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This article discusses the impact of the COVID-19 pandemic on the EACTA fellowship program. The authors present three points that in their view are important and give cause for concern because they could make it difficult or impossible to achieve the original goals of the fellowship program. Corresponding points are discussed and possible solutions are presented. An implementation in the fellowship curriculum is planned. © 2020 Elsevier Inc. All rights reserved.

Key words: coronavirus disease 2019; COVID-19; European Association of Cardiothoracic Anaesthesiology; EACTA; fellowship; cardiothoracic and vascular anesthesia

Concerns Emerging From the Interruption of the Fellowship Program

The World Health Organization declared the novel coronavirus disease 2019 (COVID-19) a pandemic on March 11, 2020.¹ By the beginning of May there were more than 3 million confirmed COVID-19 infections and 217,000 associated deaths worldwide.² COVID-19 is still spreading, with the daily

rate of new infections and deaths differing in different geographic zones.

The COVID-19 pandemic has repercussions for the Cardiothoracic and Vascular Anesthesia (CTVA) Fellowship Program. The European Association of Cardiothoracic Anaesthesiology (EACTA) created its fellowship program in 2009, with the aim of improving the quality of perioperative patient care and harmonizing training and education in EACTA-associated facilities. There are 11 active EACTA CTVA fellowship hosting centers around the world, offering a total of 32 fellowship positions. Currently, 16 fellows are participating in basic training and 5 in advanced training (Table 1). EACTA recently issued new guidelines for its CVTA fellowship.³ In some

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Table 1
Number of CTVA Fellows at the Host Centers on May 1, 2020

Center	Leipzig (Germany)	Southampton (UK)	Basel (Switzerland)	Milan (Italy)	Bern (Switzerland)	Athens (Greece)	Sao Paulo (Brazil)	Maastricht (Netherlands)	B. Oeynhausien (Germany)	Dresden (Germany)	Montpelier (France)
Basic training	3	4	1	0	1	2	1	1	2	1	0
Advanced training	1	0	1	1	1	0	0	0	1	0	0
Monthly salary	+	+	+	–	+	+	+	+	+ / –	+	+

Abbreviation: CTVA, cardiothoracic and vascular anesthesia.

participating countries, the number of people infected with COVID-19 has not yet reached a plateau, and in others it is likely that after an initial depression, a second wave of COVID-19 infection will come. Because of the restrictions on public life and healthcare around Europe, it is to be expected that the clinical, scientific, and educational training segments of the current EACTA CTVA fellowship cannot be completed as initially planned. The following 3 main points are causing concern:

1. Training interruption and workplace changes. The EACTA CTVA Fellowship Program was designed to be completed in 1 year (basic part) or 2 years (advanced part) of

Table 2
Summary of EACTA Fellowship Program

	Basic Training Year	Advanced Training Year
Duration	12 mo	12 mo
Requirement	Obligatory	Optional after completion of the obligatory basic training year
Required passing tests		
EACVI-EACTA certification	Theoretical part (for cardiac-based training)	Practical part (submitting logbook)
Online exit interview	At the end of the year	At the end of the year
Rotations/modules		
Cardiac anesthesia	7 mo (minimum of 100 cases)	Optional module (3-6 mo)
Thoracic anesthesia	1.5 mo or 25 cases	Optional module (3-6 mo)
Vascular anesthesia	1 mo or 25 cases	Optional module (3-6 mo)
Intensive care	1 mo	Optional module (3-6 mo)
TEE	2 wk	Optional module (3-6 mo)
Interventional cardiology	2 wk	
Perfusion	2 wk	
Heart and/or lung transplantation		Optional module (3-6 mo)
Organizational or research module		Optional module (3-6 mo)

Abbreviations: EACVI, European Association of Cardiovascular Imaging; EACTA, European Association of Cardiothoracic Anaesthesiology; TEE, transesophageal echocardiography.

continuous training (Table 2.). The program structure differs from the US model, which is provided by the Accreditation Council for Graduate Medical Education, in many points (Table 3.). EACTA CTVA program requirements state that training should not be interrupted by frequent or prolonged periods of absence as a result of illness or personal circumstances. Absence from training as a result of sick leave or personal circumstances requires a proportionate extension of the training period. For fellows currently assigned to the fellowship program, the formal training has been interrupted by the COVID-19 outbreak. Nonurgent, elective cardiac, thoracic, and vascular surgery procedures have been cancelled or postponed in the majority of EACTA CTVA host centers (66.7% according to a recent EACTA survey), resulting in a sudden interruption of the teaching activities. Because of several weeks of federal restrictions, fellows cannot fulfill the required basic and advanced rotations, which are tightly scheduled, and risk failing to participate in the required number of clinical cases within the obligatory time frame. Moreover, several hosting centers have reassigned their fellows to intensive care units or intermediate care units (ICUs/IMCs) to provide care for critically ill COVID-19 patients (Fig 1). These changes in the fellows' workplaces and duties are mainly the result of changeovers in ICU/IMC shifts and the need for experienced staff in this new situation.⁴ The skills of (cardiothoracic) anesthesiology trainees in hemodynamic and airway management are now needed in the ICU and not in the operating room, where there are only a small number of (emergency) surgeries. These necessary modifications and related interruptions of training and educational activities negatively affect the integrity of the EACTA CVTA fellowship process and call into question the trainees' ability to achieve the fellowship training objectives.

2. Ethical concerns. There are several ethical concerns related to the interruption of formal EACTA CTVA training and involvement of the fellows in the care and management of COVID-19 patients. First, EACTA requires contractual agreements between the hosting centers and fellows before the fellowship begins. The fellows are an integral part of the host center's staff during the contract period and consequently during the COVID-19 outbreak. It would not be acceptable for fellows to terminate their fellowship training during the COVID-19 pandemic just because training possibilities are reduced or absent. Second, health services in countries where the COVID-19 pandemic has not yet peaked

Table 3
Training Models in Europe and United States

	EACTA	ACGME
Start year	2009	2006
Financial support	Provided by the hosting center or (category A centers) or by scholarship, self-sponsoring, grants, etc. (category B centers).	Provided by the hosting center or by awards and grants.
Number of accredited hosting centers	11	69
Length of training	Basic training for 12 mo Optional advanced modular training for 12 mo (3- to 6-mo modules)	12 mo
Start of training year	Variable among centers after fulfilling language and legal requirements	Fixed
Competency-based	Yes	Yes
Time/cases-based	Yes	No
Curriculum-based	Yes	Yes
Fellows summative evaluation	3 monthly	6 monthly
Final evaluation	Exit interview	Final evaluation

Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; EACTA, European Association of Cardiothoracic Anaesthesiology.

will need to reassign the fellows to help save the lives of critically ill patients in a critical care environment. This may occur, however, without agreement between the fellows and the host center authorities, and the fellow may not be given the opportunity to object. Third, it is ethically questionable whether EACTA host centers that could not offer monthly salary are authorized to instruct fellows to provide care for COVID-19 patients. Fourth, involvement of fellows in the

care of COVID-19 patients might expose them to an increased risk of cross-infection or mental stress.

- Concerns related to logistics. It is unlikely that CVTA fellowship program directors will have the opportunity to perform quarterly assessments of fellows and to produce the 3 monthly reports required by the curriculum.³ It even may be impossible to provide direct assessment and debriefing for the fellows during their clinical shifts in the ICU/IMC,

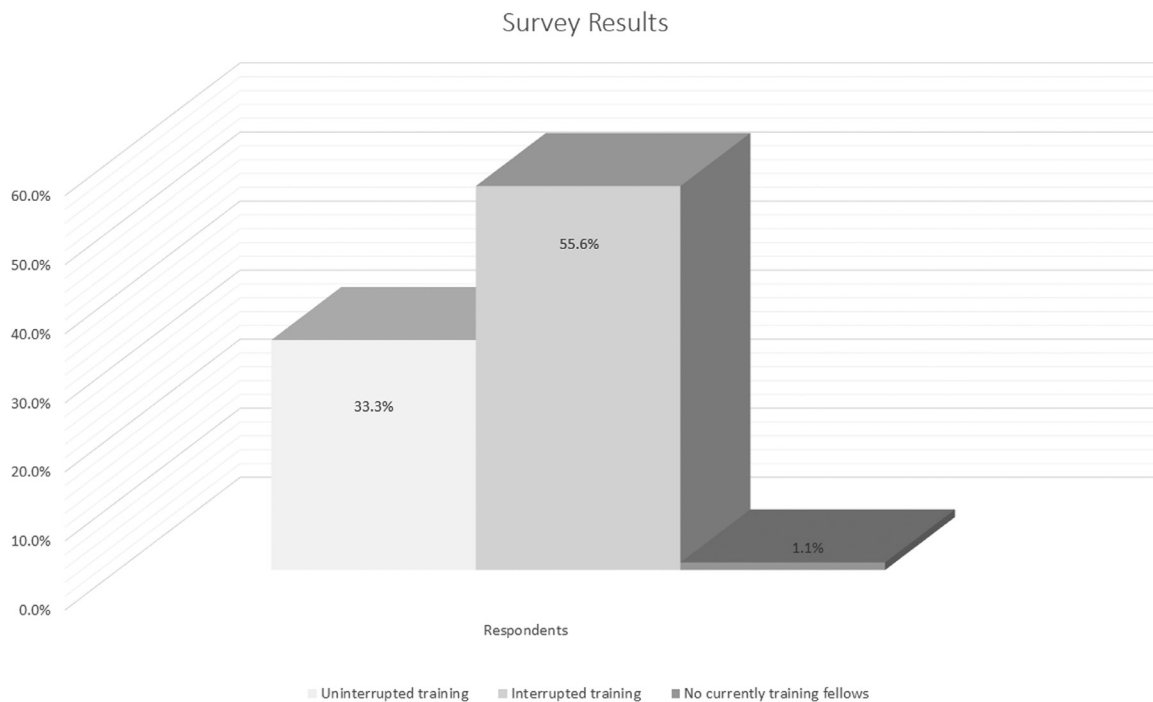


Fig 1. Result of a survey on fellowship training during the coronavirus disease 2019 outbreak in European Association of Cardiothoracic Anaesthesiology cardiothoracic and vascular anesthesia fellowship hosting centers. The survey was sent to the program directors of the 11 European Association of Cardiothoracic Anaesthesiology host centers about the interruption of training or the involvement of fellows in the direct care of coronavirus disease 2019 patients in non-operating room settings. Nine responses were collected (response rate of 81.8%). Training was continued without interruption in 3 centers (33%). In the remaining centers, elective surgeries were postponed or cancelled and the fellows were instructed to take over the direct care of coronavirus disease 2019 patients in intensive care. Two of these 7 centers considered to assign the fellows to emergency cardiothoracic surgery for as long as possible.

which may last for up to 12 hours. Moreover, staff members and program directors additionally may be involved in time-consuming activities related to crisis management. The economic crisis associated with the COVID-19 pandemic also might lead to financial problems for fellows who do not receive a salary from the host centers. Some centers may not be able to offer medical insurance coverage for the fellows in the case of COVID-19 infection. Furthermore, the nationwide lockdowns and suspension of many domestic and international flights could present an additional mental burden for fellows worrying about their families and friends at home.

Potential Measures to Help Fellows Cope With the Interruption of Their Fellowship Program

The Accreditation Council for Graduate Medical Education issued methods and strategies to cope with the altered educational landscape created by COVID-19.⁵⁻⁷ In the view of the authors of the present article, the following proposed (still theoretical) measures could help take the pressure off both fellows and hosting centers concerned about fulfilling the fellowship requirements (Fig 2). They will be discussed further by the EACTA Educational Committee and the Directory Board.

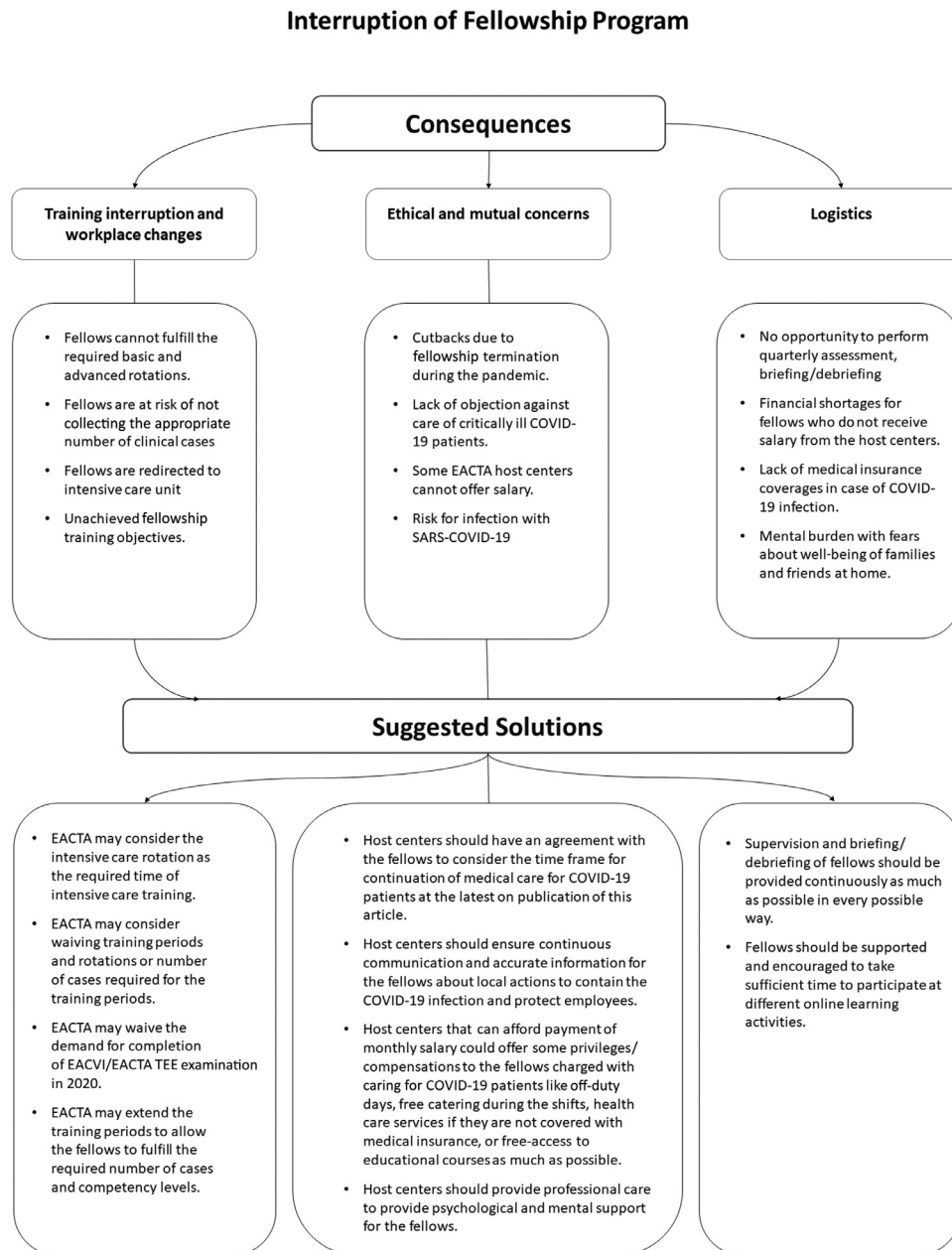


Fig 2. Summary of concerns and possible measures in the context of coronavirus 2019 pandemic and its effect on the European Association of Cardiothoracic Anaesthesiology Fellowship Program. EACVI, European Association of Cardiovascular Imaging; EACTA, European Association of Cardiothoracic Anaesthesiology; COVID-19, coronavirus disease 2019; SARS, severe acute respiratory syndrome; TEE, transesophageal echocardiography

1. Training interruption and workplace change could be addressed by the following:

Considering the period spent in the ICU during the COVID-19 outbreak as fulfilling the requirement for the ICU rotation during the obligatory basic training and the advanced training periods. The prerequisite would be that the fellow successfully completes the other requirements for the basic training, including passing the exit interview.

Waiving training periods and rotations or the number of cases required for the training periods, moving toward a competency-based rather than a time-based curriculum.

Waiving the requirement for completion of the European Association of Cardiovascular Imaging/EACTA transesophageal certification examination in 2020, with completion of the examination required at the trainee's and program director's earliest convenience.

Extending the training periods to allow the fellows to fulfill the required number of cases and competency levels. However, the authors of the present article acknowledge several potential logistical challenges that could negatively influence the feasibility of this point, including the following: (1) overseas fellows might not be able to extend their stays abroad because of socioeconomic or administrative concerns (eg, financial shortfalls, inability to extend scientific leaves from their home institutions, and the cost of extending visas); (2) some host centers might not be able to continue payment of salaries after the expected global economic crisis; (3) the unavailability of additional financial support or scholarships for the fellows training at host centers that cannot afford monthly salary payments; and (4) expected worsening mental and psychological stress.

2. Ethical concerns could be addressed by the following:

An agreement between host centers and their fellows that covers the time frame for continuation of medical care for COVID-19 patients and associated ICU/IMC shifts, provided at the earliest opportunity after publication of this article.

Host centers ensuring continuous communication and providing their fellows with accurate information about local actions to contain the COVID-19 infection and protect employees. In the case of language barriers, it should be ensured that the fellow has a local contact person (besides the person responsible for the local CVTA program) who maintains regular contact.

Host centers that cannot afford payment of a monthly salary could offer some privileges/compensations to the fellows charged with caring for COVID-19 patients, such as days off, free catering during the shifts, healthcare services if they are not covered with medical insurance, or free access to (national and international) educational courses (webinars) whenever possible.

Host centers providing psychological and mental support.

3. Concerns related to logistics could be addressed by:

Supervision and debriefing of fellows whenever possible by the cardiovascular staff and the local CVTA program director

as well as by the ICU staff when the fellow is assigned to the ICU.

Encouraging fellows to participate in online learning activities (eg, webcasts, webinars, and forums) to improve their knowledge of cardiovascular medicine and related topics.

Conclusion

In conclusion, the authors of the present article call on the hosting centers to consider the measures suggested to help fellows cope with the interruption in EACTA CTVA fellowship training, changes in the workplace, and ethical concerns. Provisions for compensation for the interrupted fellowship training have been suggested to maintain flexibility while ensuring that fellows are able to meet the educational and clinical standards of the EACTA fellowship program. The next step will be to solicit the opinions of the fellows and the EACTA educational leaders.

Declaration of Competing Interest

All authors are members of EACTA.

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References

- 1 World Health Organization. WHO announces COVID-19 outbreak a pandemic. Available at: <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>. Accessed June 10, 2020.
- 2 Johns Hopkins University and Medicine Coronavirus Reference Center. COVID-19 dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Available at: <https://coronavirus.jhu.edu/map.html>. Accessed June 10, 2020.
- 3 Erdoes G, Vuylsteke A, Schreiber JU, et al. European Association of Cardiothoracic Anesthesiology (EACTA) cardiothoracic and vascular anesthesia fellowship curriculum: First edition. *J Cardiothorac Vasc Anesth* 2020;34:1132–41.
- 4 Mascha AU: Please call out reference 4 in the text EJ, Schober P, Schefold JC, et al. Staffing with disease-based epidemiologic indices may reduce shortage of intensive care unit staff during the COVID-19 pandemic. *Anesth Analg* 2020;131:24–30.
- 5 Feinman JW, Roberts ML, Al-Ghofaily L, et al. The fellowship experience in adult cardiothoracic anesthesiology-strategies for applicants and fellows to navigate the coronavirus crisis. *J Cardiothorac Vasc Anesth* 2020;34:2561–5.
- 6 Al-Ghofaily L, Feinman JW, Augoustides JG. Fellowship training in adult cardiothoracic anesthesiology: Navigating the new educational landscape as a result of the coronavirus crisis. *J Cardiothorac Vasc Anesth* 2020;34:219–21.
- 7 Feinman JW, Al-Ghofaily L, Augoustides JG. The fellowship milieu in adult cardiothoracic anesthesiology-fostering psychological well-being during the coronavirus crisis. *J Cardiothorac Vasc Anesth* 2020;34:2557–60.