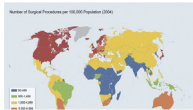


The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

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**REPLY:  
INTERNATIONAL  
PARTNERSHIPS TO  
HELP TRAIN THE  
WORLD'S**



**CARDIOTHORACIC  
SURGERY WORKFORCE:**

**Reply to the Editor:**

The Letter to the Editor submitted by Vervoort and Velazco-Davilla<sup>1</sup> is a response to an article by Nissen and colleagues<sup>2</sup> describing an international overview of cardiac surgical training in developed countries. The authors point out many of the well-known gaps and limitations in cardiac surgical training in low- and lower-middle-income countries (LLMICs).<sup>1</sup> They argue that there are gaps in country-specific training in LLMICs. They suggest that sponsors of training programs in neighboring countries or in regional programs should tailor curricula to local and regional needs, many of which are unique and are not necessarily in the mainstream of cardiothoracic surgical education and training. It is hard to argue with the authors' premise. Yet, there are some additional relevant facts worth mentioning that temper the authors' message.

The authors focus on needs for specialized surgical trainees who can respond to country-specific surgical needs. They do not mention the unmet needs for ancillary medical services that are specific for cardiothoracic surgery. These ancillary needs are paramount and include nursing, perfusion, and intensivists among others needed to support surgeons within a cardiac program. In many LLMICs, these ancillary services may be even less available than surgeons.<sup>3,4</sup> While there are some limited training programs available for cardiothoracic trainees in these underserved areas, there may be even less availability of training for ancillary services to support advanced surgical techniques and cardiac-specific care patterns.

The authors also point out the unique cardiothoracic needs of LLMICs and the relative absence of LLMIC-specific cardiac surgical curriculum in training programs. Again, it is

hard to argue with this assertion. The authors provide some vague suggestions about filling the needs in LLMICs and even offer a model used in the Nordic countries. It would help to have some concrete, region-specific proven models to point to as possible ways forward. The sad fact is that there are few successful locoregional models that exist and even fewer models supported by LLMIC countries. The authors are stating an important and obvious message that needs to be heard. What might make a bigger impact is to produce some concrete recommendations using a region or several LLMIC countries as examples. Others have made similar observations to those of the authors. Often what is lacking in these observational efforts are proven solutions. Because of constraints on the manuscript length of Letters to the Editor, it was not possible for the authors to outline comprehensive plans for enhancing global cardiothoracic surgical care. The Commentary by Vervoort and Velazco-Davilla<sup>1</sup> highlights some well-recognized global problems related to specialty surgical care. It would be refreshing to cite some concrete examples of a way forward. Unfortunately, the way forward is not clear and needs much increased interest on the part of local, regional, and worldwide cardiothoracic surgical workforces.

It is worth pointing out that the original article by Nissen and colleagues<sup>2</sup> describing differences in cardiothoracic training in developed countries triggered a much-needed discussion of the worldwide disparities in cardiothoracic surgical care and education. It is a sad but critical fact that nearly one half of the world's population does not have access to adequate advanced cardiac surgical care, much less specialty training programs. The number of deaths as a result of this limitation is incalculable, but enormous. As a specialty, we have avoided this fact to a greater or lesser extent, and Editorial Commentaries and associated *Journal* articles that draw attention to this consistent disparity in care are an important initial part of the process to gain international attention. This added attention could begin the process of fixing a problem that has existed over a very long period of time that is neither acceptable in the eyes of cardiac surgeons nor tolerable in the eyes of countries suffering from the lack of advanced cardiac care. I hope that the dialog created by this series of Commentaries will stimulate much needed efforts at change.

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The authors reported no conflicts of interest.

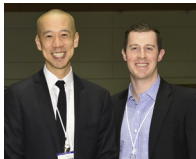
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Dr Nguyen is a consultant for Edwards LifeSciences, Abbott, and LivaNova. Dr Nissen reported no conflicts of interest.

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**REPLY FROM  
AUTHORS: RAISING  
THE BAR FOR QUALITY  
AND ACCESS TO  
CARDIOTHORACIC**



**SURGICAL TRAINING INTERNATIONALLY**

**Reply to the Editor:**

We appreciate the insightful and ambitious letter by Vervoort and Velazco-Davila in response to our *Journal* submission on the topic of global cardiothoracic training paradigms.<sup>1,2</sup> Vervoort and Velazco-Davila astutely point out and expand on both the global inequities of access to high-quality cardiothoracic surgical care and means to address this within low- and lower-middle income countries (LLMICs). The primary avenue recommended involves using unfilled training positions internationally and regional training agreements to train aspiring cardiothoracic surgeons, thus yielding an increased number of well-trained surgeons ready to practice in host nations where access to care remains limited.

Although many LLMICs may accept graduates of programs in the United States, Canada, and European countries, the eventual goal of establishing quality cardiothoracic surgical training globally is also important. Rather than sending interested applicants great distances for training, the Nordic countries offer an example by which regionalization of training among neighboring nations, each of whom share similar health care policies and training timelines, can also prove effective.<sup>3</sup> For each country to accept the other's training methodology, similar goals, operative experiences, and methods for board certification are also shared among the Nordic countries. An unstated consequence of this regionalized neighbor–nation training is a sort of positive peer pressure whereby each nation, to reap the benefits of access to the region's effective training programs, must also put forth a training paradigm that meets

the standards of the region. Our original *Journal* manuscript highlights the vast heterogeneity in training duration, minimum case requirements, and rigor for board certification required globally.<sup>2</sup> If regional training agreements are used as an entrée into solving a cardiothoracic workforce shortage, we speculate that this could have positive secondary consequences by raising the bar for the quality of training within many regions.

A final consequence of regional training agreements may be improved transparency in the duration of training, particularly in nations where no such timeline exists (eg, Germany, Italy, Japan, China). While the lack of a strict timeline may allow trainees to pursue additional degrees or case experience with less pressure to graduate, this also has anecdotally facilitated a culture within which junior surgeons remain in an apprentice role for an undetermined amount of time, funneling cases to more senior surgeons until deemed competent enough to operate independently, based on ill-defined institution- or mentor-specific metrics. Improving the transparency of such a process and ensuring trainees are ready to operate in a timely fashion should facilitate increased throughput for training programs in these nations, to further increase access to training.

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