Are There Gaps in Current Thoracic Surgery Residency Training Programs?

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Background. **Cardiothoracic surgery is rapidly evolving to adapt to a changing health care environment and a wider application of innovative techniques. The Society of Thoracic Surgeons Workforce on Thoracic Surgery Resident Issues Transition to Practice Task Force sought to identify new or existing gaps of training in contemporary thoracic surgery residency training programs.**

Methods. **A voluntary survey consisting of 24 questions was distributed to recent graduates of thoracic surgery residency programs in the United States during the 2014 American Board of Thoracic Surgery oral examination application process. Fifty-five of 132 applicants anonymously participated.**

Results. **The majority of respondents admitted that they needed more instruction or lacked confidence with the following specific cardiothoracic procedures: minimally invasive cardiac operations (25/52, 48%), robotic cardiac operations (29/52, 55.8%), endovascular operations (28/52, 53.8%), robotic pulmonary operations (29/52, 55.8%), minimally invasive esophageal operations (24/52, 46.2%), robotic esophageal operations (32/52, 61.5%), and operations on congenital cardiac conditions (31/52, 59.6%). The respondents further declared either a need for more instruction or lack of confidence in employment contracting (17/21, 81.0%), negotiating terms of employment (17/21, 81.0%), and professional service agreements (16/21, 76.2%).**

Conclusions. **Further exposure to minimally invasive robotic procedures, operations on congenital conditions, and issues of practice management appear to be needed in contemporary cardiothoracic training in the United States. These identified gaps may assist cardiothoracic surgery residency programs to optimally prepare future graduates for our evolving specialty.**

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The American Board of Thoracic Surgery (ABTS) was established in 1948 to ensure high standards in the practice of cardiothoracic surgery. One of the prerequisites of eligibility for ABTS certification is completion of a thoracic surgery residency approved by the Accreditation Council for Graduate Medical Education (ACGME). Traditionally, thoracic surgery residency has consisted of 2 to 3 years of additional training after general surgery residency.

In the past decade, the number of traditional thoracic surgery residency applicants has been steadily decreasing. In an effort to counter a potential serious shortage in the future cardiothoracic surgery workforce, an integrated 6-year (I-6) thoracic surgery training program was established in 2009 as a pathway for training cardiothoracic surgeons directly from medical school without the need for prior full general surgery training.

The integrated residency in cardiothoracic surgery is in a process of evolution as new programs are being established and accredited annually. Most graduating cardiothoracic surgeons are currently products of the traditional 2- to 3-year ACGME-approved thoracic surgery residency programs. The rapid development of new technology and techniques in our specialty may have an impact on the value and shape of future training. Our goal was to identify potential training gaps so as to inform new and future curriculum development for cardiothoracic surgery training in the United States.

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Material and Methods

In an effort to identify potential gaps in the current thoracic surgery residency training programs, the Society of Thoracic Surgeons (STS) Workforce on Thoracic Surgery Resident Issues Transition to Practice Taskforce hypothesized four major areas of possible improvement in the training of thoracic surgery residents: (1) clinical judgment readiness, (2) technical ability readiness, (3) professional employment issues, and (4) career development issues.

After several iterations of discussion, a focus group consisting of members of both the Taskforce and the Workforce were formed, with the specific aim of designing a survey questionnaire that would address the aforementioned four major areas of concern. A 24-question survey instrument (Appendix A) was ultimately developed and approved by both Taskforce and Workforce members and administered by the ABTS. This voluntary survey was distributed to 130 graduates of ACGME-approved thoracic surgery residency programs at the ABTS certifying oral board examination in June 2014. The surveys were filled out before the administration of the oral examination and collected on the same day. The data were tabulated anonymously. Descriptive data analyses were performed according to standard statistical methods, and categoric variables are presented as percentages.

Results

Fifty-five individuals participated in the survey (55/130, 42.3% response rate). Forty-six (83.6%) of those surveyed were male. Fifty of the respondents, 90.9% (50/55), had completed their residency training within the past 4 years, and 96.4% (53/55) were from the traditional 2- to 3-year thoracic residency programs (Fig 1). Forty-two percent (23/55) of respondents completed additional fellowship training programs after their thoracic surgery residency training (Table 1).

Clinical Judgment Readiness

From a clinical judgment preparedness standpoint, an overwhelming majority of respondents reported that they were well prepared to handle basic and complex clinical decision issues confidently in both general thoracic operations (49/52, 94.2%) and operations on acquired cardiac conditions (42/52, 80.8%), whereas only fewer than half of the respondents thought the same regarding operations on congenital cardiac conditions (21/52, 40.4%) (Fig 2).

Technical Ability Readiness

In terms of technical abilities, the respondents noted that they lacked confidence and needed more instruction in many cardiothoracic surgical procedures. The most common areas were robotic esophageal operations (32/52, 61.5%), operations on congenital cardiac conditions (31/52, 59.6%), robotic cardiac operations (29/52, 55.8%), robotic lung operations (29/52, 55.8%), endovascular operations (28/52, 53.8%), minimally invasive cardiac operations (25/52, 48%), and minimally invasive esophageal operations (24/52, 46.2%) (Fig 3).

When asked to rank the top three areas (out of 26 possible choices) in which the graduating fellows desired additional training, the following procedures were the most commonly noted: endovascular operations (17/154 votes), minimally invasive cardiac operations (15/154 votes), robotic cardiac operations (12/154 votes), and minimally invasive esophageal operations (11/154 votes).

Profession Employment Issues

From a professional employment preparedness standpoint, the majority of respondents noted that they lacked confidence and needed more instruction in the following concepts in both academic and private practice realms: employment contract laws (17/21, 81.0%), evaluation of employment contracts (17/21, 81.0%), negotiating terms of employment (17/21, 81.0%), and professional service agreement business model (16/21, 76.2%) (Fig 4).

Career Development Issues

In terms of career development, 23 respondents (23/51, 45.1%) reported that their performance expectations for their first jobs as junior faculty members were either marginally outlined or not outlined at all. Eighteen respondents (18/51, 35.3%) reported that they had not been able to define a clearly protected time to pursue their respective clinical or academic endeavors. Thirteen respondents (13/51, 25.5%) did not believe that they had received enough mentoring advice to enable them to make sound career decisions. The majority, 84.3% (43/51), believed that a formal mentoring program, the availability of mentors outside their current institutions, or both would be critical and very useful.

Comment

A gap in existing cardiothoracic surgery residency training programs was demonstrated. Specifically, the majority of recent graduates noted a need for more instruction in minimally invasive cardiothoracic surgical procedures and formal career mentoring. Although other studies have documented gaps in training in other specialty training programs [1–3], the current analysis is specific to cardiothoracic surgical training and has exposed some clear gaps as well as inaccuracies in self-assessment by our trainees. Given the evolving nature of new I-6 programs and the rapidly changing market forces in cardiothoracic surgery, the findings of this analysis may help generate a focused revision of current training paradigm.

Trainee physician self-assessment has been used in the fields of emergency medicine and obstetrics and gynecology with some degree of validity [4–6]. The current survey provides data on self-reported confidence regarding preparedness in clinical decision making in cardiothoracic surgery. Specifically, an overwhelming majority of respondents self reported that they are confident in handling basic and complex clinical decision-making issues in both