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First nationwide survey of US integrated 6-year cardiothoracic surgical residency program directors

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Objective: The recently implemented integrated 6-year (I-6) format represents a significant change in cardiothoracic surgical residency training. We report the results of the first nationwide survey assessing I-6 program directors' impressions of this new format.

Methods: A 28-question web-based survey was distributed to program directors of all 24 Accreditation Council for Graduate Medical Education-accredited I-6 training programs in November 2013. The response rate was a robust 67%.

Results: Compared with graduates of traditional residencies, most I-6 program directors with enrolled residents believed that their graduates will be better trained (67%), be better prepared for new technological advances (67%), and have superior comprehension of cardiothoracic disease processes (83%). Just as with traditional program graduates, most respondents believed their I-6 graduates would be able to independently perform routine adult cardiac and general thoracic operations (75%) and were equivocal on whether additional specialty training (eg, minimally invasive, heart failure, aortic) was necessary. Most respondents did not believe that less general surgical training disadvantaged I-6 residents in terms of their career (83%); 67% of respondents would have chosen the I-6 format for themselves if given the choice. The greater challenges in training less mature and experienced trainees and vulnerability to attrition were noted as disadvantages of the I-6 format. Most respondents believed that I-6 programs represent a natural evolution toward improved residency training rather than a response to declining interest among medical school graduates.

Conclusions: High satisfaction rates with the I-6 format were prevalent among I-6 program directors. However, concerns with respect to training relatively less experienced, mature trainees were evident. (J Thorac Cardiovasc Surg 2014;148:408-15)

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Since the first integrated 6-year (I-6) cardiothoracic (CT) surgical residency program was adopted at Stanford in 2007, the number of Accreditation Council for Graduate Medical Education (ACGME)-approved I-6 programs in the United States has steadily increased. This new format for CT surgical residency programs seeks (1) to attract a greater number of highly qualified trainees to the field and (2) to provide a more focused and multidisciplinary curriculum to produce CT surgeons better equipped to practice modern CT surgery.

Although the general perception has been that the I-6 format is moving toward achieving these objectives, current evidence has been limited and often anecdotal. In a recent survey of I-6 program applicants, Tchantchaleishvili and colleagues[1] reported that most candidates were young, high-achieving individuals oriented toward academic careers; however, the sample size was small (36 respondents, 45% response rate). Ward and colleagues[2] compared the curricula between I-6 and traditional training programs. However, their study was limited in that it only considered the duration of the different rotations rather than the content (eg, case volume, experiential milestones) and noted significant curricular heterogeneity among the programs.[2]

Abbreviations and Acronyms

ACGME = Accreditation Council for Graduate Medical Education
CT = cardiothoracic
I-6 = integrated six-year
PGY = postgraduate year

To better assess the perceived advantages, disadvantages, and concerns with the I-6 format, particularly timely given the recent graduation of the first I-6 residents, we conducted the first nationwide survey of program directors in all US ACGME-accredited I-6 programs and report our results and interpretations.

METHODS

A 28-question, web-based electronic survey platform (Qualtrics, Provo, Utah) was distributed to the program directors of all 24 ACGME-accredited I-6 CT surgical training programs on November 1, 2013. The survey was closed December 1, 2013. Four newly accredited I-6 programs had not yet enrolled their first residents at the time of our survey. One reminder electronic mail message to the initial nonrespondents was sent, including invitations to other members of the faculty. Participation was voluntary, and the anonymity of all respondents was preserved. The survey data were exported from the platform in a pure text file format (.CSV) and subjected to basic statistical analysis. An audit of the data revealed neither duplicate responses nor multiple responses from any 1 individual.

The survey included questions specifically composed to assess the perceptions of I-6 program directors in several different areas (see Online Data Supplemental) in accordance with published data pertaining to the I-6 format[1-4] and Dr Yuh's experience as the Yale CT surgical residency program director:

Comparisons Between I-6 and Traditional Residents
Overall competence of I-6 residents and the need for additional training after graduation
Overall favorability toward the I-6 format
Perceived advantages and disadvantages of the I-6 format

Of these questions, 25 were multiple choice and used a Likert response scale. One question contained a field for a specific numeric response, and two questions permitted free text responses. The program directors from the 4 newly accredited programs were asked to base their answers to the questions on their current knowledge and expectations of the I-6 format; these were analyzed separately. The Yale University Human Investigation Committee approved the design and conduct of the present study.

Only data from completed surveys were analyzed. GraphPad Prism software, version 6.0c (GraphPad Software, Inc, La Jolla, Calif) was used for basic statistical analysis and plotting of the data. The responses were checked for inconsistencies and errors, computed, and presented as frequencies according to the following groups:

"Active" programs: I-6 programs with currently enrolled residents
"Mature" programs: I-6 programs instituted in 2010 or earlier, with residents at or beyond the postgraduate year (PGY)3 level
"New" programs: newly accredited programs anticipating enrolling their first residents in July 2014

The free-text responses were quoted. Because we had no true control group, the results were analyzed and are presented in a descriptive manner.

RESULTS

Respondents' Program Demographics

In November 2013, there were 24 ACGME-accredited I-6 CT surgical residency programs; 20 programs had 1 to 12 residents enrolled. A 67% response rate was achieved, with 16 program directors completing the survey (Table 1). Of these respondents, 12 (75%) represented "active" programs with currently enrolled residents, accounting for 69% of all I-6 residents in the United States (62 of 90). Of these active programs, a subset of 7 "mature" programs was derived, composed of programs instituted on or before 2010 (residents at or beyond the PGY4 level). Finally, 4 respondents (25%) represented newly accredited programs anticipating enrolling their first residents in July 2014. The distribution of the programs' starting dates was as follows: 1 in 2007, 1 in 2008, 2 in 2009, 4 in 2010, 1 in 2011, 1 in 2012, 3 in 2013, and 4 in 2014.

Comparisons Between Residents in I-6 and Traditional Training Programs

Most surveyed I-6 directors of active I-6 programs believed their residents currently possessed more diagnostic and technical aptitude and academic interest than their traditional resident counterparts (Figure 1). This superiority was also anticipated at graduation. Most respondents believed that the residents' overall maturity was largely equivalent between the 2 resident groups, although 42% anticipated greater maturity among the I-6 residents on graduation.

Compared with the graduates of traditional residencies, most directors of the active and mature I-6 programs believed their graduates will be better trained (Figure 2), be better prepared for new technological advances, and have superior comprehension of CT disease processes (Table 2).

Overall Competence of I-6 Residents

Among the directors of the active I-6 programs, 75% believed their I-6 graduates would be able to competently and independently perform routine adult cardiac and general thoracic operations. This proportion was even greater (86%) among the directors of mature programs (Table 2). The respondents were equivocal regarding whether they thought additional specialty training (eg, minimally invasive, heart failure, aortic) was necessary for their I-6 residents but favored additional training for graduates of traditional programs.

Overall Favorability Toward the I-6 Format

Comparatively few respondents believed that most academic CT surgical faculty favored the I-6 format over traditional programs. However, clear majorities of the directors from both active (75%) and mature (71%) I-6 programs