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Perceptions and Utilization of the U.S. Core Cardiovascular Training Statement

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There has been rapid advancement within the field of cardiovascular disease (CVD) with increasing disease complexity and rapidly evolving technologies. These changes present new challenges in training the next generation of cardiologists. In parallel, there has been an evolution in graduate medical education with an increasing focus on competency-based medical education (CBME) (1).

The American College of Cardiology (ACC) first addressed these challenges with publication of COCATS (Core Cardiovascular Training Statement) in 1995 (2). The goal of this statement was to provide a uniform set of curricular recommendations for training in CVD. Over the subsequent 2 decades, there have been multiple revisions of this document. COCATS4 represents the latest iteration (3) and is an important step forward in CVD education. The new document differs from the previous COCATS document in numerous ways. First, COCATS4 introduced elements of CBME, defining competencies, associated milestones, and specific instruments to assess performance. Second, 2 additional task forces (multimodality imaging and critical care medicine) were added. Third, recommendations were made that all fellows achieve level II echocardiography training, and that additional level II training in imaging should reasonably consist of only 1 additional modality. Finally, it was recommended that a minimum of 30 months of clinical training should be the goal of most fellowship programs.

These changes represent challenges to training programs as COCATS4 is translated and put into action by program directors (PDs). Our aim was to survey cardiology fellowship PDs to understand how they perceived and implemented COCATS4.

METHODS

In 2017, the ACC Cardiovascular Training Section organized a CVD Program Directors Survey. The first survey was launched in the spring of 2018 and was focused on training program structure and perceptions of COCATS4. Survey questions administered to PDs of all U.S.-based programs, identified through the American Medical Association FREIDA database of ACGME-accredited training programs. The survey was open from April 2018 to May 2018. Programs were stratified by size and by program type as defined by program self-report (university hospital based, community hospital/university affiliated, community based, or military hospital). Data was collected in a deidentified manner. A qualitative review of narrative comments was performed by a single author and confirmed by group consensus. The Medstar Health Institutional Review Board approved the project.

RESULTS

Of the 229 CVD training programs, 130 (57%) responded. The make-up of responding programs was 50% university hospital based, 39% community hospital/university affiliated, 9% community based, and 2% military programs versus 49%, 27%, 23%, and 2% for nonresponding programs. A total of 45 (25%) programs responding were defined as small

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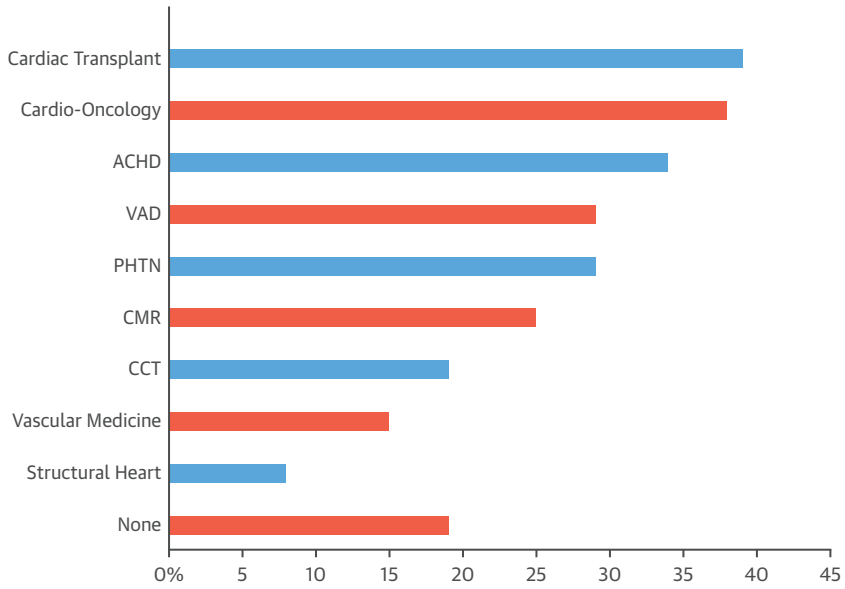
FIGURE 1 Program Limitations in Direct Clinical Experiences



Percent of programs that report in the national program director survey that expertise within a particular discipline is lacking in their program, limiting their ability to provide training in this competency. Most programs had at least 1 education deficiency. ACHD = adult congenital heart disease; CCT = cardiac computed tomography; CMR = cardiac magnetic resonance; PHTN = pulmonary hypertension; VAD = ventricular assist device.

(1 to 10 fellows), 43 (33%) as medium (11 to 17 fellows), and 42 (32%) as large (18 fellows or more). The median number of fellows per program was 13.5 fellows (range 2 to 39 fellows).

Most programs (81%) lacked direct clinical exposure to at least 1 element of CVD training (Figure 1) (19% lacked a single area, 21% lacked 2 areas, 41% lacked 3 areas). Programs most commonly used lectures (69%) as a supplement. Other methods included electives at other medical centers (43%), DVDs or web-based tools (36%), and mandatory rotations at other centers (27%).

A large percentage (45%) of programs mandated <6 months of echocardiography, while 53% required 6 or more months. A total of 52% of programs required >2 months of nuclear training, whereas 32% required >2 months of electrophysiology. Programs often did not require any clinical time in certain specific disciplines (cardiac computed tomography [CCT] 35%, cardiac magnetic resonance [CMR] 38%, vascular medicine 45%, and adult congenital heart disease [ACHD] 45%). A majority (57%) stated that resource limitation played a role at least some of the time in the lack of direct clinical experience. Many programs do not have subspecialty training programs at their institution (electrophysiology 46%, interventional cardiology 28%, advanced heart failure 62%, cardiovascular imaging 70%, and ACHD 88%). The majority of programs allow fellows to achieve level II training in three or more areas (66%), and a majority of programs (54%) allow fellows to achieve level III training in at least 1 area.

Almost one-half (45%) of programs had made no significant changes since the release of COCATS4, whereas 22% increased the number of clinical months, 8% decreased the number of clinical months, and 11% increased the number of required echocardiography months.

The majority of PDs found COCATS4 to be very or extremely useful (57%), 35% found it somewhat useful, while only 6% found COCATS4 either not very or not at all useful. Only 16% of PDs stated that it was difficult to integrate COCATS4 into the training program, while 44% were neutral, and 39% thought it was easy to incorporate. When asked about the utility of COCATS4 in guiding assessment of competency, 50% found it extremely or very useful, 30% found it somewhat useful, and 19% found it not very or not at all useful. The competency tables were frequently used, with 63% of PD using them often or always and

only 4% never using them. Only 16% of PDs stated that it was difficult to integrate COCATS4 into the training program, while 44% were neutral, and 39% thought it was easy to incorporate. Last, 69% of PDs thought COCATS4 is better aligned with the needs of today's job market, while 15% were neutral, and 14% thought it was not well aligned.

PDs were prompted with 2 open-ended questions: "What have you liked most about COCATS4?" and "What is the greatest challenge in implementing COCATS4?" Prominent themes that PDs liked about COCATS4 (n = 60 comments) included reference for curricular structure (42% of comments), alignment with CBME (22%), and emphasis on evolving domains within CVD (20%). Themes articulated as challenges by PDs (n = 75 comments) were the high density of training (20%), practical implementation of CBME (19%), difficulty in managing training in imaging (13%), balancing training with career interests (12%), and difficulty with rotational shortcomings (11%).

DISCUSSION

This survey presents the first data to describe how training programs have responded to COCATS4. A few trends are notable. First, most programs do not have the ability to clinically expose trainees to all facets of CVD care. Only a minority of programs stated that they had no clinical gaps in their training. Exposure to CMR and CCT was lacking in one-fourth to one-fifth of programs, while exposure to transplant, cardio-oncology, and ACHD were lacking in more than one-third of programs. Addressing these gaps may be very challenging, particularly in new or emerging fields, as many institutions may not provide comprehensive clinical services in these areas. As such, it may be advisable to develop alternative educational experiences in these areas. Organizations such as the ACC and other societies can help by developing high-quality educational resources across the spectrum of CVD. The ability to provide training resources is increasingly important to fill gaps. In addition, the use of innovative partnerships between institutions can help make clinical exposure in some of these fields available to more trainees (4). Such efforts may help ensure that trainees have exposure to the breadth of CVD needed to practice in the current era, irrespective of their training site.

Second, programs are not adhering to all aspects of the recommendations in COCATS4. This was particularly noticeable in the imaging disciplines, where a lack of clinical exposure to CCT and CMR was not uncommon. In addition, not all programs mandate 6 months (level II) of echocardiography training. However, many allow for trainees to achieve level II training in 2 to 3 disciplines, suggesting that, although not mandated by programs, many trainees choose to achieve level II training in multiple imaging modalities. If programs are not adhering to COCATS4 guidelines in certain areas, it may be important to obtain further data to explain this discordance. It would be important to define the limitations of training programs, and potentially update COCATS accordingly, as the ACGME uses documents such as COCATS4 to update the minimum training requirements.

Third, quantitative data indicated that PDs viewed COCATS4 favorably. Nonetheless, a substantial minority of programs did not institute changes, and only 39% found it easy to implement. Some programs likely felt they were already achieving much of what was required in COCATS4. However, it is equally likely that, for some, no further modifications that would have fulfilled COCATS4 requirements were possible. Narrative comments from PDs expressed more ambivalence and nuance. Challenges include the sheer number of rotations and procedures that must fit into a fixed period of training, and the implementation of CBME. This finding is consistent with prior publications in CBME, as it is difficult to manage the increased administrative requirements, to resolve the inconsistencies in how competencies are defined and assessed, and to integrate competencies into the overall clinical context (5).

Therefore, it would be important to consider up front the challenges that programs might face in implementation as further adaptations of COCATS are considered. This would include involvement of PDs from a diverse set of training programs in the formative stages of future documents to create a broadly applicable document that still maintains a high standard for programs. This would also allow for planning for any resources that might be needed by programs that could not meet new requirements internally.

There are important limitations to this study. First, 43% of programs did not reply; therefore, respondent bias cannot be excluded. However, the range of program types that participated was representative, thus lending validity to this data. Second, this instrument has not been previously validated, although it was tested by a select group of educators prior to release. Last, respondents may be biased in the way they answer questions, either in a positive or negative direction. The inclusion of free-text questions, however, did allow for more nuanced comments to be collected; this methodology has been used to answer

questions in medical education when other forms of data collection are not possible (6).

CONCLUSIONS

This instrument represents the first organized effort to collect comprehensive data from PDs and CVD training programs. In this first survey, we find that CVD training programs are diverse in their makeup and approach to training. Overall, PDs are positive about COCATS4 and the directions it proposes for CVD training, but there is variation in what is offered in programs, which to some degree is driven by available resources. These variations can help guide further training documents as well as serve as a call for national bodies such as the ACC to help address the gaps and resource limitations that programs face as CVD training evolves to account for the increasing complexities of current CVD care.

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