

LEADERSHIP PAGE

COCATS 4, the 2015 CCEP Advanced Training Statement, and the Transition From 12 to 24 Required Months of Electrophysiology Training Rationale, Status, and Implications for the Future*



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Electrophysiology (EP) is an increasingly complicated field. Recognition of the complexity and scope of EP training has resulted in a consensus that it requires more than 12 months to become competent in the vast array of required decision-making and procedural skills. We aim to provide an update on the upcoming transition of Accreditation Council for Graduate Medical Education (ACGME) accredited Clinical Cardiac EP (CCEP) fellowship training from 12 to 24 months. This change was dependent on the American Board of Internal Medicine (ABIM) Council voting to increase the duration of EP training and the ABIM Cardiovascular Board voting to add additional procedural requirements to be eligible for initial certification in CCEP, and will become effective for those beginning CCEP training academic year 2017/18. This transition in EP training has been supported by the creation of the updated Core Cardiology Training Symposium (COCATS) 4 Task Force 11 (1) and the 2015 American College of

Cardiology (ACC)/American Heart Association/Heart Rhythm Society (HRS) Advanced Training Statement on Clinical Cardiac Electrophysiology (ATS) (2). The increased duration of EP training approved by the ABIM, as well as the revised components of EP training defined in these documents have substantial implications for those considering or undergoing EP training, CCEP fellowship programs, and for practicing electrophysiologists.

Since the 17th Bethesda Conference on Adult Cardiology training in 1986 (3), the ACC has played a principal role in developing the framework of competencies necessary for cardiology and subspecialty practice. The COCATS 4 Task Force 11 document, an update of previous COCATS documents, defines what training in arrhythmia management is required as part of general cardiology training. COCATS outlines 3 levels of training: level I defines the basic skills required of all graduates of cardiology fellowship programs; level II outlines advanced training (for EP, this comprises pacemaker implantation and device management); and level III defines subspecialty training (this encompasses CCEP training). All current ACC training documents incorporate application of training standards to the 6 ACGME/American Board of Medical Specialties competency domains of Medical Knowledge, Patient Care, Professionalism, Systems-Based Practice, Practice-Based Learning and Improvement, and Interpersonal and Communications Skills (1).

Of relevance to the EP community is what this document tells us in terms of recommendations for competency in implanting cardiac electronic

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implantable devices and performing EP studies and ablation. Cardiovascular fellows may spend a minimum of 6 months of dedicated time during their third year of cardiology fellowship implanting and managing pacemakers to achieve level II training. During this period of time, they must perform >100 in person and >50 remote device interrogations and implant >40 pacemakers (of which >20 should be single-chamber and >20 dual-chamber implantations). The COCATS document states that cardiovascular fellows seeking to implant defibrillator and biventricular pacing devices without subspecialty board certification in CCEP should take an additional year of dedicated training beyond the 3 years required for cardiovascular training. In addition to this 12 months of dedicated experience, completion of an examination, such as the International Board of Heart Rhythm Examiners examination, to demonstrate competence is required (1).

The subspecialty of EP was officially recognized by ABIM in 1992, and the duration of CCEP fellowship training was established as 12 months. Initial requirements for specialized EP training were defined in 1986 by 2 documents from the 17th Bethesda Conference on adult cardiology training: Task Force VI: Training in Cardiac Pacing (4), and Task Force VII: Arrhythmias and Specialized Electrophysiologic Studies (5). During this era, a 6- to 12-month training experience in pacemaker implantation and follow-up was advocated for level II training, with implantation of >25 pacemakers and >10 reoperations. Similarly, in this same pre-ablation era, a minimum recommendation of 1 year, and “preferably a minimum of 2 years,” with participation in the performance and analysis of at least 100 intracardiac EP studies was endorsed for level III training in specialized EP procedures. The first set of teaching objectives in CCEP was published in 1988, even then stating, “Given the modern body of knowledge and variety of complex skills required to care for patients with cardiac arrhythmias, it was unanimously agreed that the minimal length of such a training program should be 1 year after completion of an approved training program in clinical cardiology. A 2 year program was advised for those desiring to acquire skills in the area of cardiac electrosurgery, insertion of antitachycardia devices or catheter ablative procedures” (6).

Since that time, technological advancements have further increased the complexity of EP procedural skills requirements; complex atrial fibrillation ablation and biventricular pacing devices are now customary; and training for these procedures as well as increasingly complex ventricular ablation procedures has been added to an already saturated

curriculum. An association of decreased complication rates with a higher volume of procedures has been well documented in areas as diverse as coronary interventions (7), ablation of atrial fibrillation (8), lead extraction (9), and ablation of ventricular tachycardia (10). These findings directly relate to conceptual frameworks for learning and the requirement for practice to achieve mastery of both thinking and technical skills (11).

Despite this early recognition of the complexity of becoming competent in EP, the historical divide of pacing and EP procedures, and the initial ABIM requirement of 1 year of CCEP training, led EP fellowship programs to adopt a variety of strategies for providing EP trainees with adequate preparation. Many programs increased EP training to 24 months after 3 years of cardiology training. For most of these programs, the official 12 months of CCEP training required by ABIM occurred during the final 12 months of training. Other programs elected to use much or most of the third year of cardiology fellowship as a preliminary EP year, with the 12-month CCEP training occurring in the fourth year. Other programs confined training to 1 year, focusing on providing training for a subset of EP skills.

Over this period of time, HRS has surveyed EP training program directors concerning the duration of training. Increasing recognition of the difficulties inherent in providing adequate EP practice and exposure in a limited time, coupled with increasing demands during general cardiology training has fostered recognition that adequate training in EP can no longer be accomplished during a 12-month period of time. In addition, the variation in how programs manage training has made it difficult for CCEP programs to participate in the National Resident Matching Program, which has led to ever earlier fellowship applications. HRS program director surveys revealed widespread support for increasing official CCEP training from 12 to 24 months. The first step in addressing this issue was to send an official letter from the leadership of HRS, the ACC, and the Chair of the ABIM EP Exam Writing Committee to ABIM requesting that CCEP training be increased to 24 months. In response, the ABIM Council approved this request early in 2014, anticipating that extended training would first be required of those fellows beginning EP training in academic year 2017/18.

The second step in this process was to define what requirements, other than an increased duration of training, would be required to take the ABIM CCEP Certifying Examination. To accomplish this task, ACC and HRS launched a structured revision of the COCATS 4 arrhythmia training document (1), followed

by a similar process for the CCEP ATS (2). The CCEP ATS integrates the ACGME/American Board of Medical Specialties competency framework with the considerable demands of procedural-based training in a highly cognitive specialty. ATS aids program directors and faculty in creating milestones for assessment and developing targets for procedural volumes during fellowship. The changes in scope and volume of procedures are substantial and are grounded in increased training time. Significant experience in atrial fibrillation ablation is now advocated, numeric guidance for device implants is markedly increased, and complex procedures such as ventricular tachycardia ablation and novel therapies, such as left atrial appendage occlusion, are highlighted. An important component of this document is a detailed list of procedural recommendations that defines how many of what kind of procedures trainees should perform

(Table 1). A subset of these numbers were approved as procedural requirements by the ABIM Cardiovascular Board. The next step was for ABIM to officially notify the Residency Review Committee for Internal Medicine of the ACGME of the increased training time and procedure requirements for initial certification eligibility. The new ABIM requirements for extended CCEP training duration and procedures were then incorporated into a major revision of ACGME program requirements for CCEP, which were then posted for public comment until December 30, 2015.

There are many implications of increased EP fellowship training length; an important consequence is that it is now more feasible for EP fellowship programs to have an official match. An HRS survey of EP program directors has revealed widespread support for a national match. The HRS EP Fellowship Committee is now engaged in determining whether to pursue this new initiative. To have all CCEP training programs be officially the same length levels the playing field for both applicants and programs, who previously experienced marked variations in timing of applications, interviews, and in deciding whether to accept an offer.

A major immediate effect of increased training length is that trainees, who often previously were able to focus their third year of cardiology training on EP and to spend only 1 additional year of training to be certified in EP, will be required to train longer. All CCEP fellows will now have to complete 24 months of EP training after 3 years of cardiology fellowship. Increased training length also affects hospitals; Medicare compensates teaching hospitals for costs directly related to training residents through its Direct Graduate Medical Education payment system and the Indirect Medical Payments, but the actual costs of providing this service is higher, and many hospitals are funding fellowship positions in excess of their approved numbers (12). Doubling the length of fellowship training doubles the fellowship compliment and may not be feasible in some hospital systems, which may reduce availability of fellowship positions. Lastly, some currently accredited CCEP 1-year programs may be unable to offer adequate complex procedural volume to maintain accreditation.

This move is fundamentally important to EP training because it allows for dedicated time to focus on attaining competency in a complex technological field. It allows program directors and faculty to plan a comprehensive, adaptive curriculum that spans the clinical discipline and allows the trainee the time to master a difficult skill set. Increased opportunity for practice of critical decision-making skills and in the

TABLE 1 Changes in Minimum Procedural Requirements for CCEP Trainees From 2008 to 2015

	2008	2015
Diagnostic electrophysiology studies	150	175
Catheter ablation	75	160
SVT (Not including AF)		50
Focal AT		5
AVN		5
AVNRT		25
AVRT/AP		15
Atrial flutter		30
Isthmus-dependent		20
Non-isthmus-dependent		10
Atrial fibrillation		50
Transseptal procedures	10	
VT/PVC ablation		30
Idiopathic VT/PVC		20
VT/PVC in patients with SHD		10
CIED procedures	75	100
Pacemakers	25	40
ICD	25	60
CRT pacemakers or ICD	25	25
CIED replacement/revision	30	30
CIED interrogation/programming		200
CIED programming pacemaker	100	100
CIED programming ICD	100	100
Remote device interpretation		50
Lead extraction procedures*		30
Tilt table tests		5

See Zipes et al. (2) for details and exceptions. *Lead extraction is a special competency not expected of all CCEP trainees.

AF = atrial fibrillation; AP = accessory pathway; AT = atrial tachycardia; AVN = atrioventricular node; AVNRT = atrioventricular nodal re-entry tachycardia; AVRT = atrioventricular re-entrant tachycardia; CCEP = Clinical Cardiology EP; CIED = cardiac electronic implantable device; CRT = cardiac resynchronization therapy; ICD = implantable cardioverter-defibrillator; PVC = premature ventricular complexes; SHD = sudden heart death; SVT = supraventricular tachycardia; VT = ventricular tachycardia.

hands-on technical components of procedural skills development is mandatory to improve performance and thereby patient care. Acknowledgment of the need for 2 years of training obliges institutional support, which relieves programs of the burden of obtaining funding for the common “extra year” or from attempting to compete with other demands on trainee time. The shift to formal recognition of the need for 24 months of training in order to develop competency in the complex field of EP is a credit

to the collaborative efforts of HRS, ACC, and ABIM. The ultimate beneficiaries of this effort will be our patients, who will have access to well-trained electrophysiologists in the years ahead.

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