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FELLOWS-IN-TRAINING & EARLY CAREER PAGE

Passions and Realities of Training in Cardiology

Challenges for Fellows-in-Training

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Currently, cardiology trainees are faced with the challenge of deciding whether to stay as a *general cardiologist* versus pursuing additional subspecialization within the multiple emerging branches in cardiology (1). The first question posed to many is: *Do you want to be an invasive or noninvasive cardiologist*? Invasive cardiology usually refers to those who pursue dedicated training in interventional cardiology or electrophysiology. Moreover, within interventional cardiology, there are additional opportunities to pursue extended training in either peripheral vascular interventions or structural cardiology. Conversely, noninvasive cardiology refers to the cardiologist who has remained in the general cardiology realm or to those who have obtained further specialization in noninvasive fields, such as imaging, which may include further training in echocardiography, cardiac magnetic resonance imaging, computed tomography, and/or nuclear imaging. Noninvasive cardiologists also may elect to focus on advanced heart failure and transplant, critical care, congenital, preventive, or vascular medicine.

Regardless of the chosen path within cardiology, trainees are faced with the challenge of structuring their general cardiology training to meet certain COCATS (Core Cardiology Training Symposium) training requirements. Certainly, all cardiology trainees are expected at the minimum to have level I training in all categories to graduate. Level I is defined as the basic training all trainees require to be competent consultant cardiologists, which can be accomplished during a standard 3-year program in general cardiology (2). Level II training refers to additional training in 1 or more areas that enable cardiologists to perform or interpret specific diagnostic tests and procedures or render more specialized care for specific patients and conditions (2). Here lies an important dilemma for fellows-in-training (FITs).

The main challenge lies in reconciling the aspirations of young passionate trainees versus the needs of cardiology practices nationwide. Cardiology FITs, regardless of their specific interests, are often passionate enthusiastic individuals who, on numerous occasions, model their careers to that of their mentors. However, current cardiology practices and their needs may often differ from the world in which our mentors used to live. Many of our tutors speak of a time in which they integrated invasive and noninvasive skills to take care of patients. Not infrequently, we realize that many of our mentors and role models thrived in an era in which they performed procedures in the cardiac catheterization laboratory, inserted pacemakers, interpreted echocardiograms, and examined patients in diverse clinical settings such as the coronary care unit or clinic. Remarkably, somehow these mentors also found time to teach us the practice of cardiovascular medicine, and not uncommonly, many also were recognized investigators as well. This broad, exciting day-to-day experience with our faculty during our medical training and/or residency was the magnet that drew us to cardiology.

In contrast, FITs now are faced early in their training with the decision of choosing a path. Most large urban practices (academic, private, or both) have divided the practice of cardiology into numerous branches. Not infrequently, large practices may have distinct specialty clinics focused on specific

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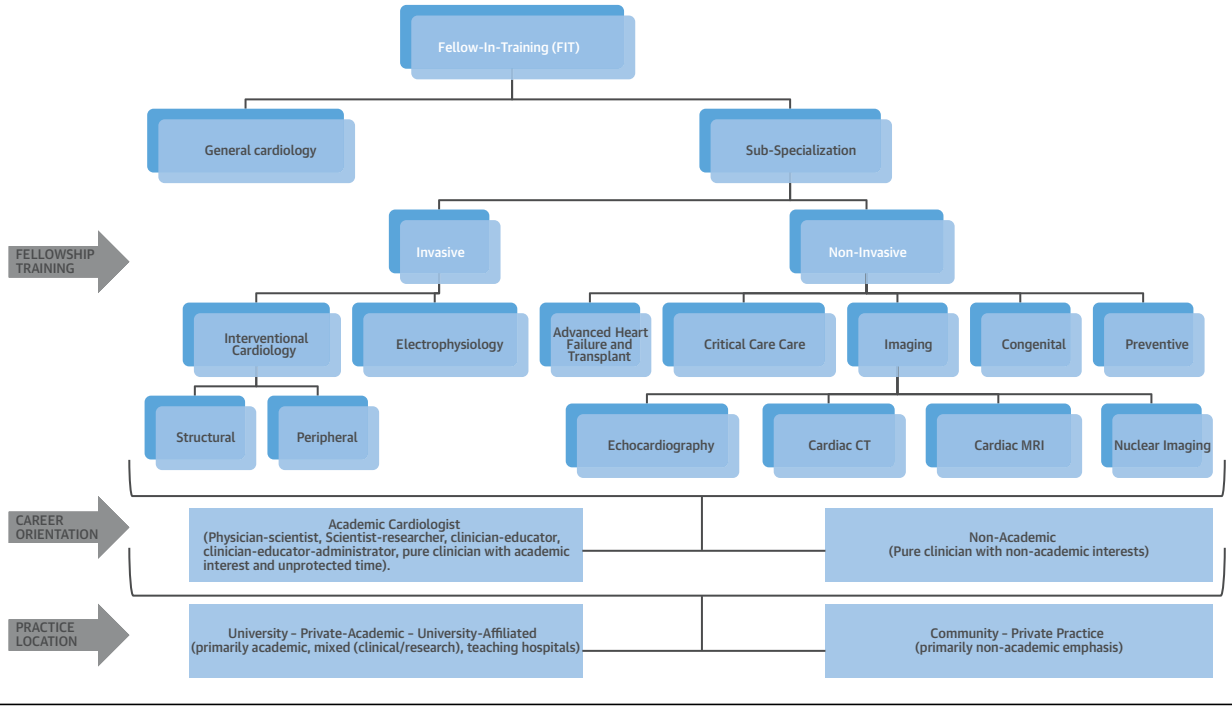
entities, including but not limited to valve disease, heart failure, prevention, the woman's heart, or pulmonary hypertension. In contrast, in some traditional community practices, cardiologists may practice within multiple disciplines and manage patients across the whole spectrum of cardiology.

This radical subspecialization has burdened professional decision-making for FITs. Some have simply dichotomized the path into academic or not (3). To those who advocate for an "*academic*" path, they argue for a path of finding a professional "niche." Consequently, there are some who may pursue mastering a specific area throughout their training with the aspiration of thriving in the care of a specific population, as well as performing research and education in relation to a specific area. In contrast, for those not seeking an "academic" career, a broader practice is generally observed, where cardiologists are not bound to a specific area, but are rather global clinicians exposed to a wide variety of diseases and/or conditions. There are certainly shades of gray within this dichotomy; for example, there are cardiologists who have an academic expertise and research focus in an area, yet maintain a broad clinical practice. It is important to recognize that the apparent career dichotomy into academic or not should not apply to a practice setting or location, but rather to a career direction. For example, there are numerous private/academic institutions where physician-investigators have had scientifically productive careers, and therefore, FITs should appreciate that the academic versus nonacademic paths are career directions, not a practice setting or location (4,5).

FITs are required to structure their training according to their perceived professional interests (**Figure 1**). Consequently, FITs structure their training to meet level II requirements in areas aligned with their aspirations. Interestingly, with regard to multimodality imaging, although the COCATS 4 Task Force document states that level II competency in >2 imaging modalities typically requires additional training beyond the standard 3-year cardiovascular fellowship, it also acknowledges in the same document that selected fellows may obtain level II training in 3 modalities in programs well equipped with the faculty, facilities, case volume, and educational infrastructure necessary to accomplish competency in numerous modalities (6). In an ideal world, FITs would pursue level II training only in areas aligned

FIGURE 1 **Fellows-in-Training Career Decision Tree**



CT = computed tomography; MRI = magnetic resonance imaging.

with their passions and maintain focus. However, in reality, FITs often pursue level II training in multiple areas for the sake of being "marketable" and to facilitate their search for a job. Notably, many cardiology practices enhance this training culture by seeking multifaceted cardiologists who are able to perform multiple tasks. Hence, many trainees seek level II training in numerous areas whether or not they have a genuine profound interest. This continued misalignment persists, partly due to the inability to predict the future needs of potential employers. Importantly, this broad exposure in multiple areas may come at the expense of the chance to really focus on a specific niche.

Because there is professional uncertainty as to which job one could obtain (regardless of an individual's interest), there is an apparent need to train in multiple level II areas "in case" a future employer might require them. There are 2 possible main scenarios. One is to "gamble" on a focused training with the possibility that at the time of training completion a position will become available that fits the garnered focused expertise in an area. In contrast, the alternative is to "play it safe" and obtain level II training in numerous areas to maximize the chance of finding a job. This is an important tension between the passions of FITs and the realities of finding a job.

Excellent tutors play an important role in helping mentees decide what to do with their careers (7). However, unless the tutor has the direct ability and/or power to help the mentee obtain a cardiology position, ideally prior to concluding a fellowship and with sufficient time to tailor the trainee's time and training, the fellow might ultimately be pushed to train broadly and obtain level II training in multiple areas. Mentors and/or program directors are essential not only to direct a trainee's career, but also have an important role in advocating either hiring fellows at the trainee's institution or recommending FITs to other centers. Hence, it is critical that mentors and program directors remain attentive of the job market trends to best guide their FITs. Furthermore, the American College of Cardiology offers guidance in this aspect, and in our state, the local American College of Cardiology chapter has organized open forum meetings in which the state FITs from all local training programs are invited to interact with faculty from various practices to discuss distinct aspects about the transition from fellow to faculty.

Moving forward, as cardiovascular training continues to evolve with numerous technological advances and emerging new subspecialties, it is important to remain attentive to challenges posed to FITs regarding pursuing passions, while maintaining awareness of the realities of practices nationwide. Mentorship and introspection are fundamental to face these challenges.

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REFERENCES

1. Goldfarb MJ. The push to specialize: choosing a career in cardiology. J Am Coll Cardiol 2014;64:2174–5.

2. Halperin JL, Williams ES, Fuster V. COCATS 4 introduction. J Am Coll Cardiol 2015;65:1724–33.

3. Fanari Z, Weiss SA. Academic versus private cardiology: preparing for a successful career after fellowship. J Am Coll Cardiol 2015;65:303–4.

4. King SB. Cardiology fellows' dilemma of academic versus private practice: is it the wrong question? J Am Coll Cardiol 2015;65:305.

5. Harris KM, Katsiyiannis WT, Maron BJ. What constitutes an "academic" cardiology practice? There are new models to consider. Am J Cardiol 2015;116:995–6.

6. Narula J, Chandrashekhar YS, Dilsizian V, et al. COCATS 4 task force 4: training in multimodality imaging. J Am Coll Cardiol 2015;65:1778–85.

7. Agarwal S. Mentorship during fellowship. J Am Coll Cardiol 2014;64:1637–8.

RESPONSE: Balancing the Decision Act in Fellowship

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Sandoval has raised both provocative and important issues that face all fellows-in-training (FITs) in cardiology. How do you balance the desire to pursue your passion in cardiology with the practical issues of obtaining employment and "making a living," which will meet the needs and desires of the individual? Clearly all FITs need to meet COCATS (Core Cardiology Training Symposium) requirements for level I to graduate, but for most individuals, careful thought is required in the selection of which areas of additional training should be chosen to obtain level II or III training.

Two key considerations are whether the FIT wants to pursue an academic career (this can be done in traditional academic settings as well as private settings) versus a nonacademic career. However, I would add an additional issue to consider for those who want to pursue a private practice career: in what environment do you want to practice: urban or rural? For those who want to practice in a competitive urban location, the issue of specialization is becoming increasingly important, as cardiologists are frequently now being hired by either hospitals or large practices. Specialized skills and extra training such as structural heart disease or additional experience with complex electrophysiology procedures are often needed to be a competitive candidate for an academic faculty position or to be hired by a large urban private practice.

For those who have a desire to pursue an academic career, it is indeed important to get advice from your mentor, but it is also important to seek out senior fellows going through the process and younger junior faculty who have recently gone through the process of applying for a first job. I agree with the statement that mentors and program directors should be attentive to the job market opportunities, but ultimately, only the individual FIT truly knows his/her passions, skills, personal situation, financial needs, and so on. As pointed out correctly, the world has changed and continues to change at a rapid pace, and ultimately, we all make our own decisions based upon what we feel to be our best self-interest.

For the individual who wants to pursue an academic career, the FIT must address the question as to what type of research to pursue—basic, clinical, translational, or health outcomes research—and in addition, in what area or areas of cardiovascular disease the research will be pursued. The excitement and potential for cardiovascular research has never been greater, but funding is tight and thus greatly affects the ability of institutions to support protected research time for young investigators. Broad training in level II is not necessarily the best option to "play it safe." For example, having broad training in noninvasive imaging, which includes only level II training in echocardiography, nuclear, computed tomography (CT), and cardiac magnetic resonance (CMR) imaging, may not be as useful as level III training in echocardiography and level II in nuclear only. In most institutions, the need for skilled level III readers for echocardiography is high because of standards set in large hospitals with rigorous quality programs. Level II nuclear is sufficient for the outpatient cardiology clinical setting. Even in large medical centers, only a few noninvasive cardiologists get to spend a substantial amount of time interpreting CMR and CT studies. However, for an individual who wants to pursue an academic career in noninvasive imaging, additional training in CMR and CT with development of the expertise, publications, and skillset to be a "star" may well be the best way to pursue one's passion and obtain that key position.