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FELLOWS-IN-TRAINING & EARLY CAREER PAGE

# What We Teach

## A Fellow's Perspective on House Staff Education

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As a specialty, cardiology holds a unique position in the realm of medical education. Not only is there a vast amount of research and literature devoted to this field, but it also comprises several distinct subspecialties, each a complex and fascinating science unto itself. Add to this the multitude of clinical findings associated with each cardiac disease state, and it is understandable that becoming an effective educator may seem a daunting task to a cardiology fellow-in-training.

Dr. Charles Mayo famously stated, "The safest thing for a patient is to be in the hands of a man engaged in teaching medicine. In order to be a teacher of medicine the doctor must always be a student" (1). Being designated as a fellow brings with it a great deal of responsibility and the harmonization of multiple roles; as a clinician, an academician, and an educator. The circadian integration of clinical duties and house staff teaching remains one of the most unique features of our profession, and yet, it can pose a significant challenge when constrained by the hectic schedules of early fellowship training. While learning the nuances of managing a hypertrophic cardiomyopathy patient in shock or the echocardiographic features of tamponade, how realistic is it for a fellow-in-training to concurrently become a proficient teacher to residents and medical students?

For the core competency of practice-based learning and improvement, the Accreditation Council for Graduate Medical Education mandates that each fellowship program use performance data to assess the fellow in teaching skills involving peers and patients (2). However, beyond this, the role of a fellow as a clinical educator has not been well defined in literature as of yet, making it somewhat arbitrary with regard to objective criteria.

The teaching role of a fellow-in-training integrates several different components. Lectures, presentations, and topic reviews serve as formal didactics. Clinical responsibilities include case-based teaching on rounds, supervising bedside procedures, and clarifying medical information to educate patients. As a cardiology fellow interested in clinical education, I quickly learned that the environment around me would not always be conducive to teaching. Although surrounded by a wealth of cardiac pathology while on service, the high patient volume, frequent emergencies, and numerous pages meant that dedicating time to house staff teaching was challenging and would necessitate organization and planning.

Detailed in the following text are strategies aimed at incorporating effective house staff teaching into the daily routine of a fellow-in-training:

1. *Learn how to delegate, when to supervise, and when to intervene.* On service rotations, a cardiology fellow performs the simultaneous functions of a supervisor and a trainee. Establishing opportunities for teaching and appropriate task delegation are imperative to skillfully training residents. Dynamic delegation refers to senior leaders' rapid and repeated delegation and withdrawal of active leadership roles from junior leaders in response to challenging tasks. This has been shown to support constrained trial-and-error learning in a high-risk work context (3). The ideal time to use dynamic delegation among residents is during high-acuity situations like "code-blues" or whilst managing critically ill patients. Fellows can also use their supervisory roles to demonstrate analytical thinking through focused history-taking and formulation of differential diagnoses, exhibiting behaviors that may be modeled by house staff to create learning (4).

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2. *Understand the audience and create relevance.* An electrocardiogram of complete heart block generates an entirely different impact when paired with physical examination findings of canon "a" waves and a variable intensity "S1." Similarly, Swan-Ganz catheter tracings come alive when taught at the bedside of a patient in cardiogenic shock. When students perceive course content and activities as relevant to them, their motivation to learn is likely to increase (5). Being a successful teacher also requires a seemingly intuitive ability to learn *about* one's audience in real-time. By incisively answering questions as well as using directed paraphrasing, students develop the skill of translating information into words that they can understand, and teachers are able to assess how well the learning has been internalized (6,7). Particularly with concept-based subject matter like cardiac hemodynamics, it is imperative to tailor teaching to a level that each specific audience can grasp easily. Giving multiple smaller talks on the same topic, each one successively building in complexity, can be a useful way to ensure that house staff at all levels of training are able to learn effectively.
3. *Practice incremental teaching.* Conducting a 30-minute didactic session at the end of a busy clinical day is not always feasible, and as a result, resident teaching often falls by the wayside. A resourceful method to overcome this is to teach incrementally, recognizing that it is the summation of individual facts that ultimately creates knowledge. Be it an interesting echo loop, electrocardiogram, or a clinical sign on a patient, fellows sometimes take for granted the things they encounter routinely. Yet, these findings can serve as simple and powerful teaching points for junior trainees. Moreover, in a field as clinically rich and diverse as cardiology, even demonstrating what constitutes "normal" can be a pertinent component of teaching.
4. *Create a continual multilevel feedback loop.* High-quality feedback has been strongly associated with student perceptions of teaching effectiveness (8). Both giving and receiving feedback are important components of the feedback loop and can greatly influence the educational yield by a group if provided in a timely fashion. Receiving feedback also has been shown to modify teaching behaviors (9). Although evaluations of fellows as teachers are collected at the end of a rotation, such evaluations do not provide real-time feedback to direct improvements at the time of teaching (10). An ongoing dialogue with house staff and senior physicians that highlights the strengths and weaknesses of a fellow's teaching style can therefore be a valuable addition to the feedback-loop.
5. *Incorporate the use of teacher immediacy behaviors.* Derived from psychologist Albert Mehrabian's work (11), teacher immediacy describes verbal and nonverbal behaviors that reduce the physical and psychological distance between teachers and learners. Immediacy behaviors include eye contact, posture, gesturing, using humor, and addressing learners by name (12,13). A meta-analysis by Witt et al. (14) showed meaningful correlations between teachers' immediacy and student reports of perceived and affective learning (14). Working in a consultant's role enables cardiology fellows to interact with new residents each day. Immediacy behaviors are integral to promoting approachability and creating teaching opportunities during these brief encounters. They also facilitate education during formal didactic sessions by increasing motivation as well as cognitive and affective learning (15–17).

Ultimately, cardiology fellowship is a demanding but highly gratifying balancing act. The initial learning curve is steep and sometimes overwhelming, but it also offers countless opportunities to become a leader, a role model, and a teacher. Many teaching techniques employed by fellows-in-training are largely intuitive or modeled from their mentors and attending physicians. Developing a teaching curriculum that incorporates methodologies from academic-education literature will allow fellows-in-training to hone the skills necessary to build the future generation of clinician-educators that cardiology so critically needs.

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