

VIEWPOINT

Challenges Facing Early Career Academic Cardiologists



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Early career academic cardiologists currently face unprecedented challenges that threaten a highly valued career path. A team consisting of early career professionals and senior leadership members of American College of Cardiology completed this white paper to inform the cardiovascular medicine profession regarding the plight of early career cardiologists and to suggest possible solutions. This paper includes: 1) definition of categories of early career academic cardiologists; 2) general challenges to all categories and specific challenges to each category; 3) obstacles as identified by a survey of current early career members of the American College of Cardiology; 4) major reasons for the failure of physician-scientists to receive funding from National Institute of Health/National Heart Lung and Blood Institute career development grants; 5) potential solutions; and 6) a call to action with specific recommendations. (J Am Coll Cardiol 2014;63:2199–208) © 2014 by the American College of Cardiology Foundation
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The majority of advances in cardiovascular care emerge from academic medical centers (AMC) through research, publication, and development of clinical protocols by physicians and scientists (1). Our ability to advance knowledge, to develop novel technologies/therapeutics, to educate trainees, and to provide quality care is currently in jeopardy due to increasingly challenging conditions placed on AMC and early career academic cardiologists. As heart disease remains the number 1 cause of death in the United States (2) and

40% of Americans will develop some form of cardiovascular disease by 2030 (3), academic cardiologists in conjunction with AMC strive to continually improve cardiovascular care through discovery and teaching.

Early career academic cardiologists, defined as those who are within 10 years of completion of a cardiology fellowship training program, often find themselves challenged to remain in academics and thus must consider a transition to nonacademic practice. Many early career cardiologists

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Abbreviations and Acronyms

- ACC** = American College of Cardiology
- AMC** = academic medical center
- GME** = general medical education
- NHLBI** = National Heart Lung and Blood Institute
- NIH** = National Institutes of Health
- RVU** = relative value unit

view a career in academics as an opportunity to make discoveries that may lead to new therapies or influence clinical practice in substantive ways. Others view it as an opportunity to educate and train the next generation of providers. Sadly, current uncertainties regarding the viability of an academic career are driving many early career academic cardiologists away.

In light of these developments, the early career professional section of the American College of Cardiology (ACC), along with senior leadership, initiated this manuscript to summarize challenges faced by early career academic cardiologists, to present data on perceived obstacles, and to discuss potential solutions to these challenges and obstacles.

Defining the Academic Cardiologist

Physician-scientist. Physician-scientists provide direct patient care and conduct research as principal investigators. They formulate research hypotheses based on existing data and their experience in treating patients. They then test their hypotheses by means of basic, translational, or clinical research, culminating sometimes in intellectual property development. Responsibilities of these individuals include overseeing research, publishing results, and writing grants to obtain external funding. Physician-scientists are often expected to provide didactic lectures to medical students and to serve as the teaching attending for medical students and residents on hospital services. By participating in both clinical and research domains, physician-scientists provide a critical bridge to translate clinical observations into the realm of scientific discovery and to return newfound knowledge to direct patient care.

Scientist-researcher. Scientist-researchers dedicate nearly 100% effort to research. Whereas their investigative responsibilities are similar to those of a physician-scientist, scientist-researchers do not have clinical duties.

Clinician-educator. Clinician-educators dedicate a significant amount of time to educational activities: participating in preceptorships, presenting didactic lectures to house staff and students, and participating as instructors in formal coursework offered through an associated medical school and/or graduate medical education program. The relative distribution of effort among these activities for clinician-educators is predominantly clinical. More recently, preceptor and mentor roles have extended beyond the traditional medical trainee to include allied health professionals, such as physician assistants, nurse practitioners, and pharmacy students.

Clinician-educator-administrator. Clinician-educator-administrators have responsibilities in course administration, rotation administration, and clinical operations in addition to the role of clinician-educator. Administrative roles include program director, director of clinical cardiology, or medical school course director. Some may chair or cochair institutional, regional, national, or international continuing medical education courses.

Pure clinician. Pure clinicians have the primary role of providing direct patient care. Unlike the other types of academic cardiologist, pure clinicians are contracted to dedicate essentially 100% of their allotted effort to direct patient care. Pure clinicians who wish to maintain academic interests must do so outside of their allotted and expected clinical time, whereas other categories of academic

Table 1 Common Challenges

Traditional sources of funding have declined	
Federal	<p>NIH/NHLBI</p> <p>Funds vast majority of cardiovascular research</p> <p>Budget plateaued in 2010 and then declined (Fig. 1) (22–24)</p> <p>Grant funding success rates have steadily decreased by >50% from 2003 to 2012 (Fig. 1) (22–24)</p> <p>Using 1995-constant U.S. dollars, NIH 2013 budget was 22% lower than for 2003 (25)</p> <p>GME</p> <p>Medicare support of GME has been frozen at 1996 levels (26)</p> <p>Frozen cap led to 12% decrease in cardiology fellowship slots in 1995 to 2001 (11)</p> <p>Presidential budgets proposed to reduce indirect Medicare support of GME by 10% (26–28)</p>
Industry	<p>Research spending for new cardiovascular therapies has been declining (29,30)</p> <p>Cardiovascular drug development has decreased (31)</p>
Increasing number of PhDs competing for smaller available funding pool	
	<p>Life-science/medical PhDs awarded per year grew from <2,000 in 1993 to >8,000 in 2007 (32)</p> <p>Biological sciences PhDs awarded per year grew from <5,000 in 1993 to 8,052 in 2010 (32,33)</p> <p>PhD growth likely contributed to steadily increasing number of grant applications (Fig. 1)</p>
Over-reliance on RVU discourages academic pursuits	
	<p>Medicare pays by the following formula: current procedure terminology code × RVU × conversion factor</p> <p>Medicare formula does not reimburse academic pursuits</p> <p>Consequently, healthcare systems do not award RVU “credit” to academic pursuits</p> <p>Academicians are forced to add RVU tasks in lieu of academic pursuits</p>
Trends in medicine and academia reduce available time for investigator-initiated academic pursuits	
	<p>Progressive limitations on house staff increasingly shift work to cardiology faculty</p> <p>Explosive growth of complex regulatory compliance requirements add increasing administrative burdens (e.g., Institutional Review Board, Institutional Biological Safety Committee, Institutional Animal Use and Care Committee, and Environmental Health Safety)</p> <p>More time is required to maintain expert competency</p> <p>Increasing number of studies and guidelines for each subspecialty</p> <p>Increasing requirement for formal demonstration of competency (e.g., yearly maintenance of certification exercises and more frequent board certification exams)</p>

GME = general medical education; NHLBI = National Heart, Lung, and Blood Institute; NIH = National Institutes of Health; RVU = relative value units.

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