

# Challenging Advanced Learners through a Protected Longitudinal Curriculum: Innovations in Cardiology Fellowship Education

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## TAKE HOME POINT

□ A longitudinal cardiology curriculum prioritizes fellow education in a protected environment, and fosters community, curiosity and program culture.

### Background

- In clinical training programs involving complex intensive care and procedural rotations, **patient care responsibilities** are paramount, but can **interrupt designated learning opportunities**, and detract from direct supervision and mentorship.
- In the University of Cardiology Cardiovascular Diseases Fellowship, it was hypothesized that **disrupted learning contributed to lower satisfaction, decreased focus on core cardiology topics**, and higher **risk of burnout** among fellows.

### Needs Assessment

- Spring 2020: Evaluation of the fellowship was conducted via **structured, comprehensive and anonymous interviews**.
- Data highlighted that clinical duties, as well as deficits in faculty engagement and mentorship, detracted from fellows' ability to achieve the program's educational goals. Some quotes:
 

The educational goals of the program, I think, are seldomly met because there's so much clinical work to be done that it detracts from that avenue of the fellowship.

I don't think the majority of the faculty in this division is dedicated to fellow education. The reason I would say that is if you just look at our conferences, from top to bottom, there's almost no faculty participation, except for whoever happens to be presenting.
- There was consensus that a **structured, longitudinal curriculum with protected educational time** would be an optimal learning model. Feedback included:
 

I don't think that we do a perfect job creating a systematic curriculum that goes throughout the year, that everyone can attend, that I think has very, very clear learning objectives, and this is what we should be learning in cardiology.

I think that if we had some sort of structured curriculum, even if it's just one half-day a week or something where we would go over some of the—maybe if it's toward the end of the week, go over some of the interesting cases.
- This inspired a curricular innovation of consolidating teaching conferences into a **series of protected Academic Days (ADs)**.

### PROGRAM OBJECTIVES

- Create a **cohesive, longitudinal fellowship curriculum**, with emphasis of high-yield topics.
- Integrate** clinical cardiac subspecialties, basic science, and **innovative research and new technologies**.
- Incorporate **simulation based experiences** to facilitate learning and mastery of general cardiology skills as well as exposure to highly complicated subspecialty based procedures.
- Build **highly engaging and safe learning environments** that protect fellows from clinical duties.
- Cultivate intellectual curiosity**, and supporting application of knowledge and skill to hypothetical scenarios.
- Encourage **opportunities for connection** among fellows and faculty, including potential **mentoring relationships**.

### STUDY INNOVATION

Curriculum Sessions	
• Ischemic Heart Disease, ACS Basics	• Cardio-Oncology
• Aortic Stenosis	• Women and Heart Disease
• Atrial Fibrillation	• Sarcoidosis
• Heart Failure with Reduced Ejection Fraction	• Sudden Cardiac Death, Inherited Arrhythmia Syndromes
• Electrophysiology Device Day	• Adult Congenital Heart Disease, Complex Defects
• Adult Congenital Heart Disease, Simple Defects	• Marfan's Syndrome, Peripheral Vascular Disease
• ASCVD Prevention	• Pulmonary Hypertension
• Ischemic Heart Disease, Complex Management	• Advanced Heart Failure
• New Frontiers in Basic and Translational Research	• Dyspnea
• Pericardial Disease / Is that supposed to be there?	• Mitral Stenosis, Mitral Regurgitation

- Curriculum includes 20 topics, focusing on disease processes in cardiology, each with a dedicated monthly AD; selection of these core topics was in concordance with core educational objectives for the fellowship.
- During ADs, fellows are excused from all clinical responsibilities.
- Content, structure, and course faculty for ADs were determined by a collaborative team of faculty and fellows from multiple cardiac subspecialties.
- ADs integrate topics in cardiology, such as basic science and pathophysiology, imaging, interventional procedures, humanism and professionalism, and research.
- The AD series provides a platform for innovative teaching with simulation-based education, discussion of cutting-edge technologies with expert scientists, and incorporation of a professional development series.

### DATA

- During the 2021-2022 academic year, six ADs have been executed thus far.
- ADs have included 20 general fellows (required attendance), and 11 subspecialty fellows (optional attendance).
- Following each AD, fellows submit an evaluation; based on feedback, modifications are made to future course content and structure.
- Surveys include a summative question: "Overall, was today's session helpful for your learning and clinical care?" (1-10, 10=best)
  - Ischemic Heart Disease, ACS Basics: 7 (N = 1)
  - Electrophysiology Device Day: 9.1 (N = 11)
  - Aortic Stenosis: 6 (N = 1)
  - Heart Failure with Reduced Ejection Fraction: 8 (N = 2)
  - Atrial Fibrillation: 8.7 (N = 6)
  - New Frontiers in Basic and Translational Research: 4.5 (N = 5)
- AD surveys have been overwhelmingly positive, citing impact of dedicated time for learning, scope of content, enthusiasm and engagement of faculty, and chances to connect with co-fellows.** Informal feedback from fellows and involved faculty have highlighted the program's innovation, and influence on fellowship culture.
- Example quotes from feedback:

These dedicated academic days are amazing! This EP academic day was particularly high yield, I truly enjoyed every moment and learned so much. Really well put together academic day. Really enjoyed it.

Overall really really great. I was never able to compartmentalize in the middle of the day on service. The zoom presentation would be on in the background and I wouldn't be able to focus my attention. This is much better.

Minor point, but since this is a breather education day, ending before 5pm would be a wonderful gift (allow chance to catch up on reading, exercise for once, etc).

- A global course assessment, with focused questions on satisfaction and burnout, will be performed at the end of the year.**

### DISCUSSION

- Implementation of protected ADs in a longitudinal curriculum has created new learning environments for expansion and application of knowledge, with positive impact on program culture.
- At the end of this academic year, formal evaluation of the curriculum will be conducted, with aims of assessing the effect of this innovation on fellows' professional development and fulfillment.