

appropriate tests according to clinical presentation and disease process. Second, by viewing some modalities as competing, we hinder any additional opportunities that an alternative modality may offer to patients, such as a better understanding of their disease process or decisions that might affect their outcome. I think that there is a role for the multimodality imager as well, and I concur with the editorial letter by Marwick et al. (2). To deliver quality and value-based care, we need cardiovascular specialists that have a deeper understanding of the advantages and limitations of each imaging technique. Their role in clinical research is of importance as they may be more likely to have advanced, unbiased understanding of each technique. This is essential if we want to produce knowledge that will add more value to care. Establishing and enhancing imaging paths that are disease centered, such as reflected by some of the multimodality imaging expert consensus and guideline documents generated by the American Society of Echocardiography (3,4), defines the need and establishes a role of having expert imagers in more than 1 technique. This may promote good stewardship and enhances patient care.

A core curriculum that gives a basic, but deep understanding of the principles that will be consistent and unifying should allow the trainee to develop the required skills. The Core Cardiology Training Symposium has established such a curriculum for multimodality imaging as a subspecialty vetted by an excellent group of experts and 14 key principles, which as a multimodality imager, I fully support (5). During my 2 years of cardiovascular imaging training, with the little time I had to spare, I took the cardiology, nuclear cardiology, echocardiography, and cardiac CT boards. This process needs to be unified into modules of certification. Most cardiology practices do not own a CT or magnetic resonance imaging scanner. For a successful cardiac imaging program to work in most places, it requires close collaboration between radiology and cardiology. There has to be a core curriculum of multimodality imaging training vetted by the different cardiology and radiology societies for the radiologist that wants to become a multimodality cardiac imager. A similar model of integration of different specialties may be seen in sleep medicine, critical care, and others, where different specialists are able to have similar requirements to become certified and vetted subspecialists. Collaborative models between both services, such as shared earnings and expenses, reading rosters, and quality improvement meetings with valuable interactions, may promote success in enhancing the skills of readers with different backgrounds. I think that with

this statement, the American College of Cardiology Cardiovascular Imaging Council has started a healthy conversation that will shape the future of the cardiovascular imager (1).

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#### THE AUTHOR REPLIES:



The American College of Cardiology (ACC) Think Tank on the Future of Cardiac Imaging (TT) Steering Committee would like to thank Dr. Lopez-Mattei for writing in support of multimodality imaging. As we recognized in the proceedings (1), this is an attractive concept. However, the TT participants also cautioned that prioritizing the number of modalities over expertise may be detrimental to our training and research programs and possibly patient care. Indeed, the TT felt that achieving imaging expertise should be the primary goal, an emphasis designed to strengthen the role of cardiac imaging in outcomes-based care.

The TT also agrees with Dr. Lopez-Mattei's concern regarding the potential for referral bias and competition if the modalities are siloed. To this end, we

discussed value-based care in imaging and took a practical approach to change. Our recommendations accommodated the current reality of physically separate laboratories in most large centers, and the substantial legacy of imagers practicing in only 1 or 2 modalities. Thus, the TT recommended: *Recasting multimodality imaging as a service characteristic rather than an individual person's scope of practice* (1). We believe these points look to the future by building on current care delivery and workforce constraints.

Training is another challenge. The Core Cardiology Training Symposium 4 is to be applauded for addressing multimodality imaging (2), albeit with content similar to the ACC's 2008 document (3). However, the 7-page section is contrasted with 42 pages on single modalities. Further, it does not require multimodality training when most directly addressing single versus multimodality training during general fellowship (*key principle #6: concurrent training across multiple imaging modalities is encouraged when possible*) (2). Closely aligned to training guidelines is the development of a multimodality core curriculum; we proposed a template in 2007, which is perhaps a starting point for much needed societal efforts (4).

If we are to realize the dream of multimodality imaging, we will have to address these and other concerns. A focus on communications and finding solutions will surely help us advance our field.

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