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Commentary: A first step in establishing evidence-based transcatheter competencies

Charles Crepy D'Orleans, BS,^a and
Kendra J. Grubb, MD, MHA, FACC^b

Charles Crepy D'Orleans, BS, and Kendra J. Grubb, MD, MHA, FACC

Transcatheter valve therapies and endovascular repair of the thoracic aorta have transformed cardiac surgery in the 21st century. According to the Society of Thoracic Surgeons, transcatheter aortic valve replacement surpassed every type of surgical aortic valve replacement in the United States by volume for the first time in 2019.¹ The desire to perform less-invasive endovascular and transcatheter procedures, growing indications, and increased availability of longitudinal outcomes data have driven the need for endovascular skills to be a core component of a cardiac surgeon's toolbox. Yet, standardized competencies have not been established and have relied mostly on clinical gestalt, limiting the consistency in endovascular skills acquisition during cardiac surgery training.

In this edition of the *Journal*, Moran and colleagues take the first steps in establishing the relevant core competencies that may guide evidence-based teaching approaches to transcatheter training: needs assessment.^{2,3} Via a scoping review, the authors identify 97 unique competencies, categorized and weighted by frequency, for which successful acquisition of transcatheter skills may be assessed. Although at its early stage, this review provides a step toward evidence-based competencies and establishes the foundation for curriculum development. Currently, based on the Thoracic Surgery Directors Association thoracic surgery milestones, achieving the

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graduation target (level 4) does not specify criteria in transcatheter procedures, although several level 5 criteria broadly discuss the resident's ability to perform "minimally invasive, percutaneous, or robotic approaches to valvular heart disease."⁴ However, the issue remains: lack of clear, specific, and explicit technical transcatheter skills a resident must learn perpetuates the ambiguity and lack of standardization in surgical training. This issue highlights the significance of Moran and colleagues' data, which provide a set of well-defined competencies crucial to addressing how we will define successful achievement of a transcatheter milestone.

Furthermore, given the breadth and variability of the topic Moran and colleagues sought to explore, a scoping review was appropriate for an initial needs assessment of transcatheter cardiovascular procedure competencies, as it provided the authors with the ability to account for greater diversity of relevant literature and explore this novel question in ways that might have been limited by the narrow parameters of other literature reviews, notably that of a systematic review with meta-analysis.⁵ Nevertheless, it is important to acknowledge certain limitations of scoping reviews, especially the variability in methodology, lack of depth, and reliance on successful "key word" search, which may diminish the quality of the studies being included.⁵

From ^aEmory University School of Medicine; and ^bDivision of Cardiothoracic Surgery, Structural Heart and Valve Center, Emory University, Atlanta, Ga.

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Address for reprints: Kendra J. Grubb, MD, MHA, FACC, Division of Cardiovascular Surgery, Emory University School of Medicine, 550 Peachtree St NE, Davis-Fischer, Atlanta, GA 30308 (E-mail: kjgrubb@emory.edu).

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While a scoping review was appropriate in this initial phase, systematic analyses may be warranted for future exploration. Importantly, Moran and colleagues provide an introduction to possible transcatheter cardiovascular competencies, meaning competencies for consideration. Given the exhaustive nature of the competencies identified, questions remain regarding the necessity, practicality, and function of each. A methodology for evaluation must be developed to assess each competency individually to devise a more focused list of fundamentals before moving on to any subsequent steps in curriculum development and addressing this unmet need.

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Commentary: The train has left the station: Run fast or look for the next train

Barbara C. S. Hamilton, MD, MAS, and
Tom C. Nguyen, MD, FACS, FACC

A seismic shift is occurring in the management of structural heart disease. In North America, the rate of transcatheter aortic valve replacement (TAVR) exceeds that of conventional surgical replacement.¹ Our colleagues in interventional cardiology have nimbly adopted the skills needed to perform percutaneous valvular procedures. Because TAVRs are increasingly accomplished via percutaneous femoral access, the need for surgical presence has been called into question from outcome and economic standpoints.^{2,3} Furthermore, future “single operator” devices may eliminate the need to have 2 physicians available. The success of TAVR has blown open the evolution of

Barbara C. S. Hamilton, MD, MAS, and Tom C. Nguyen, MD, FACS, FACC

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Management of structural heart patients is rapidly evolving as percutaneous treatments gain traction. Structured transcatheter aortic valve replacement training is crucial to prepare for the future of cardiac surgery.

From the Division of Cardiothoracic Surgery, Department of Surgery, University of California, San Francisco, San Francisco, Calif.

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Address for reprints: Tom C. Nguyen, MD, FACS, FACC, Division of Cardiothoracic Surgery, Department of Surgery, University of California San Francisco, 513 Parnassus Ave, Room S-321, San Francisco, CA 94143 (E-mail: tom.c.nguyen@gmail.com).

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percutaneous valvular interventions. Despite this fundamental change, no method of training cardiac surgery residents to independently perform these procedures has been established. Expectations are ambiguous and varied, and determination of competency is at the whim of the educator. Current guidelines require that residents perform only 5 TAVRs as the primary surgeon and 10 TAVRs as an assistant.⁴ In this fashion, we are not sufficiently preparing our current trainees to be cardiac surgeons of the future.