

ASK THE EXPERTS

How Has the Heart Team Concept Evolved, and What's Next?

Exploring how multidisciplinary heart teams are adapting to expanding TAVR volume, evolving technologies and imaging advances, and the demand for efficient, individualized care grounded in diverse expertise.

**With Chad Kliger, MD; Kimberly A. Skelding, MD, FACC, FAHA, FSCAI;
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Over the last 15 years, the multidisciplinary heart team (MDHT) has evolved from a procedural requirement into a fundamentally patient-centered model of care. What began as a collaborative framework has matured into the central mechanism by which complex decisions are made, therapies are delivered, and outcomes are optimized. What has changed most is not simply the expansion of therapeutic options, but the deliberate integration of expertise to ensure that each patient with structural heart disease (SHD) receives the most appropriate, individualized treatment.

At its core, the modern MDHT is defined by its ability to integrate diverse expertise around the patient. SHD care now spans transcatheter interventions, minimally invasive surgical techniques, and hybrid approaches for increasingly complex pathology. The most effective MDHTs are those that remain modality agnostic and

pathology focused, selecting therapies based on anatomy, risk profile, and lifetime disease management rather than procedural ownership or training background. Rather than anchoring decisions to specialty silos, the focus must be on building durable bridges across specialties and leveraging local expertise.

Advanced imaging has become a cornerstone of this evolution. Multimodality imaging is no longer limited to diagnosis; it is now central to preprocedural planning, procedural simulation, and intraprocedural guidance. High-level imaging expertise allows MDHTs to anticipate challenges, optimize device selection, and enhance procedural precision—directly improving safety, efficiency, and outcomes.

Partnerships with industry have also played a critical role. Collaboration between clinicians and device manufacturers has accelerated innovation by enabling early access to transformative technologies while fostering education around device use. Importantly, continuous feedback from experienced proceduralists, working in parallel with industry scientists and engineers, has driven iterative improvements in device design and safety, allowing therapies to expand responsibly to broader and more complex patient populations.

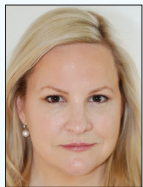
Regulatory oversight by agencies such as the FDA and Centers for Medicare & Medicaid Services (CMS) in the

United States remains essential to this ecosystem. These bodies help ensure that new technologies meet rigorous standards for safety and efficacy while supporting appropriate and timely reimbursement, thereby facilitating responsible patient access to innovation.

Looking ahead, the next evolution in MDHTs must be deliberate and forward-shaping. The MDHT must continue to evolve toward greater efficiency while simultaneously expanding depth of disease-specific expertise. As disease complexity increases and therapeutic options expand, the MDHT must move from a reactive, case-based model to a proactive system designed around patient needs, long-term outcomes, and accountability. This requires MDHTs that are modality agnostic, pathology focused, and empowered to select the best therapy without deference to historical training boundaries. Imaging expertise must

be embedded early in decision-making, irrespective of an initial surgical or transcatheter bias, to proactively define procedural strategy.

Emerging technologies, including artificial intelligence and advanced analytics, will further enhance diagnosis, planning, risk stratification, and procedural efficiency. Forward-looking regulatory frameworks that balance innovation with rigorous standards for safety and efficacy will remain essential. Alignment among industry partners, continued evidence generation, and fiscal responsibility will be critical to ensure that appropriate patients receive timely access to transformative therapies. Ultimately, the true driver of the next era will be MDHTs that are intentional, integrated, adaptable, and unified around a single mission: delivering the safest, most effective, and most personalized care for all patients with complex SHD.



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The discussion of patients in a heart team meeting currently carries a class I recommendation from the American College of Cardiology and American Heart Association. Further, the Centers for Medicare & Medicaid Services mandates the use of a heart team at institutions performing transcatheter aortic valve replacement (TAVR) and transcatheter mitral valve edge-to-edge repair as a requirement for Medicare reimbursement. This approach came to fruition based on pivotal TAVR trials where all patients presenting for enrollment were discussed by a multidisciplinary group prior to the procedure.

There is wide variability in how these meetings evolved from an academic presentation discussing current evidence and shared decision-making to a quick discussion of procedure preparation. This slide into an abbreviated version of the initially verbose conferences to a synopsis meeting can be a reasonable approach in certain settings but may be inappropriate in others.

The process by which a patient presents to the valve team and their travel through the evaluation and workup is paramount. Thoughtful discussions by the surgical team and the interventional team done independently with the goal of educating the patient and getting at the core of the patient's goals, wishes, and concerns is vital to the ethical handling of this workup. It is important that the patient understands the process much more in-depth than a routine informed consent process. We have moved into a younger and lower-risk population. As we provide them with additional quantity and quality of life, long-term outcomes become more important. As members of the heart team, we bear a much higher burden.

The sheer volume of these procedures does not allow for the extensive deliberations around the real or virtual table of the past, but heart team discussions still must be concise, directed, and exceedingly patient-focused. The work of the heart team members is not lessened, but the timing does shift. Much more of the discussions, deliberations, and plans are done prior to the "formal" heart team meeting and must be presented in an abbreviated fashion to the experts in the room, who may or may not have additions to patient care. Quickly providing the plan, the bailout strategy, and the thoughts of the patients/family become the focus. Proceduralists are no longer merely presenting raw data but rather are synthesizing the available literature and the patient's decision-making. The prework is now part of the process, and the most-time consuming aspect. Just like a coach and team will prepare hours on their strategy before an important game, we will do the same and similarly hope for a win.



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The heart team was formalized in the early days of TAVR during the PARTNER trials to ensure shared decision-making between interventional cardiology and cardiac surgery and to facilitate appropriate patient selection for a novel, transformative therapy. As TAVR has evolved from a high-risk procedure with limited data to become the standard of care for most patients with aortic stenosis, so too has the heart team evolved from gatekeeper to a general model of multidisciplinary, collaborative cardiovascular care.

As more patients across the spectrum of surgical risk are undergoing TAVR, the volume of patients needing timely treatment has increased and the proportion of patients that pose challenging management dilemmas has generally decreased. The contemporary heart team must balance the imperative to reduce practice variability and leverage expertise across disciplines to provide thoughtful, patient-centered care with the need to streamline care pathways and improve throughput where necessary.

One way to accomplish this would be to have only a single operator perform preoperative assessment for

straightforward patients. Parameters including age and baseline risk could be incorporated to identify patients for whom there is likely to be broad consensus that TAVR is the preferred treatment modality and forego separate assessment by both an interventional cardiologist and a surgeon. This workflow requires that all operators assessing patients for TAVR possess the expertise required to evaluate anatomic suitability and procedural risk. Close collaboration will be required to ensure that operators are aligned on the procedural plan, including need for additional steps that increase complexity such as balloon valve fracture and leaflet modification. Interventional cardiologists and surgeons will also need to agree on patients' appropriateness for salvage sternotomy in advance of the procedure, so decisions are not being made in the throes of a complication. Even if patients are not all evaluated jointly in the clinic, they should still be reviewed in the context of heart team discussions to ensure all parties have an opportunity to share their perspectives. When the heart team identifies a patient who is more complicated than was initially apparent, a subsequent visit with a second operator can be arranged on an as-needed basis.

A program's ability to streamline workflows to maintain quality outcomes while optimally deploying finite resources will be contingent on changes to existing reimbursement models. Mandatory reporting of outcomes to national registries should be maintained to ensure changes do not result in unanticipated consequences. In the modern era of continually evolving novel transcatheter therapies and surgical innovation, decision-making has become simpler for some patients and more complex for others. The heart team must be empowered to adapt to the needs of individual patients rather than following a formula that was initially conceived decades ago in a very different era.



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At Saint Luke's Mid America Heart Institute, the heart team has evolved from a disorganized system in which a cardiologist and cardiothoracic surgeon separately evaluated patients with severe aortic stenosis to an organized and well-staffed multidisciplinary clinic in which patients with aortic, mitral, or tricuspid valve disease undergo appropriate testing before seeing a cardiologist and surgeon together to evaluate all options for the treatment of valve disease. The goal is for the patient to leave that single office visit with a plan for the management of their valve disease.

The heart team has also expanded to include structural nurse practitioners and dedicated clinic coordi-

nators who assist in triaging outpatients, optimizing medical therapy for appropriate patients, seeing inpatient consults, discharging patients postprocedure, and seeing postprocedure patients in follow-up. A small group of engaged interventional cardiologists, surgeons, structural echocardiographers, anesthesiologists, and certified registered nurse anesthetists performs most transcatheter valve procedures together. The engagement of surgeons during procedures is essential to their understanding of what can and cannot be achieved with transcatheter procedures, particularly when they see patients directly referred to them.

All of this is critical to a high-functioning valve program, as each group has much to learn from the others in the team. Although there has been recent chatter regarding the re-evaluation of the TAVR National Coverage Determination possibly resulting in the elimination of the “two operator” rule, cardiothoracic surgery at our institution intends to remain engaged in TAVR and other transcatheter valve procedures going forward. In fact, I think that two operators are

necessary for optimal TAVR workflow and outcomes, although those two operators do not necessarily need to include a cardiologist and surgeon. We utilize two interventional cardiology operators for all complex procedures, including transcatheter mitral valve edge-to-edge repair, transcatheter mitral valve replacement, transcatheter tricuspid valve edge-to-edge repair, transcatheter tricuspid valve replacement, paravalvular leak closure, and electrosurgical procedures, among others.

The only thing that needs to change, in my opinion, is a continued subspecialization of the field. The cardiologists and surgeons engaged in the space should dedicate their time to it, and providers who are not engaged should not be involved. With the exponential increase in new technologies and imaging techniques and the increasing complexity of the patients we are treating, this is not a “plug-and-play” situation in which any provider can be substituted for another. Although dedication is required from all members of the heart team in order to succeed in the structural heart space, the benefit to patients and their gratitude are the rewards that make it worthwhile. ■