Why the heart team model is non-negotiable as structural options multiply

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The market of structural heart disease management has undergone a profound transformation, moving beyond traditional surgical interventions to embrace a burgeoning array of transcatheter and hybrid procedures. This rapid evolution, while offering less invasive options for patients previously deemed inoperable or high-risk, simultaneously introduces a new layer of complexity for clinical decision-making. Navigating this intricate web of choices, from patient selection to procedure planning and post-procedural care, necessitates a coordinated, multidisciplinary approach that transcends individual specialty silos.

KEY TAKEAWAYS

- The Pivot: The proliferation of transcatheter and hybrid structural heart interventions has made isolated decision-making untenable.
- The Data: While no single statistic can capture the benefit, the heart team model consistently improves patient selection, reduces complications, and enhances long-term outcomes across various structural heart conditions.
- The Action: Clinicians managing patients with structural heart disease must actively engage with or establish a formal heart team to ensure optimal, evidence-based care.

Managing patients with structural heart disease has historically relied on the expertise of individual cardiologists and cardiac surgeons. But the advent of transcatheter aortic valve implantation (TAVI) fundamentally altered this paradigm, demonstrating that a collaborative approach between interventional cardiologists and cardiac surgeons could yield superior results for complex cases. This initial success with TAVI has since expanded across the spectrum of structural heart interventions, including mitral valve repair and replacement, tricuspid valve interventions, and left atrial appendage occlusion, among others. Each new therapeutic option, while showing a 30% reduction in rehospitalization rates, adds layers of diagnostic nuance and procedural considerations that no single specialist can reasonably master in isolation.
The core principle of the heart team model is the integration of diverse clinical perspectives to formulate a comprehensive, individualised treatment plan. This typically involves interventional cardiologists, cardiac surgeons, imaging specialists (echocardiographers, cardiac CT/MRI specialists), heart failure specialists, electrophysiologists, anaesthesiologists, and geriatricians. The team's collective expertise allows for a holistic assessment of patient comorbidities, anatomical complexities, procedural risks, and long-term prognosis, moving beyond a simple 'surgical vs. transcatheter' dichotomy. The goal is not merely to select a procedure, but to determine the optimal timing and sequence of interventions, considering the patient's overall health trajectory and quality of life goals. This is particularly relevant for older patients with multiple comorbidities, where the balance of risk and benefit for any intervention becomes exceptionally delicate.

The Evolution of Collaborative Care

The concept of a multidisciplinary team is not novel in medicine, but its formalisation and widespread adoption in structural heart disease are relatively recent. Early experiences with TAVI highlighted the necessity of this collaborative framework. Patients eligible for TAVI often presented with significant comorbidities that complicated surgical risk assessment. The heart team provided a forum for detailed discussion, allowing for a more accurate risk stratification and a shared decision-making process with the patient and their family. This approach ensures that all relevant clinical data, imaging findings, and patient preferences are thoroughly considered before committing to an invasive procedure. The team approach has also shown to be a strong predictor of survival in endocarditis, further demonstrating its value in complex cardiac conditions.
Beyond TAVI, the heart team's role has expanded to encompass the entire spectrum of valvular heart disease. For instance, in severe mitral regurgitation, the choice between surgical repair, surgical replacement, or transcatheter mitral valve repair (TMVr) depends on factors such as valve morphology, left ventricular function, patient symptoms, and surgical risk. The imaging specialist provides detailed anatomical assessment, identifying suitability for specific transcatheter devices. The heart failure specialist evaluates the impact of mitral regurgitation on cardiac function and overall prognosis, guiding the urgency and type of intervention. The cardiac surgeon offers insights into the feasibility and durability of surgical options. This integrated discussion prevents suboptimal choices that might arise from a single-specialty perspective.

Navigating the Expanding Toolkit

The rapid pace of innovation in structural heart interventions means that new devices and techniques are continually emerging. This expansion, while beneficial for patients, presents a challenge for clinicians to stay abreast of the latest evidence, indications, and procedural nuances. For example, the development of various transcatheter tricuspid valve repair and replacement systems requires a deep understanding of tricuspid valve anatomy, device specificities, and patient selection criteria. Each device has its own learning curve and specific anatomical requirements, making a centralised,

team-based approach essential for maintaining expertise and ensuring patient safety. Without a dedicated heart team, individual practitioners might struggle to gain sufficient experience with the full range of available options, potentially limiting access to the most appropriate therapy for a given patient.

The heart team also plays a critical role in managing complications and refining procedural protocols. By collectively reviewing outcomes, identifying patterns, and discussing challenging cases, the team fosters a culture of continuous improvement. This iterative process allows for the refinement of patient selection criteria, optimisation of imaging protocols, and enhancement of procedural techniques. This internal quality assurance mechanism is vital for ensuring high standards of care as new technologies are integrated into clinical practice. The collective experience of the team often identifies subtle patient characteristics or anatomical features that predict better or worse outcomes with specific interventions, knowledge that is difficult for an individual clinician to accumulate quickly.

The Role of Imaging and Shared Decision-Making

Advanced cardiac imaging is the cornerstone of structural heart disease management, and the heart team model leverages this expertise to its fullest. Cardiac CT, transesophageal echocardiography (TEE), and cardiac MRI provide detailed anatomical and functional information essential for procedural planning. The imaging specialist within the heart team interprets these studies, highlighting key measurements, potential challenges, and anatomical variations that might influence device selection or procedural approach. This collaborative review of imaging data ensures that all team members have a shared understanding of the patient's anatomy and pathology, facilitating informed decision-making. For a deeper dive into cardiac imaging, the Oxford Handbook of Cardiology offers a concise guide to modern cardiological practice.

Shared decision-making with the patient is another critical component of the heart team approach. Given the complexity of structural heart disease and the array of treatment options, patients often face difficult choices with significant implications for their quality of life. The heart team, by presenting a unified, well-considered recommendation, can better educate patients about the risks and benefits of each option. This structured discussion empowers patients to make informed choices that align with their values and preferences. The team's ability to articulate a consensus opinion, backed by multidisciplinary expertise, instils confidence in patients and their families, fostering trust in the treatment plan. This is particularly important when considering interventions for conditions like severe aortic stenosis in elderly, frail patients, where the goal might shift from extending life to improving functional status and symptom relief.

Challenges and Future Directions

Implementing and sustaining an effective heart team model is not without its challenges. It requires significant institutional commitment, dedicated resources, and a culture of collaboration among specialists who may traditionally operate independently. Time constraints, differing professional perspectives, and the need for standardised protocols can all pose hurdles. But the growing evidence base supporting the heart team approach, coupled with the increasing complexity of available therapies, makes its widespread adoption imperative for patient safety. The universal heart failure definition issued by global societies highlights the need for consistent, team-based approaches to complex cardiac conditions.

Looking ahead, the heart team model will likely evolve further. The integration of artificial intelligence and machine learning tools may assist in risk stratification and patient selection, but these technologies will augment, not replace,

the human element of multidisciplinary discussion. Telemedicine could facilitate virtual heart team meetings, expanding access to expert opinions for patients in remote areas. The focus will remain on optimising patient outcomes through a collaborative, evidence-based approach that adapts to the ever-changing trial pipeline of structural heart disease interventions. The goal is to ensure that every patient receives the most appropriate, safest, and most effective treatment, tailored to their unique clinical profile. The alternative, a return to siloed decision-making, risks suboptimal care and increased patient morbidity in an era of unprecedented therapeutic choice.

CLINICAL IMPLICATIONS

The proliferation of structural heart interventions means that no single specialist can reasonably maintain expertise across all available options and their intricate indications. GPs and referring cardiologists must recognise that a formal heart team evaluation is not merely a recommendation but a necessity for optimal patient care in this rapidly evolving field. Referring patients to centres with established, active heart teams ensures a comprehensive assessment that considers all therapeutic avenues, not just the ones a single practitioner is most familiar with.

For interventionalists and surgeons, the heart team model demands a shift from individual autonomy to collective responsibility. This requires humility, a willingness to engage in robust debate, and a commitment to shared decision-making. The benefits extend beyond individual patient outcomes, fostering a learning environment that drives continuous improvement in procedural techniques and patient selection, ultimately enhancing the reputation and capabilities of the entire cardiac program.

Patients, particularly those with complex comorbidities or advanced age, stand to gain the most from this integrated approach. They receive a treatment plan that has been rigorously vetted by multiple experts, reducing the risk of inappropriate interventions or missed opportunities. This multidisciplinary consensus also provides a clearer, more consistent message to patients and their families, empowering them to participate meaningfully in decisions about their own care. The days of a single doctor dictating a complex structural heart intervention are, thankfully, behind us.

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