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# The aortic team and bicuspid aortic valve patients

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The “Heart Team” concept was mentioned for the first time in the European Guidelines for myocardial revascularization in 2010 (1). Since then, the term “Heart Team” (HT) or “Multidisciplinary (Heart) Team” has been adopted in a range of pathologies, including valvular heart disease, infective endocarditis, aortic disease, and others. A “Heart Team” is often linked to a center that is specialized for the treatment of a specific pathology. An example is the definition of a “Heart Team” within a “Heart Valve Center”, as described in the most recent ESC/EACTS Guidelines for the management of valvular heart disease (2). It is important to realize however, that guidelines rate the HT recommendations mainly as a Class IC recommendation. Although the valve guidelines recommend the use of a HT, the assigned level of evidence clearly demonstrates lack of supporting data, as it is derived from expert consensus and/or small studies, retrospective series, or registries.

A HT can only be successful if values that are commonly attributed to the term “teamwork” are integrated. If professional egos are not willing to adopt these values, the concept is destined to fail. It is also of importance to note that a decision from one HT may completely differ to another HT. Having a transparent decision process using a standardized protocol enables later review and possible amendment of the protocol.

Even if a well-functioning HT is present, other factors may drive the decision process to perform a specific procedure or intervention. Marcus *et al.* demonstrated a substantial decline in HT utilization over time within the context of transcatheter aortic valve replacement (TAVR),

specifically in older and more frail patients, who are supposed to be candidates for TAVR only and not for open surgery, thus indicating a preselection for those patients, which are still discussed in a HT (3). It is important to avoid such a preselection so that every patient with a specific pathology should be discussed in a HT. Further evidence of decreasing HT collaboration in the context of TAVR is the statement that the German Society for Thoracic-, Cardiac- and Vascular Society made on a position paper of the German Society of Cardiology (4), indicating that other motivating factors other than patient benefit may be driving clinical decision making in this area. Even guidelines of different societies of the same specialty may differ in their recommendations (5).

In addition to a standardized protocol, a successful HT concept requires clarity with regard to nomenclature, designation of team members, frequency of meetings and quality assurance evaluations within the team and, occasionally, by an external team.

As mentioned above, the HT concept has also been implemented for aortic pathologies using the term “Aortic Team” (AT). As aortopathies and bicuspid aortic valves (BAV) are closely linked, it is a logical consequence that members of the AT are incorporated into HT discussions of BAV patients. Due to the complexity of both pathologies and their association with each other, a clear nomenclature is mandatory to speak with the same language and to compare results with other centers. With regard to BAV, a recent international consensus paper on the nomenclature, classification of BAV and its associated aortopathy has

been published (6). This document should act as a basis for patient evaluation and decision making.

It is important to mention that in contrast to valve disease and myocardial revascularization, where three basic treatment options exist (i.e., medical, interventional, surgical), BAV and its associated aortopathies represent a pathology in which generally only two treatment options are possible: Medical/surveillance or surgery. Although guideline compliant clinical decision making has resulted in excellent outcomes (7), understanding the complex pathologies of BAV and related aortopathy phenotypes has led to a more patient specific decision-making process in recent years (8,9).

Therefore, a “Heart Team” for the BAV should involve members of the “Aortic Team”, as both pathologies frequently co-exist. Besides cardiac surgeons, cardiologists (non-interventional/interventional), imaging specialists and cardiovascular anesthesiologists should also be involved, as well as specialties with an expertise in patient specific aspects (e.g., geriatricians, neurologists) if required. As these disciplines should work closely together, the definition mentioned above of a specialized “center” becomes evident (2). As referring cardiologists or centers usually know patients for a longer time, they should be involved in the decision process in these regular team meetings. Today, innovative telecommunication makes it easy to involve them in the HT meeting.

However, such a “Multidisciplinary Heart Team”, seems to be an idealized goal and not practicable, as in the clinical setting such a team with regular and standardized meetings is not realistic.

We, therefore, advocate in the context of BAV and its associated aortopathies to implement a “Nucleus Team” consisting of cardiac surgeons, cardiologists, vascular surgeons and anesthesiologists as well as an additional “Core Team” getting involved if specific patient related pathologies are present (e.g., Marfan syndrome, frail patient).

Regular meetings, discussing not only selected, but every patient with the relevant pathology, as well as a standardized meeting protocol and documentation with regular review of the decisions will enable an optimal patient specific decision process and will further improve patient outcome.

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## Footnote

*Conflicts of Interest:* The authors declare no conflicts of interest.

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## References

1. Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS); European Association for Percutaneous Cardiovascular Interventions (EAPCI); Wijns W, et al. Guidelines on myocardial revascularization. *Eur Heart J* 2010;31:2501-55.
2. Vahanian A, Beyersdorf F, Praz F, et al. 2021 ESC/EACTS Guidelines for the management of valvular heart disease. *Eur Heart J* 2022;43:561-632.
3. Marcus G, Qiu F, Manoragavan R, et al. Temporal Trends and Drivers of Heart Team Utilization in Transcatheter Aortic Valve Replacement: A Population-Based Study in Ontario, Canada. *J Am Heart Assoc* 2021;10:e020741.
4. Cremer J, Heinemann MK, Mohr FW, et al. Commentary by the German Society for Thoracic and Cardiovascular Surgery on the positions statement by the German Cardiology Society on quality criteria for transcatheter aortic valve implantation (TAVI). *Thorac Cardiovasc Surg* 2014;62:639-44.
5. Hiratzka LE, Creager MA, Isselbacher EM, et al. Surgery for aortic dilatation in patients with bicuspid aortic valves. *J Am Coll Cardiol* 2016;67:724-31.
6. Michelena HI, Dalle Corte A, Evangelista A, et al. International consensus statement on the nomenclature and classification of the congenital bicuspid aortic valve and its aortopathy, for clinical, surgical, interventional and research purposes. *J Thorac Cardiovasc Surg* 2021;162:e383-e414.
7. Etz CD, Zoli S, Brenner R, et al. When to operate on the

- bicuspid valve patient with a modestly dilated ascending aorta. *Ann Thorac Surg* 2010;90:1884-90; discussion 1891-2.
8. Borger MA, Fedak PWM, Stephens EH, et al. The American Association for Thoracic Surgery consensus guidelines on bicuspid aortic valve-related aortopathy. *J Thorac Cardiovasc Surg* 2018;156:e41-e74.
  9. Etz CD, Borger MA. Bicuspid aortic valve-associated aortopathy: A slowly evolving picture. *J Thorac Cardiovasc Surg* 2018;155:472-3.

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