European Heart Journal - Imaging Methods and Practice (2025) **3**, qyaf124
https://doi.org/10.1093/ehjimp/qyaf124

ORIGINAL ARTICLE

EACVI survey on the role, structure, and implementation of heart teams in current cardiology practice

Vlatka Reskovic Luksic [1,*], Riitta Paakkanen[2], Tomaz Podlesnikar[3,4], Emmanuel Androulakis [5,6,7], Valtteri Uusitalo[8], Sara Moscatelli [9,10,11], Marc R. Dweck[12], Anna Baritussio [13], Jadranka Separovic Hanzevacki[1], and Thor Edvardsen [14,15]

[1]School of Medicine and University Hospital Center Zagreb, University of Zagreb, Kispaticeva 12, 10000 Zagreb, Croatia
[2]Pediatric Research Center, New Children's Hospital, Helsinki University Hospital and University of Helsinki, Helsinki, Finland
[3]Department of Cardiac Surgery, University Medical Centre Maribor, Maribor 2000, Slovenia
[4]Department of Cardiology, University Medical Centre Ljubljana, Ljubljana 1000, Slovenia
[5]King's College Hospital, NHS Foundation Trust, King's Health Partners, London, UK
[6]School of Cardiovascular and Metabolic Medicine and Sciences, King's College London, London, UK
[7]City St George's, University of London, Cranmer Terrace, London SW17 0RE, UK
[8]Clinical Physiology and Nuclear Medicine, HUS Diagnostic Center, Helsinki University Hospital and University of Helsinki, Helsinki, Finland
[9]Centre for Inherited Cardiovascular Diseases, Great Ormond Street Hospital, London WC1N 3JH, UK
[10]Institute of Cardiovascular Sciences, University College London, London WC1E 6BT, UK
[11]Paediatric Cardiology Unit, Royal Brompton Hospital, London SW3 6NP, UK
[12]British Heart Foundation Centre for Cardiovascular Science, University of Edinburgh, Chancellors Building, Little France Crescent, Edinburgh EH16 4SB, UK
[13]Department of Cardiac Thoracic Vascular Sciences and Public Health, Padua University Hospital, Padua 35128, Italy
[14]Department of Cardiology, Oslo University Hospital, Rikshospitalet, Sognsvannsveien 20, Oslo NO-0424, Norway
[15]Institute for Clinical Medicine, University of Oslo, Sognsvannsveien 20, Oslo NO-0424, Norway

Received 11 May 2025; accepted after revision 4 October 2025; online publish-ahead-of-print 18 November 2025

Abstract

Aims The Heart Team (HT) concept is underscored in multiple guidelines, but the practical application is still challenging.

Objective This survey, endorsed by the European Association of Cardiovascular Imaging (EACVI) Scientific Initiatives Committee and conducted by the EACVI Leaders of Tomorrow, aimed to explore the structure and dynamics of contemporary HTs in real-life clinical practice.

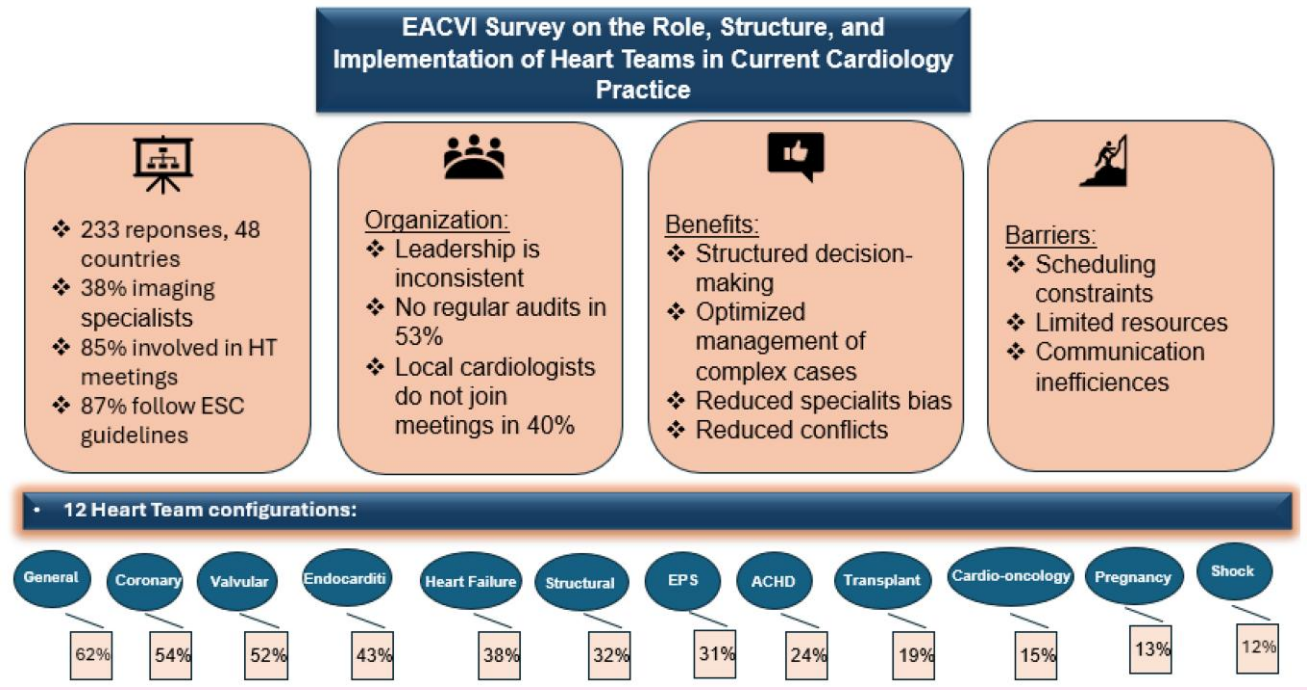
Methods and results The Survey comprised 24 questions, including single-choice, multiple-choice, and open-labeled formats. It addressed all cardiologists and associated specialists involved in the HT meetings via online platform. A total of 233 responses were collected from 48 countries, 203 (87%) from Europe. Most respondents were imaging specialists (38%) and general cardiologists (29%), with 85% actively engaged in HT meetings. Twelve distinct HT configurations were identified. Core HT members included general and interventional cardiologists, cardiac surgeons, and imaging specialists. Complex cases are usually discussed at HT meetings, and ESC guidelines serve as a guiding framework (87%). Leadership within HTs is inconsistent and regular HT audits are lacking in 53% of centers. The Heart Team predominantly focus on treatment planning (97%) rather than outcome review (45%) or education (36%). Key perceived benefits include structured decision-making

* Corresponding author. E-mail: vlatka.reskovic@gmail.com

(74%), optimized management of complex cases (69%), and reduced specialty bias (67%). Recognized barriers included scheduling constraints, resource limitations, and communication inefficiencies.

Conclusion This survey shows the important role of multidisciplinary HTs in contemporary clinical practice but reveals several areas of potential improvement. Addressing common challenges could result in more efficient HT practices and improve the care of complex patient cases in various cardiology subspecialty areas.

Graphical Abstract



Results from the EACVI survey on the role, structure and implementation of Heart teams in current cardiology practice. ACHD, adult congenital heart disease; ESC, European society of cardiology; EPS, electrophysiology; HT, heart team.

Keywords heart team • cardiologist • imaging specialist • multidisciplinary team

Introduction

The Heart team (HT) concept has become a cornerstone of contemporary cardiology practice,[1] leveraging a multidisciplinary approach to optimize patient care through collaboration on complex therapeutic strategies, patient education, and subsequent follow-up.[2] Despite being underscored in multiple guidelines, HT applications often face challenges in individualized decision-making and precise risk assessment.[2]

While HTs are widely acknowledged for enhancing survival and reducing hospitalization rates,[1] uncertainties remain regarding the frequency of meetings, communication protocols, and practical application of guidelines. Advances in cardiovascular care further challenge HTs to integrate new diagnostic and therapeutic options into clinical workflows faster than official guidelines can evolve. Emerging technologies, such as remote meetings, virtual reality and artificial intelligence, offer potential solutions to enhance HT organization,[3] though this concept is still evolving as a complement to in-person meetings. It is, however, important that HTs adapt and evolve to better meet the needs of individual patients and specific pathologies.[1]

This survey was endorsed by the European Association of Cardiovascular Imaging (EACVI) Scientific Initiatives Committee and aims to explore the structure and dynamics of contemporary Heart Teams in clinical practice, the clinical scenarios where the Heart team approach is most useful and to identify challenges and future areas for improvement.

Methods

The Survey was designed and conducted by the EACVI Leaders of Tomorrow (LOT) students and their mentors in collaboration with the EACVI Scientific Initiatives committee. It was developed in accordance with the established EACVI Criteria for Surveys[4] and comprised 24 questions (see Supplements), including single-choice, multiple-choice, and open-labeled formats.

The survey addressed all cardiologists and associated specialists potentially involved in the HT decision-making process. It was released on an online platform, and cardiologists from Europe and around the world received the invitation to participate via EACVI newsletter and social media. Data are reported as counts and percentages of the respondents in the specific question. The full list of questions is provided in Supplementary material.

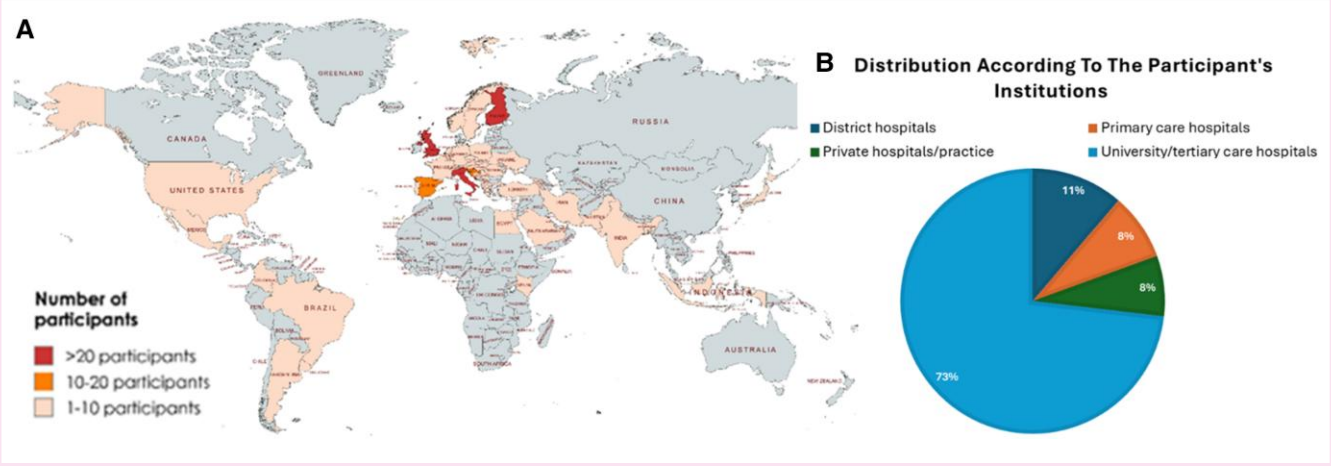


Figure 1 Distribution of participants from a total of 48 countries by a country (*A*) and by type of institution (*B*).

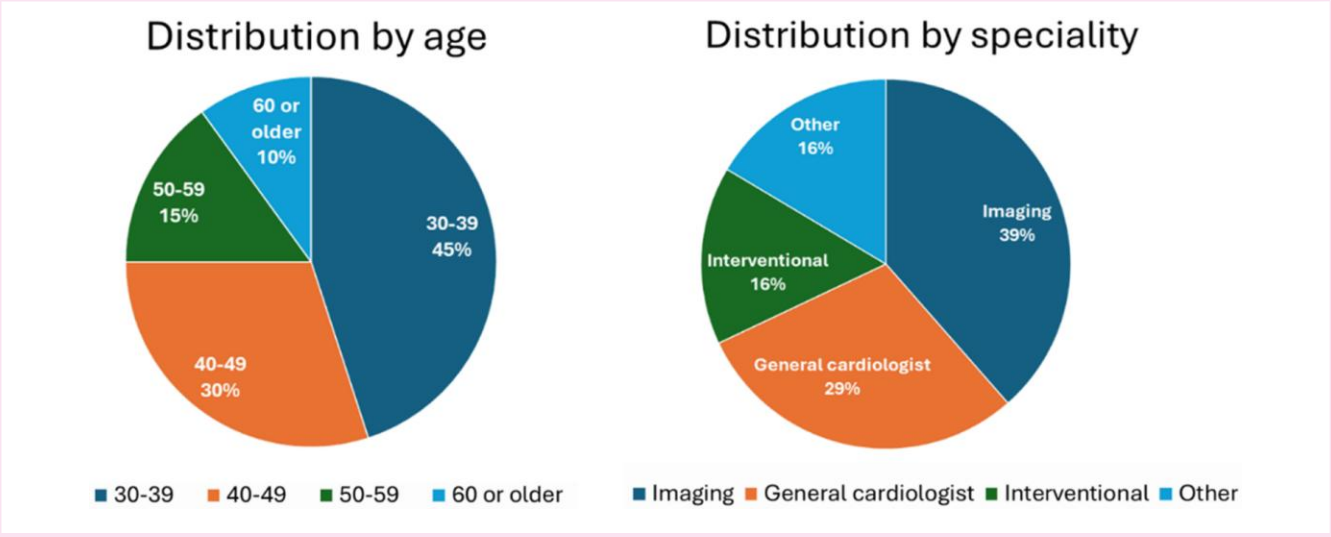


Figure 2 Distribution of the survey participants according to their age and specialties. Others include paediatric cardiologist (10), heart failure (6), cardiologists-intensivist (3), fellows/residents (3), cardiac surgeon (2), adult congenital heart disease (2), electrophysiology (2), radiology (2), infectious disease specialist (1), medical officer (1), internal medicine (1) and cardiac physiologist (1).

Results

Out of 233 responders from 48 different countries, 203 were from Europe (87%) and 30 (13%) from other regions. The majority were affiliated with tertiary care or university hospitals (73%) (*Figure 1*). Most participants were aged 30–39 years (45%), and half of them (50%) were male. Among participants, most of them were imaging specialists (38%) or general cardiologists (29%) (*Figure 2*).

Most of the participants were actively involved in HT meetings (85%). Twelve prevalent HT configurations for different types of cardiovascular conditions were identified to be common in the participating centers (*Figure 3*). Additionally, 23 participants (10%) highlighted other forms of HT for additional conditions [tricuspid valve (1), pulmonary arterial hypertension (1), preceptor roles in medical residency for clinical cardiology (1), paediatric and fetal HT (4), intensive care (1), cardiomyopathies (3), devices and pacing (2), imaging (3), sarcoidosis HT (1), and arrhythmias (1)].

Organization and members of heart teams

Core HT members typically include general and interventional cardiologists, cardiac surgeons, and imaging specialists (*Figure 4*). Additional specialties participate as needed and were identified through an open-labeled question, including infectious disease specialists, geriatricians, radiologists, clinical geneticists, ACHD specialists, electrophysiologists, gynaecologists, oncologists, and psychiatrists (all data showed in Supplements, Supplementary data online, *Table S1*). The distribution of core and additional HT members among different HTs are presented in detail in Supplements, Supplementary data online, *Figure S1*. The representation of the imaging specialists among HTs is shown in *Figure 5*.

In the participating centers, HT meetings are typically scheduled on a weekly basis. The frequency of these meetings is shown in *Figure 6*.

For complex cases, some of the HTs hold meetings on an as-needed basis. This is more frequent in HTs for endocarditis (31%), pregnancy (40%), cardio-oncology (30%), and shock HTs (44%) (see Supplements, Supplementary data online, *Table S2*).

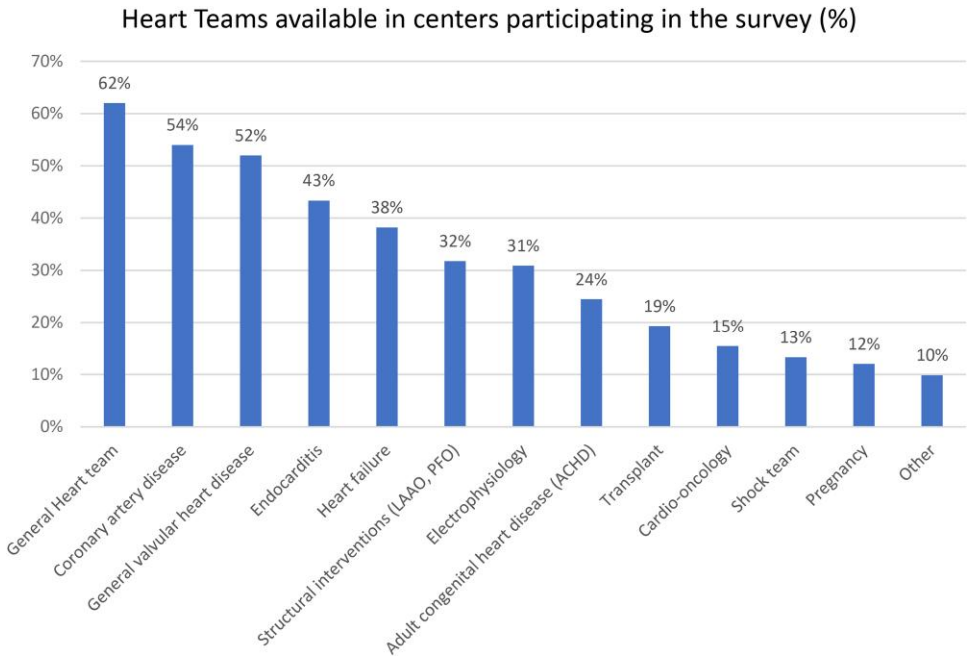


Figure 3 Distribution of the heart teams available in centers participating in the survey. ACHD, adult congenital heart disease; LAAO, left atrial appendage occluder; PFO, patent foramen ovale.

With respect to urgent referrals to the Heart Team, possible HT members who were available and involved in urgent ad-hoc meetings included general cardiologists (70%), interventional cardiologists (77%), imaging specialists (56%), cardiac surgeons (72%), and anesthesiologists/intensive care specialists (45%). However, 6% of respondents reported a lack of urgent HT availability locally.

Figure 7 shows the leadership within HTs, which generally appears unevenly delegated. The chair of the HT is usually the Head of the Cardiology Department (34%), followed by interventional cardiologist (14%). Only 7% of centers have a designated HT chair, while 19% lack one entirely, and 9% decide ad-hoc.

Patient follow-up and outcome documentation are typically handled by the consultant in charge (26%), the fellow presenting the case (22%), the HT chair (15%), or an administrative secretary (10%). There is no formal agreement in 24% of responses (*Figure 7*).

Regular audits of HT outcomes are lacking in 53% of centers, conducted irregularly in 34%, and performed regularly in only 13% (*Figure 7*).

The role of the heart teams

The distribution of patients referred to Heart Teams is shown in *Figure 8*. Patients with complex cardiac disorders are most commonly presented to the HT, but the distribution depends on pathology and HT type. Additionally, some HTs [general cardiology, coronary artery disease (CAD), valvular (aortic/mitral), adult congenital heart disease, structural intervention] primarily focus on surgical and interventional indications, while in others (heart failure, endocarditis, pregnancy, cardio-oncology, shock, transplant/VAD) medical therapy adjustment is the main topic (see Supplements, Supplementary data online, *Figure S2*).

Heart Teams primarily focus on treatment planning (97%) and less on reviewing clinical outcomes (45%) or educational initiatives (36%) (*Table 1*).

The key advantages of multidisciplinary HTs according to respondents included shared decisions for surgical or catheter interventions (75%), defined structure for effective decision-making (74%), improved management of complex cases with multispecialty expertise (69%), reducing sub-specialty bias for optimal care (67%), and minimizing professional or institutional conflicts (44%) (*Table 2*).

According to the multiple-choice question, ESC guidelines serve as a guiding framework during HT decisions (87%), supplemented by local institutional protocols and national guidelines (41%). Individual decisions based on specific clinical context influence 35% of cases, while expert opinions from literature play a role in 33% of all HTs. American guidelines are used in 31% of cases, and regional network guidelines are referenced in 18%.

Local cardiologists from primary and secondary care centers participate in HT meetings at tertiary centers through various approaches. The results of the multiple-choice question show that they join HT meetings usually remotely (47%), while 21% attend in person. However, in 40% of centers, local cardiologists do not join HT meetings at all. In 14% of centers, local cardiologists have a scheduled dedicated time for presenting cases to the HTs.

How to improve heart teams in clinical practice

Participants identified regular meetings (84%), mutual respect among team members (81%), shared decision-making (74%), and open discussions of concerns (60%) as pivotal factors for efficient HT meetings. Over half of the participants (53%) emphasized the importance of including multidisciplinary team members, such as nurses, perfusionists, technicians, and VAD specialists, into discussions. Defined leadership and team structure were considered important by 40%, while registries and audits (33%), sharing written conclusions with the team and patients (23%), and clearly defined roles (19%) were deemed less critical.

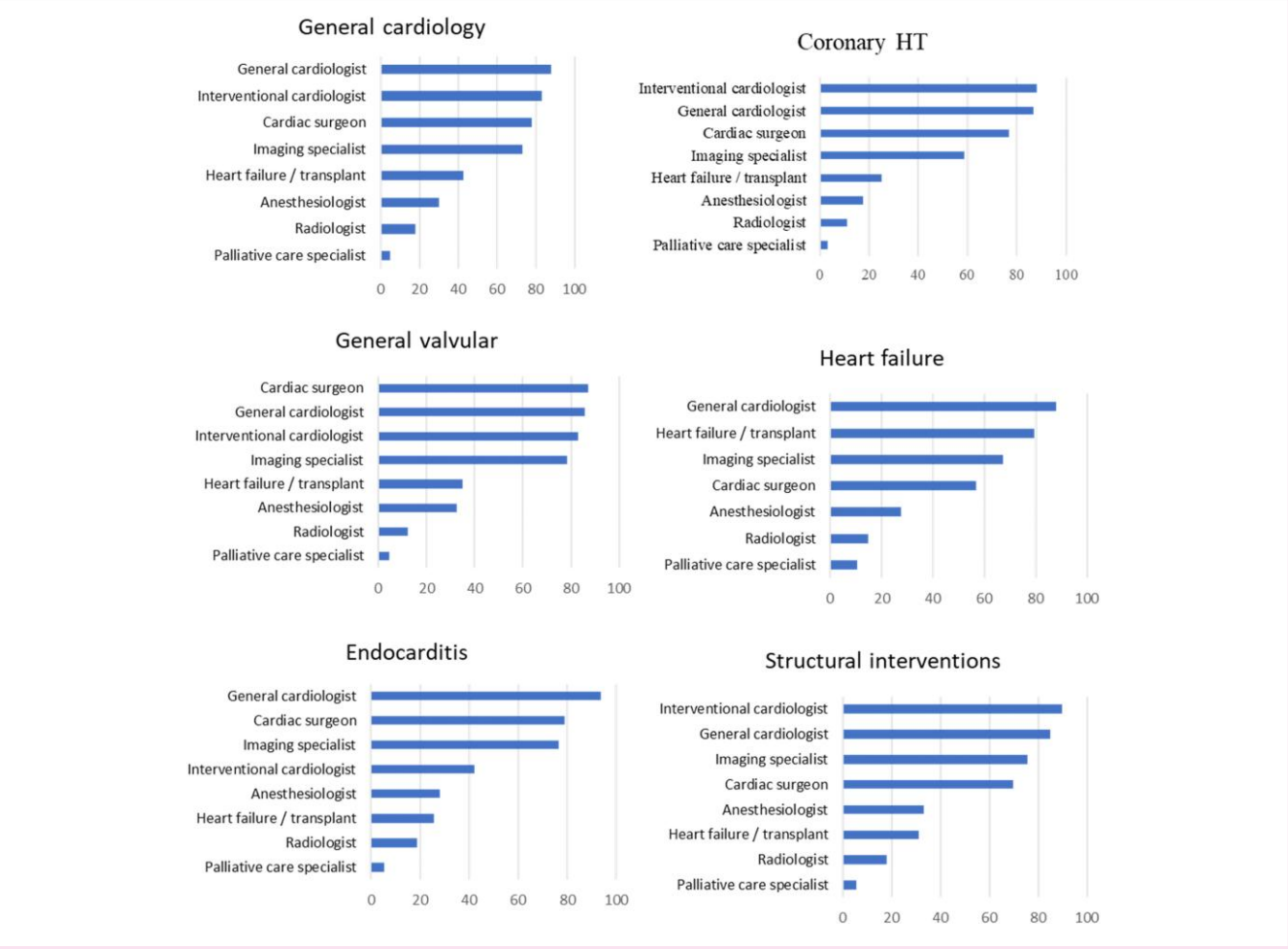


Figure 4 Core members of different types of heart teams. HT, heart team.

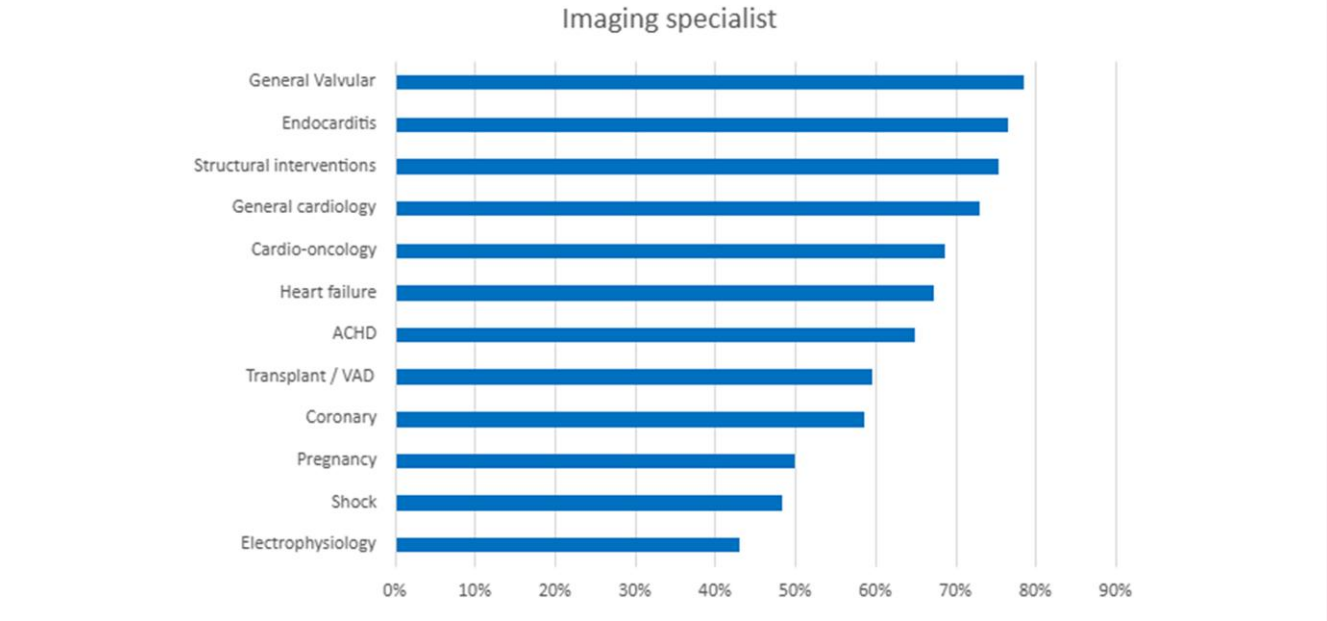


Figure 5 Representation of imaging specialists within heart teams. ACHD, adult congenital heart disease; VAD, ventricular assist device.

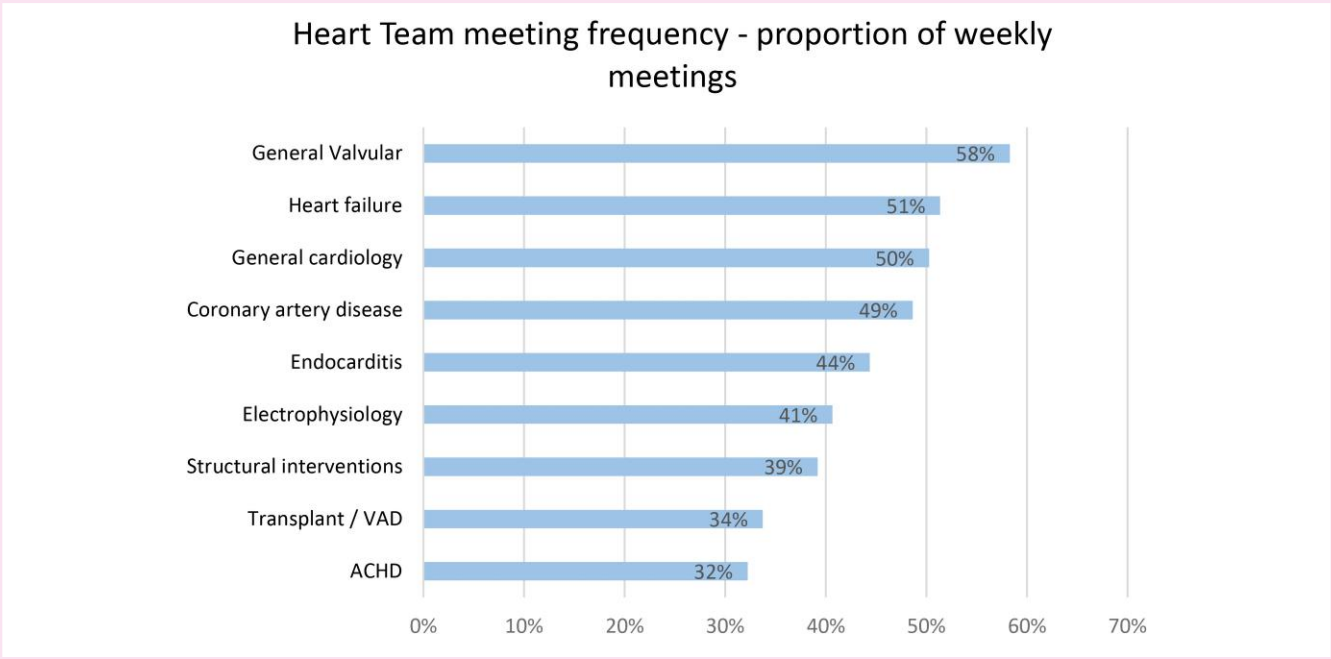


Figure 6 Organization of the heart teams—meeting frequency. ACHD, adult congenital heart disease; VAD, ventricular assist device.

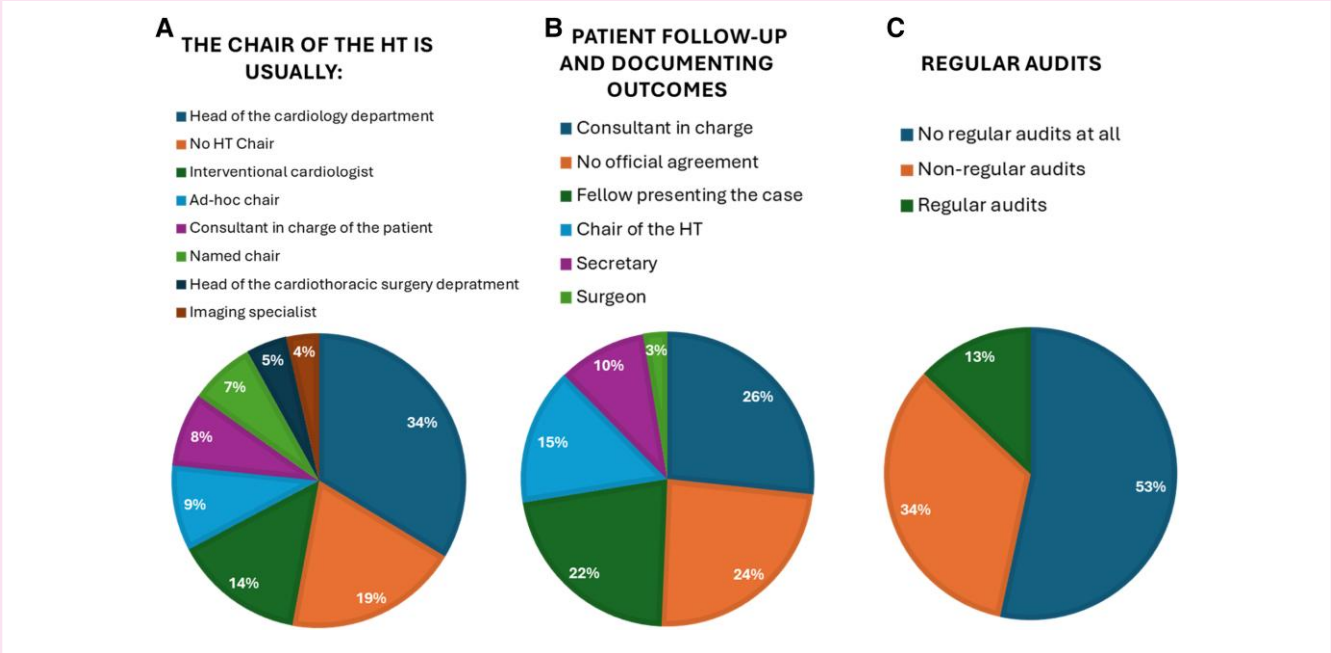


Figure 7 Organization of the heart teams: (*A*) Heart Team chair; (*B*) Patient follow-up and documenting outcomes; (*C*) Regular audits.

Primary barriers to effective HTs include scheduling, resource limitations, and communication issues, with limited patient-family engagement (*Tables 3* and *4*).

Discussion

Heart Teams have become a cornerstone in the management of complex cardiovascular diseases, promoting multidisciplinary collaboration to enhance clinical decision-making and improve patient outcomes. European society of cardiology guidelines consistently advocate structured, patient-centered, evidence-based approach to incorporating HTs into clinical practice. This survey highlights the operational aspects of HTs, emphasizing their relevance, while also identifying gaps between guideline recommendations and current practice. Compared with earlier surgeon-focused surveys focused primarily on HT functioning,[5] the present survey identifies a broader range of barriers in organizing and

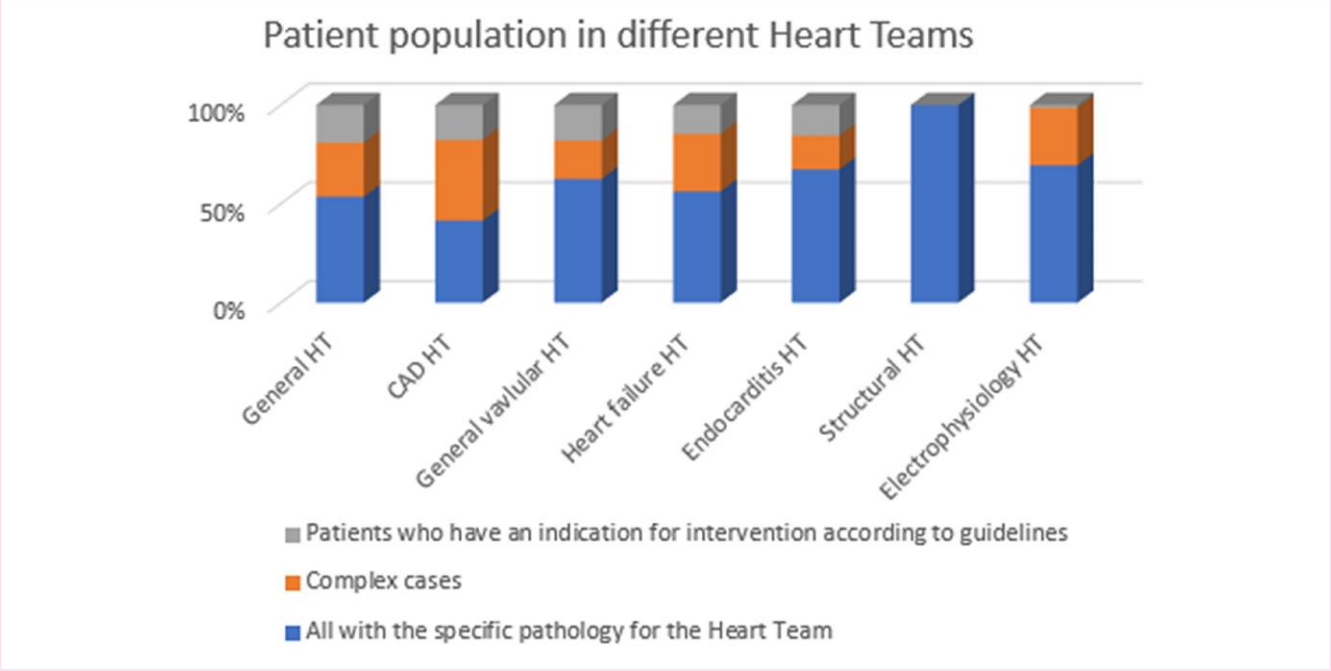


Figure 8 The patient population presented to different heart teams, shown as a percentage of multiple-choice question. Complex cases-category includes: complex cases, high risk patients and patients with equipoise between treatment options. Only one selection per respondent was analyzed. CAD, coronary artery disease; HF, heart failure; HT, Heart Team.

Table 1 Responsibilities of the heart teams shown as a percentage of multiple-choice question

Responsibilities of the heart teams	%
Treatment planning	97%
Reviewing clinical outcomes	45%
Education	36%
Effective communication	34%
Taking care of the cost-effectiveness of the procedures	23%
Research	21%
Clinical governance, including audit	16%

Table 2 The main perceived advantages of the heart teams, shown as a percentage of multiple-choice question

Main perceived advantages of the heart teams	%
Shared decision on indication for surgical or catheter intervention	75%
Defined structure for an effective decision-making process	74%
Facilitating decision-making for complex patients by inviting expertise from several specialties	69%
Reducing specialty bias for optimal patient care via shared decision-making	67%
Avoiding potentially conflicting professional and institutional interests	44%

operating HTs, which may pave the way to improving HTs function and patient care in the future.

Integration and role of imaging specialists in heart teams

The composition of HTs varies depending on the specific clinical context and institutional practices.[6] According to our survey, key members typically include general and interventional cardiologists, intensive care specialists, imaging specialists, and cardiac surgeons (*Figure 4*). Our results confirm that imaging specialists are essential in most HTs (*Figure 5*), providing essential diagnostic and procedural insights crucial for treatment planning.[7,8] However, their leadership roles within HTs remain limited. This suggests an opportunity to enhance the integration and recognition of imaging experts in decision-making hierarchies. Elevating their involvement could streamline diagnostic and therapeutic evaluation processes.

Disease-specific heart teams

This Survey shows that the most common disease-specific HTs are CAD HT (54%), VHD (52%), endocarditis HT (43%), and heart failure HTs (38%). In contrast, cardio-oncology and pregnancy HTs remain underrepresented,[9–15] representing areas for development.

CAD HTs are critical for planning optimal revascularization strategies.

The new 2025 ESC VHD guidelines reaffirm the central role of dedicated VHD HTs.[9] According to our survey, they exist in over the half of the centers, but only 55–60% of them meet on a regular weekly basis. Continuous quality evaluation and regular audits are rare. Most centers review all VHD patients, as recommended, though greater alignment with new guidelines and emphasizing attention to both asymptomatic and high-risk patients is the area for improvement.[9,16–18]

Table 3 Challenges in implementing hear teams into clinical practice, shown as a percentage of multiple-choice question

Challenges in implementing heart teams into clinical practice	%
Scheduling problems and lack of time for those meetings	55%
Resistance to change the structure in the hospital setting	49%
Communication failure within Heart Team members	41%
Understaffing and lack of time to hold HT meetings	39%
Communication failure with patient/families	22%
Overload as a backlog from COVID-19 pandemic	6%

Table 4 Obstacles in the creation of heart teams in the involved centers, shown as a percentage of multiple-choice question

Obstacles in the creation of heart teams	%
Lack of dedicated time for Heart Team meetings	63%
Team working environment within institutions and the impact of work politics	50%
Increased number of team members and cardiovascular interventions	38%
Development of interventional cardiology	35%
Increased number of referring cardiologists	33%
Need for additional training in communication skills	22%

Coronary artery disease HTs are critical for planning optimal revascularization strategies. ESC/EACTS guidelines[10–11] recommend multidisciplinary discussion to minimize bias (especially for complex cases with the same level of recommendation for PCI or CABG) and reduce inappropriate PCI or CABG use. Notably, 67% of survey respondents acknowledged the pivotal role of organized HTs in facilitating this process. Still, recent studies show that only 3% of eligible CAD patients undergo HT review,[19] highlighting a significant gap in guideline implementation. Our Survey shows CAD HTs are most prevalent in clinical practice (in 54% of centers), with weekly meetings in only half of these (49%). Coronary artery disease HTs typically include general cardiologists, interventional cardiologists, cardiac surgeons, and imaging experts. Patient participation is inconsistent, despite guideline recommendations.[10,11,19] Complex and high-risk cases remain the primary focus of CAD HT discussions in participating centers.

The role of CAD HTs is especially critical in acute coronary syndromes (ACS) requiring urgent revascularization or surgery.[12] According to our results, interventional cardiologists (77%) and cardiac surgeons (72%) are most frequently available for urgent consultations. Remote HTs may provide an effective alternative where surgical services are unavailable.[11]

The 2023 ESC Infective endocarditis (IE) guidelines emphasize the importance of a multidisciplinary HT approach,[13] advocating for teams that include general cardiologists, imaging specialists, cardiovascular surgeons, infectious disease specialists, microbiologists, and specialists in outpatient parenteral antibiotic therapy. Additional specialists may be involved based on the clinical presentation.[13,20] Cardiologists with expertise in multimodality imaging are particularly vital in these teams. Regular weekly meetings and *ad hoc* discussions facilitate timely decision-making and coordination of care.[13] However, our Survey shows that endocarditis HTs exist in less than half of the centers, with regular weekly meetings in only half of them. The composition of endocarditis HTs generally aligns with guidelines, discussing commonly all endocarditis cases, especially complex cases and those with surgical indications.

An important IE guideline recommendation is improving communication between referring centers and heart valve centers including discussions on early referral, patient transfer, and shared protocols to facilitate continuous education of referring centers.[9] Our results suggest, however, that communication within the HT remains a challenge, identified by 41% of respondents as a significant obstacle to efficient teamwork, while 22% call for additional training in communication skills. Our results underscore the need for better adherence to guideline-directed communication and coordination strategies.

The 2021 ESC HF Guidelines[14] stress the role of multidisciplinary HTs in acute and chronic HF management,[14] which has been shown to improve the quality of care for complex HF patients.[21] These HTs are crucial throughout the HF trajectory, playing a role in treatment decision-making, patient education, and long-term monitoring, including terminal stages.[14] Multidisciplinary cardiomyopathy HTs are also recommended, additionally including genetic counsellors, clinical psychologists, electrophysiologists, and the transition of care from paediatric to adult services.[15] Despite their potential, HF HTs were reported in only 38% of the participating centers, with transplant HTs available in 19%. Weekly meetings are held regularly in half of the centers, but with minimal patient or family members involvement. HTs in HF primarily address interventions, surgery, and medical therapy adjustments for complex and high-risk cases. To optimize HF management, strategies should focus on increasing patient education and self-management, along with better integration of palliative care and transition-of-care practices.

Challenges and barriers

The survey identifies several impediments to the effectiveness of HTs, including logistical inefficiencies, lack of clear leadership roles, and inconsistent involvement of patients and families. Communication gaps and logistical demands further limit HTs from reaching their full potential. Overcoming these barriers requires institutional backing for regular, structured meetings, and establishing a formalized communication framework to promote interdisciplinary collaboration.[14]

Heart Teams tend to focus primarily on treatment planning, but there is a need to emphasize clinical outcomes review and education. As identified by respondents, the principal advantages of HTs include facilitating shared decision-making, providing a clear framework for effective decision-making, and reducing specialist bias through a multidisciplinary approach. Although the decision making process is mainly based on the ESC guidelines (87%), in the 35% of the centers the final decision is individual, based on specific clinical context.

To align practices with recommendations and enhance HT functionality, it is important to establish a robust leadership structure within HTs, where each specialist's role is clearly delineated. Furthermore, more than half of the centers currently lack regular audits of HT outcomes, similar to the results of slightly smaller surgeon-focused survey where 32% reported conducted audit processes.[5] Implementing regular audits, improving documentation as well as patient engagement, emphasized in the 2025 ESC VHD guidelines[9] is another vital area for improvement.

Limitations

The conclusions of this survey are constrained by the limited participant representation, which introduces the possibility of sampling bias. Additionally, the response rate in several countries was low, potentially affecting the generalizability of the findings. Also, since the most of the respondents were from European countries, it was not possible to

analyse differences in HT functioning between Europe and rest of the world. Additional specific analysis of the functioning of the HT (such as following the guidelines, reaching consensus between HT members, etc.) is the field for further investigations. In addition, there was not specific question regarding the lack of any HTs so we are not able to address this question specifically.

Conclusion

While HTs are integral to enhance cardiovascular care, this survey highlights several areas for improvement. Strengthening organizational structures and ensuring strict adherence to clinical guidelines could bridge existing practice gaps, fostering improved patient outcomes. Addressing challenges such as leadership ambiguity, lack of patient involvement, and communication inefficiencies, HTs can enhance their efficacy and align more closely with evolving healthcare needs. This initiative not only enhances management of complex cases but also sets a benchmark for effective multidisciplinary collaboration in the broader medical field.

Lead author biography

Vlatka Reskovic Luksic

Curriculum vitae

Education

- EACVI Leaders of Tomorrow Programme (2022–2024)
- Research Associate at School of Medicine University of Zagreb, 2020
- Postgraduate study Biomedicine and Health (PhD program), University of Zagreb, Medical School, 2007–2018. PhD thesis defence 11/2018.
- Cardiology Fellow, Department of Cardiovascular Diseases, University Hospital Centre Zagreb 2014–2016
- Honorary observer at Heart Valve Clinic, Centre Hospitalier Universitaire de Liège, Belgium 03/2015, 06/2017
- Certification in EACVI Adult Transthoracic Echocardiography 2014-ongoing
- Resident of Internal Medicine, University Hospital Centre Zagreb 2006–2012
- Postgraduate course 'Doopler Ultrasound Diagnostic of Vascular Diseases'2010
- Instructor for Advanced Life Support, European Resuscitation Council 2007
- Medical School, University of Zagreb, 1998–2004

Work experience

- Consultant cardiologist, Department of Cardiovascular Diseases, University Hospital Centre Zagreb 2016—ongoing
- Cardiology fellow, Department of Cardiovascular Diseases, University Hospital Centre Zagreb 2014–2016
- Internal medicine fellow, University Hospital Centre Zagreb 2007–2012
- Internal medicine fellow, General hospital 'Dr Ivo Pedisic', Sisak, Croatia 2006–2007
- Internship at General hospital 'Dr Ivo Pedisic', Sisak, Croatia 2004–2005

Research activities

- Associate on project 'Determination of culprit lesion by myocardial deformation analysis in acute coronary syndrome without ST elevation'2017
- Associate on project 'Degenerative valvular heart diseases'2018
- Active participation as collaborator at EACVI (European Association of Cardiovascular Imaging) projects: 'EuroEndo registry'(2016–2019), 'MASCOT HIT study'(2018–2019), 'Afib Echo Euro Registry'(2018-ongoing), EACVI MM-VHD Registry (2024-ongoing)
- Doctoral dissertation: 'Myocardial deformation abnormalities assessed by two-dimensional deformation study in hypertensive patients with basal interventricular septal hypertrophy—public defence in 2018

Teaching activities

- Undergraduate student teaching 'Fundamentals of Medical Skills', Medical School Zagreb, 2013—ongoing
- Lecturer at postgraduate course of continuous medical education for cardiology (Medical School Zagreb, Medical School Split)
- Student demonstrator at Department of Patophysiology and Department of Internal Medicine during Graduate Study

Organisational activities

- Secretary of Working Group of Echocardiography and imaging modalities, Croatian Cardiac Society and therefore included in organisation of many lectures, symposia and courses of continuous medical education: CroEcho congress—secretary, organising committee member (2013,2015,2017,2019,2021, 2023, 2025), CroValv—organizing committee member (2016); Educational workshop Echo on Wheels (2014–2025), Education on-line program „Echo from the armchair (10 webinars, 2020–2021), Croatian Mitral Academy
- Heart Imagers of Tommorow ambassador for Croatia 2016–2021
- EACVI HIT Committe member 2020–2022, Membership Committee & Partner Societies 2022–2024, Certification & Accreditation Committee (TTE) 2022–2026, EACVI Education Committee 2024–2026

Membership at medical societies

- Croatian Medical Association (member)
- Croatian Cardiac Society (member)
- Working Group of Echocardiography and imaging modalities, Croatian Cardiac Society (secretary)
- Working group of Valvular heart disease, Croatian Cardiac Society (board member)
- European Society of Cardiology (member)
- European Association of Cardiovascular Imaging [Heart Imagers of Tommorow ambassador for Croatia 2016–2021, EACVI HIT Committe member 2020–2022, Membership Committee & Partner Societies 2022–2024, Certification & Accreditation Committee (TTE) 2022–2026], EACVI Education Committee 2024–2026

Publications and presentations

- Published as an author or co-author of 17 scientific papers and 5 papers as an collaborator in EuroEndo group. Publications have 971 citations.
- Author or co-author of many abstracts on national and international congress (CroEcho, CroValv, Croatian Cardiac Society Congress, EuroEcho, EuroValve, Cardiology Highlights Dubrovnik, PCR London Valves 2018)
- Actively participated on numerous Croatian, European and international medical conferences and symposia as a speaker (CroEcho, CroValv, Croatian Cardiac Society Congress, Croatian Valvular School, ESC Congress 2023,2024, EuroEcho 2018, 2019, 2023,2024; EACTA Echo Course 2022; Zadar Summer School of Neurosonology and stroke 2021, 2022; Symposium Highlights in Cardiology 2021, North Macedonia; 25th Conference of the European Society of Neurosonology and Cerebral Hemodynamics 2021, Belgrade; CardioAlex 2021, Egypt; Online Symposium of Cardiovascular Imaging and COVID-19 experience 2020, North Macedonia, 26th Conference of the European Society of Neurosonology and Cerebral Hemodynamics, Lisbon, Portugal, 2022; EchoSerbia 2022, 3 rd Congress of the Echocardiographic Society of Serbia with international participation, October 2022, Belgrade,

ESNCH ITC & Zadar Summer School of Neurosonology and stroke management, Zadar, June 2023, 7th Macedonian Congress of Cardiology, 2023, Ohrid, North Macedonia, Athens medical group Cardiovascular imaging congress, Athens,2024, EchoSerbia 2024, Belgrade, Serbia.)
- EACVI HIT Imaging bites, educational video, 2022
- EACVI HIT Teaching Course on Focus cardiac ultrasound, Belgrade—invited speaker, October 2022
- EACVI HIT Summer School Zadar 2023, Croatia (Course Co-Director),
- EACVI HIT Summer School Dubrovnik 2024, Croatia (Course Co-Director),
- EACVI HIT Summer School Skopje 2025, N. Macedonia (Course Co-Director).

Other

- ESC Congress Clinical case reviewing committee (2021–2025), ESC Congress 2024–2025 Abstract review, EuroEcho-Imaging 2024–2025 Abstract Reviewing Committee
- Reviewer of several publications in Croatian and international medical journals (Croatian Medical Journal, PLOS ONE, BMC Cardiovascular Disorders, Expert Review of Cardiovascular Therapy, Fronitiers in Cardiovascular medicine, Journal of Clinical Medicine-JMC, BMC Geriatrics, Medicina, European Heart Journal—Imaging Methods and Practice, Diagnostics).

Acknowledgements

The production of this EACVI survey document is under the responsibility of the Scientific Initiative Committee of the EACVI, and grateful acknowledgments are made to the members. The authors acknowledge Hatem Soliman Aboumarie for the organization of the Leaders of Tomorrow program, and all survey participants. The authors thank Oceane Marie, from the ESC staff for the logistical support in setting up this EACVI study.

Supplementary data

Supplementary data are available at *European Heart Journal - Imaging Methods and Practice* online.

Funding

None.

Conflict of interest: None declared.

Data availability

The data underlying this article are available in the article and in its online supplementary material.

Lead author biography

Consultant cardiologist at University hospital centre Zagreb, Croatia, and assistant professor at Bioinformatics and precision medicine research group, Algebra Bernays University, Zagreb. Research associate at University of Zagreb School of medicine. Actively engaged in undergraduate and postgraduate teaching at the University of Zagreb School of medicine. Serves on several EACVI committees and as secretary of the Working Group on echocardiography and imaging modalities of the Croatian cardiac society. Involved in the organization and as a speaker at national and international congresses, with a strong commitment to education, research, imaging and professional collaboration.

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