

Contemporary perspectives in cardiovascular medicine: imaging, interventions, and prognostic strategies

Patrizio Lancellotti

To cite this article: Patrizio Lancellotti (2025) Contemporary perspectives in cardiovascular medicine: imaging, interventions, and prognostic strategies, Acta Cardiologica, 80:3, 209-212, DOI: [10.1080/00015385.2025.2496029](https://doi.org/10.1080/00015385.2025.2496029)

To link to this article: <https://doi.org/10.1080/00015385.2025.2496029>



Published online: 08 May 2025.



Submit your article to this journal [↗](#)



Article views: 428



View related articles [↗](#)



View Crossmark data [↗](#)

EDITORIAL



Contemporary perspectives in cardiovascular medicine: imaging, interventions, and prognostic strategies

This issue of *Acta Cardiologica* features a series of original articles covering a broad range of topics in contemporary cardiovascular medicine. The contributions explore advances in cardiac imaging, particularly in the assessment of atrial function and valvular heart disease (Figure 1), as well as insights into the prognostic value of echocardiographic and clinical parameters in heart failure and endocarditis [1–5]. Interventional cardiology is also represented through long-term follow-up data on transcatheter valve therapies and case-based experiences with post-procedural arrhythmias [6,7]. In addition, mechanistic studies highlight novel pathways involved in thrombosis and inflammation, while health economic analyses and population-level data provide complementary perspectives on treatment strategies and public health implications. Together, these studies reflect the diversity and depth of ongoing research in the field.

Rheumatic mitral stenosis (MS) remains prevalent in developing countries and contributes to progressive left atrial (LA) remodelling and dysfunction [8]. In the study of Abdelgawad et al. concerning 50 patients with significant MS and 50 healthy controls, advanced echocardiographic techniques were used to evaluate LA size and function [9]. LA strain parameters and 3D LA ejection fraction were markedly reduced in the MS group, while 3D maximum and minimum LA volumes were increased. Functional parameters – particularly 3D LAEF and 2D strain indices – showed stronger correlations with mitral valve area than conventional volume-based measures. These functional markers also differentiated between severe and very severe MS, unlike static volume indices.

In another study, 40 patients with severe MS were prospectively evaluated to assess changes in LA function following balloon mitral valvotomy (BMV) [10]. Peak atrial longitudinal strain (PALS) was significantly impaired at baseline and improved 24h after BMV, alongside a marked reduction in transmitral gradient and pulmonary artery pressure. Mitral valve area increased significantly postprocedure, confirming effective mechanical relief of obstruction. Despite the improvement, baseline PALS showed limited predictive value for procedural success, with modest sensitivity and specificity. Nevertheless, the increase in PALS values was associated with clinical improvement.

The Melody™ transcatheter pulmonary valve (TPV) has been used as a less invasive alternative to surgical valve replacement, but long-term follow-up data remain limited. Over a 15-year period, 234 Melody™ valves were implanted in patients with a mean age of 20.8 years, primarily for pulmonary stenosis, regurgitation, or mixed lesions [11]. Valve function remained stable over time, with survival rates of 89% at 10 years and 72% at 15 years.

Valve failure occurred in 9.4% of cases, most commonly due to endocarditis, which affected 10.2% of patients, particularly young males (Figure 2). There were seven deaths during follow-up, none related to valve dysfunction. These results confirm the durability and reliability of the Melody™ valve, although vigilance for endocarditis remains essential.

Infective endocarditis remains a critical condition with high in-hospital mortality, necessitating reliable prognostic tools [12]. In a cohort of 153 patients, in-hospital mortality occurred in 20.9%, and the Naples Prognostic Score (NPS) was significantly higher among non-survivors [13]. Compared to other markers such as the neutrophil-to-lymphocyte ratio, lymphocyte-to-monocyte ratio, albumin, and cholesterol, NPS demonstrated the strongest predictive value for mortality (AUC: 0.704, $p < 0.001$). Multivariate analysis confirmed that higher NPS, septic shock, and older age were independent predictors of in-hospital death. The study supports the use of NPS as a practical and robust tool, reflecting both inflammatory and nutritional status. Incorporating NPS into clinical assessment may improve risk stratification and guide early management decisions in patients with IE.

René Gerónimo Favalaro (1923–2000), a pioneer of coronary bypass surgery, laid the groundwork for modern structural heart interventions [14]. His legacy echoes through the advances explored in this issue, from transcatheter valve therapies to refined imaging for valvular assessment. The transition from open surgery to minimally invasive approaches continues the path he helped forge – placing innovation in the service of better, safer patient care [15].

Female sex remains an underrecognized risk factor for undertreatment in both atrial fibrillation (AF) and ischaemic heart disease, despite comparable or even greater symptom burden and adverse outcomes compared to men [2,16]. Women are less likely to receive guideline-recommended therapies, including anticoagulation and invasive strategies, highlighting persistent gaps in care. This disparity calls for a paradigm shift – one that incorporates sex-specific risk profiling, addresses potential biases, and ensures equitable access to evidence-based interventions [17,18]. Reframing cardiovascular care through a more inclusive lens is essential to improve outcomes for women and close the treatment gap.

Prostaglandin G/H synthase 1 (PTGS1) has been implicated in platelet activation and inflammation, but its role in AF-related thrombosis remains unclear. In the study of Bai et al., LA appendage tissues from patients with and without AF-related thrombus revealed significantly higher PTGS1 expression in those with thrombus [19]. Elevated PTGS1 levels were associated with impaired atrial function,

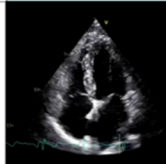
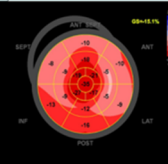
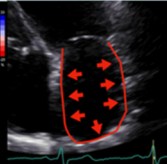
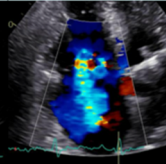
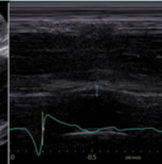
	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
Grading/staging AS	No cardiac damage	LV damage	LA/MV damage	PC and/or TV damage	RV damage and/or low-flow state
					
Moderate AS		Under investigation: PROGRESS, EXPAND-TAVR II			
Severe asymptomatic AS	AVATAR, EARLY TAVR, EVOlVeD, RECOVERY: benefit in HF hospitalization, unplanned CV or HF hospitalization and stroke				
Severe symptomatic AS	Class I indication for AVR				

Figure 1. Proposed algorithm for aortic stenosis treatment according to valvular disease severity, presence of symptoms and stage of cardiac damage. AS: aortic stenosis; AVR: aortic valve replacement; CV: cardiovascular; HF: heart failure; LA: left atrial; LV: left ventricular; MV: mitral valve; PC: pulmonary circulation; RV: right ventricular; TV: tricuspid damage. PROGRESS - NCT04889872 at Clinical Trials.gov, EXPAND-TAVR-II: NCT05149755, AVATAR: NCT02436655, EARLY-TAVR: NCT03042104, EVOlVeD: NCT03094143, RECOVERY: NCT01161732 (from reference 3).

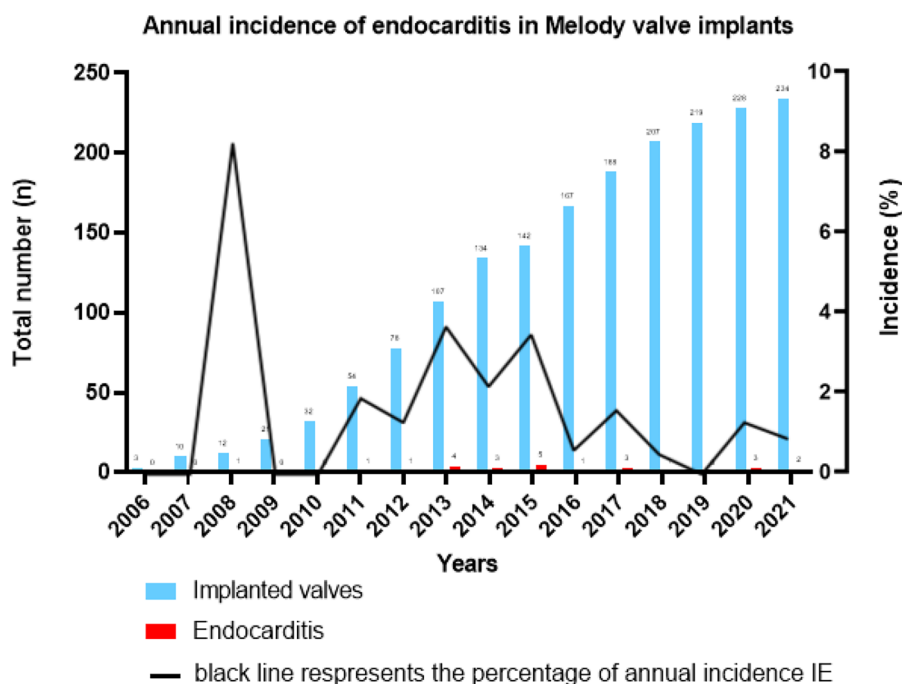


Figure 2. Annual incidence of infective endocarditis. The numbers of endocarditis (red) are displayed with the number of implanted valves (blue). The percentage of annual incidence is displayed by the black line (from Ref. [11]).

higher CHA₂DS₂-VASc scores, and increased markers of platelet activation and systemic inflammation. Enhanced M1 macrophage infiltration and pro-inflammatory cytokine expression were also observed in patients with thrombus. Mechanistic experiments showed that PTGS1 suppresses autophagy in endocardial endothelial cells, potentially contributing to endothelial dysfunction and thrombus formation.

Complete atrioventricular block (CAVB) is a rare but serious complication following closure of perimembranous ventricular septal defects (pmVSDs). In a cohort of 2436 patients treated between 2010 and 2022, the incidence of permanent CAVB was 0.3% after surgical repair and 0.7% after device occlusion [20]. Notably, half of the CAVB cases in the device group occurred more than one month postprocedure, whereas all cases in the surgical

group occurred during hospitalisation. Larger defect size and higher device-to-defect ratio were identified as independent risk factors for CAVB. Multivariate analysis showed that device occlusion carried a significantly higher risk of permanent CAVB compared to surgical repair.

The American Heart Association's "Life's Essential 8" (LE8) framework offers a comprehensive assessment of cardiovascular health, while fractional exhaled nitric oxide (FeNO) serves as a non-invasive marker of respiratory inflammation [21]. In this large cohort of over 14,000 adults from the NHANES database, a higher LE8 score was associated with increased FeNO levels, possibly reflecting enhanced immune or inflammatory responses [22]. At the same time, higher LE8 scores were linked to reduced all-cause mortality, suggesting a protective effect of better cardiovascular health. These associations remained significant after adjusting for demographic and behavioural factors.

Peak tricuspid regurgitation velocity (TRV) may serve as a prognostic marker in heart failure with preserved ejection fraction (HFpEF), particularly for predicting short-term outcomes [23,24]. In a cohort of 513 hospitalised HFpEF patients aged 60 years or older, 68% had elevated TRV values (>2.8 m/s) (Figure 3) [25]. High TRV was independently associated with an increased risk of heart failure readmission at one year, even after multivariable adjustment and inverse probability weighting. Patients with elevated TRV had over twice the risk of readmission compared to those with normal values. Subgroup analysis showed that the prognostic impact was more pronounced in patients aged ≥ 80 years, men, and those with hypertension.

Cost-effectiveness remains an important consideration in the management of heart failure with reduced ejection fraction (HFrEF), particularly in resource-constrained healthcare systems. Using a 20-year Markov model based on Chinese healthcare data, this study compared the cost-utility of adding sacubitril/valsartan or vericiguat to standard heart failure therapy [26]. Sacubitril/valsartan provided slightly more quality-adjusted life years (QALYs) at a lower total cost than vericiguat. The incremental

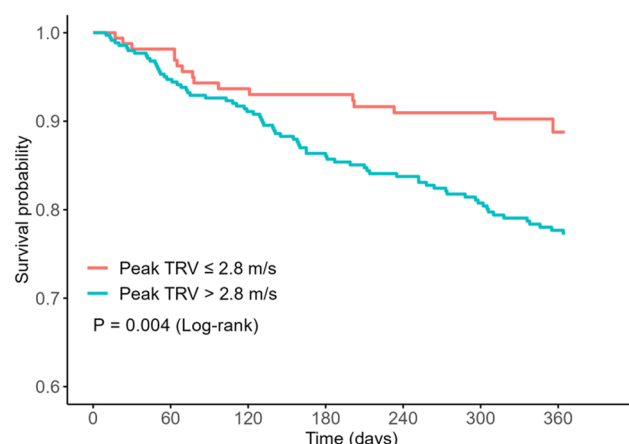


Figure 3. The receiver operating characteristic curve of peak tricuspid regurgitation velocity (TRV) for heart failure readmission (from Ref. [25]).

cost-utility ratio (ICUR) favoured sacubitril/valsartan, with an overall cost saving and greater benefit in terms of health outcomes. Sensitivity and scenario analyses confirmed the robustness of these results.

In this issue of *Acta Cardiologica*, several focus images highlighting interesting cases have also been reported [27–34].

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- [1] Lancellotti P, Cosyns B. Highlights of Acta Cardiologica. Acta Cardiol. 2022;77(6):469–470. doi: [10.1080/00015385.2022.2143092](https://doi.org/10.1080/00015385.2022.2143092).
- [2] Martens B, Duytschaever M. Early rhythm control in atrial fibrillation anno 2024. Acta Cardiol. 2024;79(10):1064–1070. doi: [10.1080/00015385.2024.2324217](https://doi.org/10.1080/00015385.2024.2324217).
- [3] Viva T, Sperlongano S, Trung MN, et al. Staging cardiac damage in aortic stenosis: stratifying prognosis to individualise the treatment. Acta Cardiol. 2025;80(3):322–325. doi: [10.1080/00015385.2025.2457178](https://doi.org/10.1080/00015385.2025.2457178).
- [4] Lancellotti P, Petitjean H, Postolache A, et al. Focus on valvular heart disease. Acta Cardiol. 2022;77(10):861–863. doi: [10.1080/00015385.2022.2159193](https://doi.org/10.1080/00015385.2022.2159193).
- [5] Rogiers M, Jentjens S, Guler I, et al. Value of (18)F-FDG pet/CT for prognostic assessment in patients with infective endocarditis. Acta Cardiol. 2022;77(10):900–909. doi: [10.1080/00015385.2022.2040823](https://doi.org/10.1080/00015385.2022.2040823).
- [6] De Paepe J, Lamberigts M, Meuris B, et al. Transcatheter aortic valve implantation versus sutureless aortic valve replacement: a single-centre cost analysis. Acta Cardiol. 2024;79(1):30–40. doi: [10.1080/00015385.2023.2268441](https://doi.org/10.1080/00015385.2023.2268441).
- [7] Çakır Ç, Ceylan Y, Karagöz A, et al. Percutaneous mitral commissurotomy in women with asymptomatic severe mitral stenosis before pregnancy. Acta Cardiol. 2021;76(7):754–759. doi: [10.1080/00015385.2020.1783778](https://doi.org/10.1080/00015385.2020.1783778).
- [8] Liu B, Wang Y, Liu Y, et al. Effects of percutaneous balloon mitral valvuloplasty in patients with mitral stenosis and atrial fibrillation: a systematic review and meta-analysis. Acta Cardiol. 2022;77(10):890–899. doi: [10.1080/00015385.2021.1989837](https://doi.org/10.1080/00015385.2021.1989837).
- [9] Abdelgawad H, Dufatanye D, Shehata M, et al. Left atrial myopathy in rheumatic mitral stenosis; three-dimensional and speckle tracking echocardiography study. Acta Cardiol. 2025;80(3):225–236. doi: [10.1080/00015385.2025.2457180](https://doi.org/10.1080/00015385.2025.2457180).
- [10] Pant BP, Walse R, Sivasadasapillai H, et al. Left atrial strain as a surrogate parameter for successful percutaneous balloon mitral valvotomy? Acta Cardiol. 2025;80(3):274–282. doi: [10.1080/00015385.2025.2484506](https://doi.org/10.1080/00015385.2025.2484506).
- [11] Bjorn C, De Meester P, Budts W, et al. Fifteen years of experience with the melody™ TPV for percutaneous pulmonary valve replacement. Acta Cardiol. 2025;80(3):237–244. doi: [10.1080/00015385.2025.2459453](https://doi.org/10.1080/00015385.2025.2459453).
- [12] Suwa Y, Miyasaka Y, Taniguchi N, et al. Predictors of in-hospital mortality in patients with infective endocarditis. Acta Cardiol. 2021;76(6):642–649. doi: [10.1080/00015385.2020.1767368](https://doi.org/10.1080/00015385.2020.1767368).

- [13] Altunova M, Evsen A, Zencirkiran Agus H, et al. Predicting in-hospital mortality in infective endocarditis: insights from the Naples prognostic score. *Acta Cardiol.* 2025;80(3):292–301. doi: [10.1080/00015385.2025.2491150](https://doi.org/10.1080/00015385.2025.2491150).
- [14] Valdes-Socin HG, Tchana-Sato V, René Geronimo Favaloro (1923–2000): the challenging dream of a heart surgeon. *Acta Cardiol.* 2025;80(3):319–321. doi: [10.1080/00015385.2024.2448866](https://doi.org/10.1080/00015385.2024.2448866).
- [15] Declercq A, Floré V, Van de Veire N. The scalpel's dilemma: weighing the mortality risk of combined surgical aortic valve replacement and coronary artery bypass grafting. *Acta Cardiol.* 2025;80(3):326–327. doi: [10.1080/00015385.2025.2476887](https://doi.org/10.1080/00015385.2025.2476887).
- [16] Lancellotti P, Piette C. Special issue on atrial fibrillation. *Acta Cardiol.* 2023;78(3):269–273. doi: [10.1080/00015385.2023.2205277](https://doi.org/10.1080/00015385.2023.2205277).
- [17] Shu Y, Lyu S-Q, Tan J, et al. Sex differences in patients with atrial fibrillation and acute coronary syndrome or undergoing PCI: a real-world study. *Acta Cardiol.* 2024;79(10):1119–1132. doi: [10.1080/00015385.2024.2432693](https://doi.org/10.1080/00015385.2024.2432693).
- [18] Corica B, Mei DA, Boriani G. Female sex as risk factor for undertreatment: need for a paradigm shift in the care of atrial fibrillation and ischaemic disease. *Acta Cardiol.* 2025;80(3):317–318. doi: [10.1080/00015385.2025.2453790](https://doi.org/10.1080/00015385.2025.2453790).
- [19] Bai H, Xi G, Cheng Y. Prostaglandin G/H synthase 1 promotes thrombosis in atrial fibrillation through modulation of platelet activation, macrophage infiltration, inflammation, and autophagy inhibition. *Acta Cardiol.* 2025;80(3):254–265. doi: [10.1080/00015385.2025.2467009](https://doi.org/10.1080/00015385.2025.2467009).
- [20] Lin L, Chen W, Chen H, et al. Complete heart block after occlusion and repair for perimembranous ventricular septal defect. *Acta Cardiol.* 2025;80(3):266–273. doi: [10.1080/00015385.2025.2480961](https://doi.org/10.1080/00015385.2025.2480961).
- [21] Ravichandran S, Gajjar P, Walker ME, et al. Life's essential 8 cardiovascular health score and cardiorespiratory fitness in the community. *J Am Heart Assoc.* 2024;13(9):e032944. doi: [10.1161/JAHA.123.032944](https://doi.org/10.1161/JAHA.123.032944).
- [22] Li K, Feng J, Han L, et al. Association of the 'life's essential 8' with FeNO and all-cause mortality: a population-based study in U.S. adults. *Acta Cardiol.* 2025;80(3):245–253. doi: [10.1080/00015385.2025.2459453](https://doi.org/10.1080/00015385.2025.2459453).
- [23] Lancellotti P, Ribeiro Coelho S, Nguyen Trung ML, et al. Special issue on heart failure. *Acta Cardiol.* 2023;78(2):165–167. doi: [10.1080/00015385.2023.2182985](https://doi.org/10.1080/00015385.2023.2182985).
- [24] Zhang Y, Feng L, Zhu Z, et al. Association between blood inflammatory indices and heart failure: a cross-sectional study of NHANES 2009–2018. *Acta Cardiol.* 2024;79(4):473–485. doi: [10.1080/00015385.2024.2356325](https://doi.org/10.1080/00015385.2024.2356325).
- [25] Wang T, Liu X, Zhang Y, et al. The association between peak tricuspid regurgitation velocity and 1-year heart failure readmission in hospitalised patients with heart failure with preserved ejection fraction. *Acta Cardiol.* 2024;80(3):217–224. doi: [10.1080/00015385.2024.2421638](https://doi.org/10.1080/00015385.2024.2421638).
- [26] Zhao X, Hu N, Wang L, et al. Vericiguat versus sacubitril/valsartan for the treatment of heart failure with reduced ejection fraction in China: a cost-utility analysis. *Acta Cardiol.* 2025;80(3):283–291. doi: [10.1080/00015385.2025.2484848](https://doi.org/10.1080/00015385.2025.2484848).
- [27] Caratti di Lanzacco L, Boudouft M, Lepièce C, et al. Post-transseptal puncture re-entrant atrial tachycardia mimicking typical flutter. *Acta Cardiol.* 2025;80(3):213–216. doi: [10.1080/00015385.2025.2452125](https://doi.org/10.1080/00015385.2025.2452125).
- [28] Dimitriadis K, Beneki E, Aznaouridis K, et al. Five-leaflet tricuspid valve regurgitation. Transcatheter Repair at Once? *Acta Cardiol.* 2024;80(3):302–303. doi: [10.1080/00015385.2024.2396751](https://doi.org/10.1080/00015385.2024.2396751).
- [29] Murray C, Mannion J, Wilkinson M. Severe tricuspid regurgitation and right heart failure secondary to carcinoid heart disease. *Acta Cardiol.* 2024;80(3):304–305. doi: [10.1080/00015385.2024.2396757](https://doi.org/10.1080/00015385.2024.2396757).
- [30] Deffet S, Dulgheru R, Lancellotti P. Coexisting bicuspid pulmonary and aortic valves. *Acta Cardiol.* 2024;80(3):306–307. doi: [10.1080/00015385.2024.2414132](https://doi.org/10.1080/00015385.2024.2414132).
- [31] Singh D, Ojha V, Pandey NN, et al. Accessory mitral valve tissue causing left ventricular outflow obstruction. *Acta Cardiol.* 2024;80(3):308–310. doi: [10.1080/00015385.2024.2424481](https://doi.org/10.1080/00015385.2024.2424481).
- [32] Gao J, Ma X, He Y, et al. Three-dimensional transesophageal echocardiographic guided transcatheter puncture of the interatrial septum for mitral valve-in-valve replacement for mitral bioprosthetic valve failure. *Acta Cardiol.* 2024;80(3):311–312. doi: [10.1080/00015385.2024.2436722](https://doi.org/10.1080/00015385.2024.2436722).
- [33] Dimitriadis K, Soulaïdopoulos S, Pyrpyris N, et al. First-in-man concomitant mitral transcatheter edge-to-edge repair and atrial fibrillation ablation. *Acta Cardiol.* 2025;80(3):315–316. doi: [10.1080/00015385.2025.2471651](https://doi.org/10.1080/00015385.2025.2471651).
- [34] Tang M, Xia J, He Y, et al. Cardiac 'quartet': a rare case of quadricuspid aortic valve combined with ascending aortic aneurysm. *Acta Cardiol.* 2025;80(3):313–314. doi: [10.1080/00015385.2025.2484859](https://doi.org/10.1080/00015385.2025.2484859).

Patrizio Lancellotti
*GIGA Institutes, Cardiovascular Sciences and Metabolism,
 Department of Cardiology, CHU Sart Tilman, University of
 Liège Hospital, Liège, Belgium*
 plancellotti@chuliege.be