

# Bridging perspectives from prevention, diagnosis, management to economic aspects: the voice of Belgian cardiologists

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EDITORIAL



## Bridging perspectives from prevention, diagnosis, management to economic aspects: the voice of Belgian cardiologists

In previous discussions, we have delved into the crucial aspects of preventing, diagnosing, and managing cardiovascular pathologies [1–4]. This editorial expands on these themes, incorporating the economic perspective. It is imperative to underscore the valuable contribution of the Belgian cardiological community to our journal. Consequently, we have curated a collection of articles from our community, aiming to highlight the multidimensional impact of cardiovascular care in this edition.

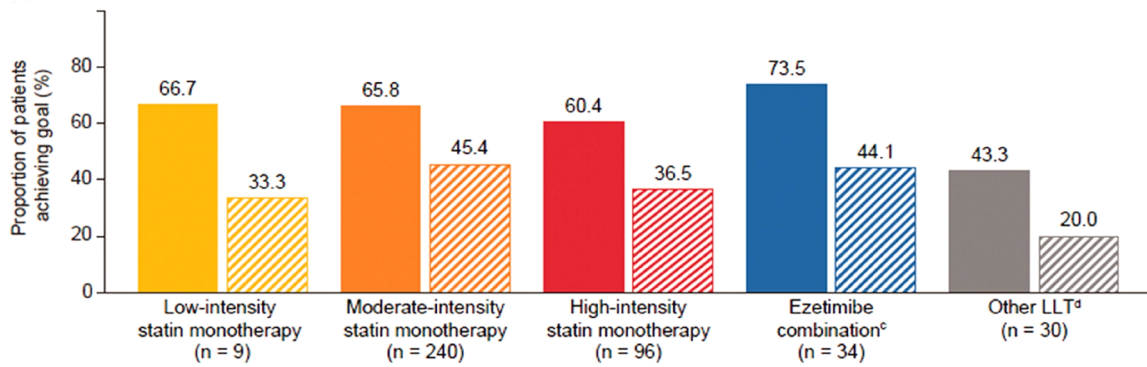
Enhancing the prevention of cardiovascular disease (CVD) involves promptly identifying individuals at heightened risk, allowing for the precise implementation of impactful dietary, lifestyle, or pharmaceutical interventions [5]. Lowering LDL cholesterol stands as a pivotal element in preventive measures. The extent to which the recommended LDL-C goals, as outlined by the European Society of Cardiology (ESC)/European Atherosclerosis Society (EAS) guidelines, are met in the Belgian population remains uncertain. The cross-sectional, observational DA VINCI study included 497 patients who were prescribed lipid-lowering therapy (LLT) between 21 June 2017 and 20 November 2018 [6]. Data specific to patients from Belgium were extracted for this country-specific analysis. Moderate-intensity statin monotherapy was the most prescribed LLT regimen (59%). According to the updated 2019 ESC/EAS guidelines, less than half (41%) of patients achieved their risk-based LDL-C goal. The proportion of primary and secondary prevention patients who achieved 2019 risk-based LDL-C goals was 59% and 18%, respectively. These findings underscore a substantial disparity between the LDL-C goals advocated by the ESC/EAS and the levels routinely achieved in clinical practice in Belgium (Figure 1). In a Belgian cohort of individuals with heterozygous familial hypercholesterolaemia (FH), Ide et al. highlighted that these patients are persistently undertreated. Achieving treatment targets for FH appears feasible, albeit necessitating combination therapy, particularly involving PCSK9-targeted therapy in the majority of patients [7].

In their study, Liu et al. provided compelling data supporting the perspective that acute myocardial infarction (AMI) patients with diabetes and subclinical hypothyroidism (SCH) exhibit exacerbated in-hospital outcomes, along with elevated 30-d and long-term mortality rates [8]. While similar outcomes have been reported in some prior studies, these new findings may potentially challenge current understanding of the pathophysiological connections between the heart, thyroid, and diabetes [9].

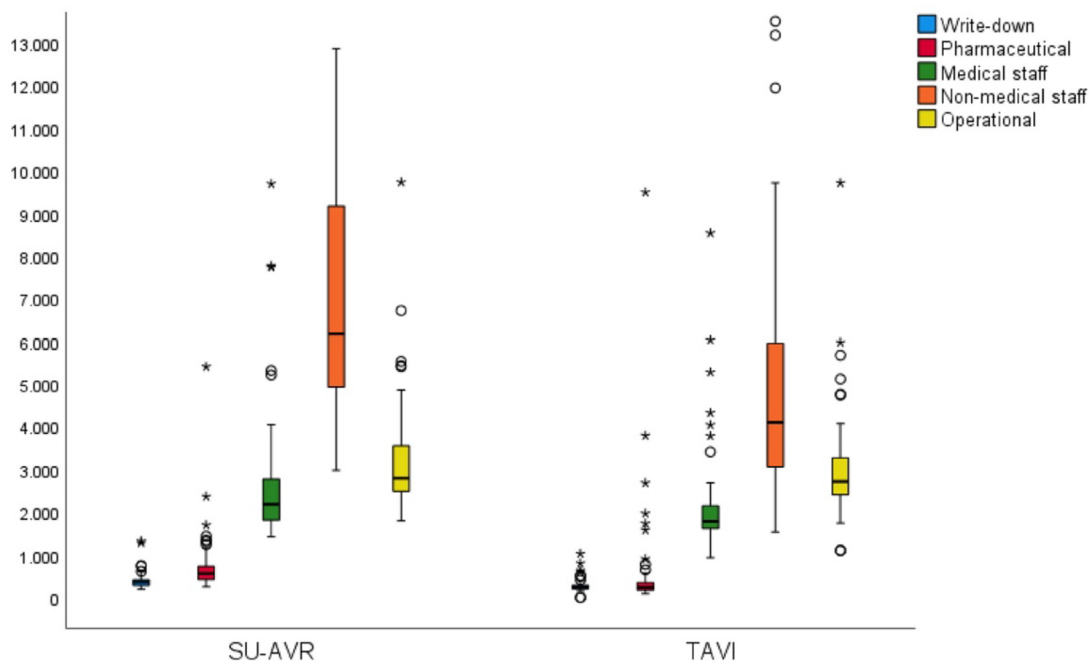
CVD, particularly ischaemic heart disease, commonly associated with coronary heart disease, constitute the primary cause of mortality in Western countries [2]. So far,

coronary angiography remains the gold standard for anatomically assessing epicardial coronary stenosis. Visual assessment may lead to a misestimation of the severity of stenosis, emphasising the importance of incorporating quantitative measures [10]. Utilising a pressure wire to measure fractional flow reserve (FFR) during coronary angiography identifies coronary lesions causing substantial ischaemia and helps pinpoint patients who are most likely to gain benefits from percutaneous coronary intervention. In the contemporary landscape, FFR is recommended for angiographically intermediate coronary artery lesions, encompassing conditions such as left main stem involvement, multivessel diseases, sequential stenoses, bifurcations, and ostial branch stenoses [11–14]. Boutaleb et al. investigated the practical challenges and benefits associated with microcatheter- and wire-based systems in real-world scenarios. Their findings indicated comparable performance in pressure measurements, albeit with a notably higher incidence of crossing failures observed with the microcatheter-based system (9.2% vs. 0.7%). Additionally, they documented associations between crossing failure and coronary artery calcifications and tortuosity [15]. In Belgium, a total of 81,531 coronary angiographies were conducted in 2021. Exploring the economic aspects of coronary angiography for diagnostic purposes involves a comprehensive analysis of the financial implications, resource utilisation, and cost-effectiveness associated with this cardiovascular diagnostic procedure within the Belgian healthcare system. This investigation encompasses considerations such as reimbursement structures, healthcare expenditure, the economic impact on patients, and potential cost-saving measures. In their study, Minten et al. examined the daily number of coronary angiographies needed per cathlab to achieve cost coverage. Their results revealed that the hospital falls short of reaching the break-even point, underscoring the financial challenge associated with integrating physiological interrogation as an upfront strategy in high-risk patients. Moreover, the current Belgian system lacks additional reimbursement for this specific procedure [16].

More than 10 million Europeans are affected by valvular heart diseases (VHDs), which persist as a diagnostic and management challenge. VHDs continue to rank among the primary causes of cardiovascular morbidity and mortality, contributing to diminished physical capabilities and deteriorating quality of life. The true burden of VHDs is underestimated in epidemiological data due to challenges such as insufficient data from routine examinations, underreporting of mild VHD cases, and limited availability of imaging techniques in certain regions. Despite these obstacles, remarkable strides have been



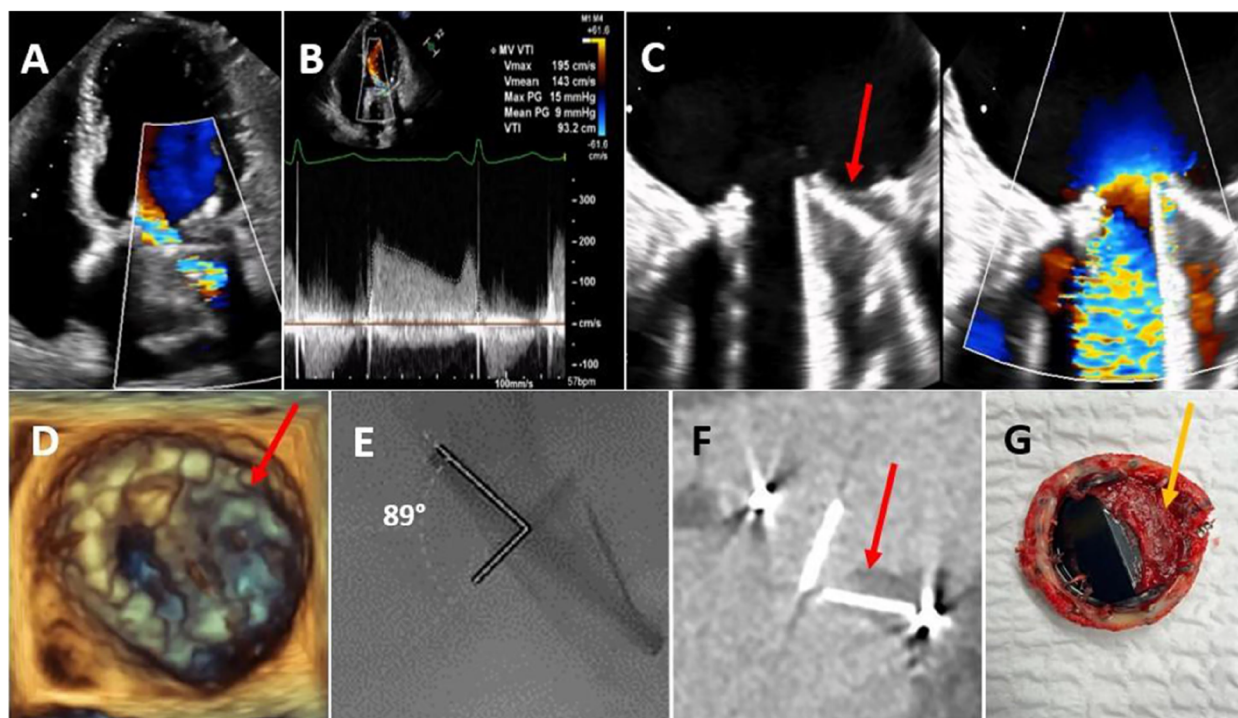
**Figure 1.** Risk-based LDL-C goal attainment in patients categorised by lipid-lowering therapy (LLT). Patients ( $n = 410$ ) on stabilised LLT therapy and evaluable for goal attainment. c: Ezetimibe combination: patients who were treated with ezetimibe plus statin of moderate, high or unknown intensity (from reference [6]).



**Figure 2.** Box plot showing subcategories of expenditure (€) (median; 25th–75th percentile; °outlier; \*extreme value). Costs of SAVR are significantly higher than those of TAVI, for each of the subcategories except operational costs. Furthermore, non-medical staff is shown to be the largest item of expenditure for both groups, followed by operational costs and medical staff (from reference [23]).

made in the evaluation and management of VHDs over the past decade, although prevention remains a formidable challenge [17]. Over the last decade, cardiac magnetic resonance imaging has made notable strides, emerging as a crucial technique for assessing diverse cardiac pathologies, including VHD [18]. In the context of aortic stenosis, the identification of myocardial fibrosis has been linked to an unfavourable prognosis [19]. Transcatheter aortic valve implantation (TAVI) has become the established standard of care for patients dealing with severe symptomatic aortic stenosis. According to European guidelines, TAVI is recommended as the primary treatment for patients aged  $\geq 75$  years with an accessible transfemoral approach or those at high surgical risk

(STS-PROM/EuroSCORE II  $> 8\%$ ) [20]. Despite being less invasive than surgical aortic valve replacement (SAVR), TAVI demands vigilant care monitoring [21]. Notably, TAVI-related conduction disturbances, particularly new-onset left bundle-branch block (LBBB) and high-degree atrioventricular block (HD-AVB) requiring permanent pacemaker implantation (PPMI), remain prevalent complications [17, 22]. In the competitive landscape of TAVI and SAVR, evaluating the economic aspects becomes essential for optimising resource allocation, improving healthcare efficiency, and ensuring the sustainability of services in Belgium [23–25]. A thorough analysis of economic factors guides informed decision-making for policymakers, healthcare providers, and stakeholders



**Figure 3.** Transthoracic echocardiography in a patient with mechanical prosthetic valve mitral valve replacement for systemic lupus erythematosus-induced Libman-Sacks endocarditis. (A) turbulent eccentric diastolic mitral inflow; (B) mean 9-mmHg pressure gradient; C-F: posterior leaflet stuck in closed position and a prosthetic mitral thrombus (arrow). (C and D) trans-esophageal echocardiography; (E) cinefluoroscopy; (G) cardiac computed tomography (from reference [26]).

engaged in delivering and financing cardiovascular care, particularly in the context of the TAVI and SAVR competition. In their study, Dubois et al. indicated that SAVR is cost-saving when compared to TAVI, primarily attributed to the higher device costs associated with the latter. Excluding device costs, TAVI showed lower expenses and a shorter length of stay. Moreover, although the initial procedure costs for TAVI were higher than those for SAVR, the subsequent expenses related to rehabilitation, disabling stroke, treated atrial fibrillation, and rehospitalisation were lower. The significant contribution of non-medical staff expenses suggests that the length of stay plays a pivotal role as a major financial determinant. The robustness of TAVI's cost-effectiveness over SAVR was consistently observed in sensitivity analyses. In their study, De Paepe et al. highlighted that SAVR demonstrates cost-saving compared to TAVI, primarily due to the higher device costs associated with the latter [23]. However, when device costs were excluded, TAVI revealed lower expenses and a shorter length of stay. The notable contribution of non-medical staff expenses underscores the crucial role of length of stay as a key financial determinant (Figure 2).

Dubois et al. demonstrated in patients at low risk for surgical mortality using PARTNER 3 data that despite TAVI's higher initial procedural costs, subsequent expenses related to rehabilitation, disabling stroke, treated atrial fibrillation, and rehospitalisation were lower compared to SAVR [24]. Their cost-effectiveness

analysis in Belgium indicated that TAVI outperformed SAVR, showing an increase in quality-adjusted life years (QALYs) by 0.94 and cost savings of €3013 per patient. This underscored the significant clinical and cost advantages of TAVI SAPIEN valves over SAVR. Importantly, the robustness of TAVI's cost-effectiveness over SAVR was consistently evident in sensitivity analyses. These findings are likely relevant to EVOLUT TAVI valves, particularly given the favourable outcomes observed in low-risk patients [25].

In this issue of Acta Cardiologica, several focus images and cases highlighting interesting clinical conditions have also been reported (Figure 3) [26–34].

### Disclosure statement

Nothing to disclose.

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