

EHJ ACVC where translational science meets care

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Received 27 December 2024; accepted 31 December 2024; online publish-ahead-of-print 11 January 2025

The February issue of the *European Heart Journal Acute Cardiovascular Care* highlights potentially groundbreaking translational research and clinical studies, showcasing innovations that may reshape acute cardiovascular medicine. From inflammation and diagnostic advancements to device innovation, this issue offers clinically impactful findings and expert commentary, affirming the journal's leadership in bridging bench science and bedside care.

Schupp *et al.*¹ in a pivotal sub-study of the ECLS-SHOCK trial,^{2,3} investigate the prognostic role of C-reactive protein in 371 patients with acute myocardial infarction complicated by cardiogenic shock (AMI-CS). Elevated C-reactive protein levels in the highest tertile (>61.0 mg/L) were independently associated with a 3.5-fold higher 30-day mortality risk compared to the lowest tertile [≤ 5.0 mg/L; adjusted odds ratio: 3.54; 95% confidence interval (CI), 1.88–6.68; $P = 0.001$]. Patients with higher C-reactive protein levels tended to be older and less likely to present with acute cardiac arrest, suggesting a connection between systemic inflammation and more advanced shock progression. Importantly, extracorporeal life support did not improve 30-day mortality regardless of C-reactive protein levels. Incorporating C-reactive protein into the IABP-SHOCK II risk score⁴ minimally improved the model's discrimination (AUC: 0.74; 95% CI, 0.68–0.79), suggesting outcomes are principally driven by readily available clinical variables. François Roubille's commentary contextualizes these findings, calling for targeted anti-inflammatory strategies in managing AMI-CS.

Honda *et al.*⁵ bring further translational insight with the LASCAR-AHF trial, evaluating low-dose carperitide (recombinant α -human A-type natriuretic peptide) in acute heart failure (AHF). This multicentre randomized trial found no significant difference in the composite endpoint of all-cause mortality and heart failure hospitalizations between the carperitide group (29.5%) and standard treatment [28.0%; hazard ratio (HR): 1.26; 95% CI, 0.78–2.06; $P = 0.827$]. Secondary outcomes, such as dyspnoea relief and biomarker improvements, were also similar, while the carperitide group experienced greater renal function decline. The findings align with previous studies questioning the clinical utility of natriuretic peptides in AHF, prompting critical evaluation of their role in contemporary management strategies.

Device innovation takes centre stage in a study by Ikeda *et al.*⁶ utilizing observational data from the Japanese PVAD registry. High-flow percutaneous ventricular assist devices (PVADs; e.g. Impella 2.5 or CP) were associated with lower rates of complications, including haemolysis

(HR: 0.38; 95% CI, 0.24–0.58) and kidney injury (HR: 0.32; 95% CI, 0.18–0.57), compared to low-flow devices (e.g. Impella 5.0 or 5.5), while also associated with lower all-cause mortality (HR: 0.79; 95% CI, 0.65–0.96). In this non-randomized analysis, high-flow PVADs appeared to deliver superior safety and efficacy, without increasing bleeding or sepsis risks. In the absence of a randomized trial, these hypothesis-generating findings point to the potential importance of tailoring device selection to patient profiles, marking a leap forward in optimizing mechanical support for CS.

Innovation in diagnostics features prominently in a study by Moon *et al.*⁷ who developed a deep-learning model integrating electrocardiogram data for AHF diagnosis in emergency settings. Analysing data from over 19 000 emergency care visits, the model achieved outstanding accuracy (AUC-ROC: 0.90 in external validation), outperforming traditional diagnostic methods. Including clinical biomarkers, such as troponin and creatinine, further enhanced its performance. This artificial intelligence (AI)-driven approach offers a promising tool for rapid AHF diagnosis, setting a new standard for precision medicine in emergency care.

In a thought-provoking review, Van Aerde *et al.*⁸ address the shifting demographics of cardiac intensive care unit (CICU) patients, highlighting the increasing prevalence of elderly patients in CICUs, and the high proportion of patients with multiple comorbid conditions. Intensive care unit-acquired muscle weakness emerges as a major contributor to long-term morbidity and mortality after intensive care, emphasizing the need for standardized tracking of complications and holistic care strategies. This review underscores the importance of patient-centred models to improve long-term outcomes in CICU survivors.

This issue's *Best in the Year 2024* series focuses on acute aortic diseases,^{9–11} offering a comprehensive review of our journal's most impactful research in this critical area this year.

The February edition of the *European Heart Journal Acute Cardiovascular Care* exemplifies the journal's dedication to advancing translational research and clinical care. By spotlighting inflammation, leveraging AI-driven diagnostics, and optimizing device-based therapies, this issue equips healthcare professionals with actionable insights to improve patient outcomes. Dive into this essential issue and discover the future of acute cardiovascular medicine, where science meets care.

Enjoy reading, the editors.

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Funding

None declared.

Conflict of interest: none declared.

Data availability

No new data were generated or analysed in support of this research.

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