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ISSUE SUMMARY
Educational Papers

Bright days, critical decisions: evolving strategies in cardiogenic shock and OMI

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Welcome to the July issue of the *European Heart Journal—Acute Cardiovascular Care*, in which we spotlight the evolving and high-stakes landscape of cardiogenic shock (CS). This lethal and complex syndrome is increasingly shaped by precision diagnostics and physiologically guided therapies.[1–4] Despite advances, complications like bleeding and acute kidney injury (AKI) continue to drive poor outcomes.[5–8] As frontline teams face a continued drumbeat of acute myocardial infarction complicated by cardiogenic shock (AMI-CS), this issue highlights the critical role of individualized, physiology-based care, advanced diagnostics, and harm-reduction strategies—including optimal access site selection[9,10] and antithrombotic use[11]—in improving survival. In parallel, the timely recognition of occluded myocardial infarction (OMI) has emerged as a key factor in determining the success of early intervention and long-term prognosis. Traditional STEMI criteria too often miss acute coronary occlusions, delaying life-saving reperfusion. Mounting evidence, including new data featured in this issue, calls for a shift towards an OMI/non-OMI model in frontline ECG interpretation, potentially facilitating earlier diagnosis and better patient outcomes.[12]

The editor's choice is the retrospective observational study by Dr. Bjørn using data from the Danish RETROSHOCK cohort (2010–17).[8,13] This important investigation highlights the long-term association between AKI and poor outcomes in patients with acute myocardial infarction complicated by cardiogenic shock (AMI-CS). Among 1473 patients, 44% developed AKI, with 25% requiring renal replacement therapy (RRT). Mortality was more than 30% higher at 10 years among those who developed AKI ($P < 0.001$), positioning AKI as a major prognostic determinant in AMI-CS. Bjørn's findings resonate with concerns raised in the DanGer Shock trial, where improved survival from micro-axial pump support was shadowed by increased AKI incidence—reinforcing the urgent need for renal-protective strategies in shock management.[5,14] This manuscript is put into perspective by an editorial from Kevin Damman and Jozine Ter Maaten.[15]

From the Mayo Clinic, Fazzini *et al.*[16] contribute a powerful retrospective study assessing the prognostic utility of ventricular-arterial coupling (VAC) in 4685 critically ill cardiac intensive care patients. Using a simple, non-invasive ratio (left ventricle end-systolic volume/stroke volume), the study finds that a VAC ratio >2 was independently associated with increased in-hospital and 1-year mortality. This work positions VAC as an emerging bedside risk stratification tool based on non-invasive imaging, with strong potential to guide therapy in a wide range of critically ill cardiac patients.

Also featured is Zeymer *et al.*[11] retrospective analysis of cangrelor use in patients with out-of-hospital cardiac arrest undergoing PCI. In a cohort of 414 patients, cangrelor was shown to provide potent platelet inhibition without increasing major bleeding risk, even in the high-risk subgroup treated with extracorporeal CPR. These data support the tolerability of cangrelor as a bridging antiplatelet agent when oral drug absorption may be compromised—a pragmatic insight for interventionalists managing complex resuscitated patients.

Timely recognition of an occluded vessel is a defining moment in the trajectory of myocardial infarction. Yet, traditional tools are too often inadequate. In a compelling substudy from the DOMI-ARIGATO trial, Meyers *et al.*[17] reveal that 38% of patients with a confirmed LAD occlusion (TIMI 0 flow) failed to meet STEMI criteria on ECG. Crucially, both expert readers and an AI algorithm (PMCardio Queen of Hearts) achieved 100% sensitivity for occlusion detection on the first ECG. These findings raise attention to potential a paradigm shift—from STEMI/Non-STEMI to the more clinically accurate OMI/Non-OMI model—and signal a transformative future in which AI augments frontline diagnostic accuracy when every second counts.

In a clinically grounded and practical contribution, François Roubille[18] present an educational review on the early management of acute myocarditis (AM). Addressing ten real-world clinical questions, from imaging selection to timing of physical activity resumption, the authors emphasize that despite progress in diagnostic capabilities, no disease-specific therapies exist. Their call for a multi-disciplinary myocarditis response team is a timely reminder that co-ordination and clinical intuition remain cornerstones in the face of therapeutic uncertainty.

We are also proud to debut a new section: The Physiopathological Page. In this inaugural feature, Dr. Johannes Grand from Copenhagen University Hospital[19] explores the metabolic signatures of CS, examining lactate dynamics and context-specific variations across shock phenotypes. His analysis bridges mechanistic insight and bedside relevance, laying the groundwork for more tailored resuscitation strategies.

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As many of us approach a summer reprieve, this issue reminds us that even in the heat of July, the science of critical care never rests. From early occlusion detection and AI-enabled diagnostics to bleeding avoidance, renal protection, and physiology-guided care, this collection of studies represents the pulse of progress in CS. Whether you are reviewing cases in the cardiac intensive care unit or reflecting from a quieter place, we invite you to engage deeply with the work of our contributors, because advancing care for the sickest among us demands both vigilance and vision.

Author contributions

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