*Signa Vitae*

# EDITORIAL

# A year of impact: the best articles of 2024 in *Signa Vitae*

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The year 2024 marked a significant period for scholarship and clinical relevance in Signa Vitae, with a new Editor in Chief and an increased number of published articles, of which many received considerable attention and became important references in their fields [1–9]. These citations reflect the journal's commitment to advancing impactful, multidisciplinary research in critical care and emergency medicine. We hereby present a curated selection of the best 2024 Signa Vitae articles, grouped into four thematic areas: sepsis, neurocognitive complications, cardioprotection, and emergency department medicine (Fig. 1, Ref. [1–9]). This categorization not only highlights the breadth of scientific contributions but also emphasizes the need for a synthesis that showcases impactful research across diverse yet interconnected domains of acute care.

Among frequently cited articles, two publications stand out in the ongoing battle against sepsis. In a comprehensive review, Yang *et al*. [1] from Hunan Children's Hospital in China examined the use of extracorporeal membrane oxygenation (ECMO) as a salvage therapy for pediatric patients with refractory septic shock. This article synthesizes current practices, technical challenges, and future directions, and it has become a useful reference for clinicians exploring ECMO in critically ill children, given the high mortality associated with pediatric refractory septic shock.

Complementing this, Tullo *et al*. [2] from Fondazione Policlinico Universitario A. Gemelli in Italy evaluated the prognostic utility of the Sepsis-Induced Coagulopathy score in a large emergency department cohort. Their retrospective study demonstrated that the Sepsis-Induced Coagulopathy score is independently associated not only with in-hospital mortality but also with serious coagulopathy-related complications such as overt disseminated intravascular coagulation (DIC), bleeding, thrombosis, and new organ injury. The implications for early risk stratification and targeted intervention explain the strong citation impact of this research.

Two articles addressed the crucial intersection between neurological integrity and acute care. Cotae *et al*. [3] from Bucharest Emergency Clinical Hospital in Romania presented a timely review of early postoperative cognitive decline in the emergency surgical setting. Recognizing the limitations of preoperative preparation in urgent cases, the authors evaluated both pharmacological and non-pharmacological preventive strategies. Their practical recommendations have been well received by clinicians managing cognitively vulnerable patients, particularly the elderly.

In another impactful contribution, Möller Petrun *et al*. [4] from the University Medical Centre Maribor in Slovenia fo-

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## Key areas & main findings

**SEPSIS**

**Yang** *et al.* **[1]:** ECMO as rescue therapy in refractory pediatric septic shock

**Tullo** *et al.* **[2]:** SIC score predicts mortality and complications like DIC, bleeding, and organ failure

**CARDIOPROTECTION**

**PRINCE Trial [5]:** Remote ischemic preconditioning reduces myocardial injury in non-cardiac surgery

**Crescenzi** *et al.* **[6]:** Esmolol reduces low cardiac output syndrome, myocardial injury, and postoperative complications

**NEUROCOGNITION**

**Cotae** *et al.* **[3]:** Preventive strategies for postoperative cognitive decline in emergency surgery

**Möller Petrun** *et al.* **[4]:** Neurological complications in pregnancy and puerperium.

**EMERGENCIES**

**Zamzami** *et al.* **[7]:** Prolonged ED stay due to delays in consultations, drugs, and tests

**Shin** *et al.* **[8]:** Deep-ICU CMS algorithm predicts in-hospital cardiac arrest with higher accuracy than traditional scores

**Serra** *et al.* **[9]:** Hypotension, tachypnea, hypoxia, and elevated lactate predict mortality in elderly patients in the ED

**F I G U R E 1. Thematic areas of the articles selected by the editors of Signa Vitae.** ECMO: Extracorporeal membrane oxygenation; DIC: Disseminated Intravascular Coagulation; SIC: Sepsis Induced Coagulopathy; ED: Emergency Department; ICU: Intensive Care Unit; CMS: Content Management System.

cused on neurological complications during pregnancy, delivery, and the puerperium. By integrating clinical insights and current literature, the authors emphasized the importance of early recognition and intensive management of conditions such as eclampsia, venous sinus thrombosis, and other rare but serious neurological syndromes. This article has gained widespread attention for addressing a previously underrepresented but clinically urgent topic.

Cardioprotection also remained a central theme in 2024, with two standout articles capturing international interest.

The multicenter PRINCE trial designed by Greco *et al.* [5] aimed to investigate the efficacy of Remote Ischemic Preconditioning (RIPC) in reducing myocardial injury in patients undergoing non-cardiac surgery by enrolling high-risk patients across multiple centers underscoring the potential of non-invasive, low-cost strategies to mitigate perioperative cardiac complications. The full results have been subsequently published [10], advocating for Signa Vitae as a journal to publish trial protocols in.

On the pharmacological front, Crescenzi *et al.* [6] (Fondazione Policlinico San Matteo, Italy) investigated the cardioprotective role of esmolol in patients undergoing mitral valve surgery for mitral regurgitation. Their propensity-matched analysis revealed a significant reduction in low cardiac output syndrome, markers of myocardial injury, and postoperative complications in patients who received intraoperative esmolol prior to aortic cross-clamping. This study highlights the po-

tential of targeted beta-blockade in optimizing outcomes in cardiac surgery, resonating strongly with cardiac anesthesiologists and intensivists.

Crowded emergency departments continue to pose challenges for healthcare systems worldwide, with several highly cited articles addressing this issue from various perspectives. Zamzami *et al.* [7] (King Abdulaziz University, Saudi Arabia) conducted a retrospective analysis identifying the major contributors to prolonged emergency department length of stay (LOS). Their findings indicated that delays in consultation services were strongly associated with LOS, followed by delays in medication administration and diagnostic testing. This study was cited for its implications in system optimization and workflow redesign.

From a technological perspective, Shin *et al.* [8] (Soonchunhyang University, Korea) developed and validated Deep-Intensive Care Unit (ICU) Central Monitoring System, a deep-learning algorithm to identify patients at risk of in-hospital cardiac arrest among those admitted to emergency department-based intensive care units. The model was trained on routine vital signs, outperformed traditional early warning scores, and maintained accuracy over extended time frames. Enabling real-time risk stratification this article earned broad recognition among researchers interested in artificial intelligence and critical care.

Serra and Yuguero (University Hospital Arnau de Vilanova, Spain) retrospectively analyzed patients who died in the emer-

gency department and identified early clinical parameters (*e.g.*, hypotension, tachypnea, hypoxia, and elevated lactate levels) which were associated with poor outcomes, particularly in elderly patients [9]. The authors suggest to develop a targeted scoring system for elderly at triage, a concept which has attracted interest in emergency department risk modeling.

Interestingly, the articles chosen by the editorial board to be summarized in this manuscript were not necessarily the most frequently cited (Web of Science, accessed 6 August 2025), the most frequently downloaded, or the most frequently viewed among the 2024 Signa Vitae articles (Signa Vitae, accessed 30 July 2025) (Table 1). These were included because they best covered the four thematic areas the editorial board decided to address.

The best articles published in Signa Vitae in 2024 demonstrated innovative thinking, clinical relevance, and scientific rigor. From cardiac protection to neurocognitive complications, from machine learning in the emergency department to

**T A B L E 1. Most cited, most downloaded and most viewed Signa Vitae 2024 articles together with the nine articles chosen and discussed by the editors (which are presented in bold).**

| Author | Title | Citations | Downloads | Views |
|---|---|---|---|---|
| Most cited articles | | | | |
| Losiggio R *et al.* | The renal effects of amino acids infusion | 13 | 353 | 3772 |
| Alyahya B *et al.* | The epidemiology of poisoning and overdose in Saudi Arabia: exposures, risks, management and outcomes | 4 | 267 | 4645 |
| **Yang YF *et al.*** | Extracorporeal membrane oxygenation for refractory septic shock in children | 4 | 205 | 2357 |
| Depta F *et al.* | Evaluation of time constant, dead space and compliance to determine PEEP in COVID-19 ARDS: a prospective observational study | 4 | 198 | 2599 |
| Belletti A *et al.* | The role of Macklin effect in management of ARDS: beyond spontaneous pneumomediastinum | 3 | 208 | 1982 |
| Deng L *et al.* | Efficacy and safety of remimazolam besylate in patients with obesity undergoing painless colonoscopy: a prospective, double-blind, randomized controlled trial | 3 | 181 | 2289 |
| **Tullo G *et al.*** | Sepsis-induced coagulopathy (SIC) score is an independent predictor of mortality and overt-disseminated intravascular coagulation in emergency department patients with sepsis | 3 | 243 | 4272 |
| **Cotae AM *et al.*** | Early postoperative cognitive decline-are there any preventive strategies for surgical patients in the emergency setting? | 3 | 268 | 10,170 |
| **Möller Petrun A *et al.*** | Neurological complication during pregnancy, delivery and puerperium requiring intensive therapy management | 2 | 261 | 2864 |
| **Greco M *et al.*** | Remote ischemic preconditioning in non-cardiac surgery (PRINCE): a multinational, double blind, sham-controlled, randomized clinical trial | 2 | 304 | 3915 |
| Most downloaded articles (which were not among the most cited articles) | | | | |
| Salkaya A *et al.* | The effects of perioperative low-dose magnesium sulfate infusion on postoperative pain in lumbar surgery | 2 | 360 | 3831 |
| Zhu X *et al.* | Evaluation of respiratory muscle training interventions on pulmonary function in critical care: a systematic review and meta-analysis | 0 | 279 | 1776 |
| Tóth K *et al.* | Melatonin as adjuvant treatment in COVID-19 patients. A meta-analysis of randomized and propensity matched studies | 0 | 272 | 4433 |

**T A B L E 1. Continued.**

| Author | Title | Citations | Downloads | Views |
|---|---|---|---|---|
| Grinkeviciute DE *et al*. | Accidental transdermal fentanyl overdose in a child | 0 | 262 | 4276 |
| Niu Q *et al*. | A review on increasing risk for gastrointestinal bleeding associated with dabigatran | 0 | 261 | 3983 |
| **Shin Y *et al*.** | The development and validation of a novel deep-learning algorithm to predict in-hospital cardiac arrest in ED-ICU (emergency department-based intensive care units): a single center retrospective cohort study | 2 | 254 | 4341 |
| Most viewed articles (which were not among the most cited or downloaded) | | | | |
| Gao MH *et al*. | Application of opioid-free general anesthesia in laparoscopy: a meta-analysis of randomized controlled studies | 0 | 229 | 4196 |
| Aksoy A *et al*. | Analysis of the aeromedical evacuation of victims from the Syria-Turkey earthquake in 2023 | 1 | 240 | 3394 |
| Articles chosen by the editors (which were not among the most cited, downloaded or viewed) | | | | |
| **Zamzani A *et al*.** | Factors associated with prolonged emergency department length of stay in a resource-constrained setting | 2 | 207 | 2911 |
| **Serra M *et al*.** | Clinical factors of patients who die in an emergency department: the significance of early clinical data, especially for the elderly | 2 | 142 | 1885 |
| **Crescenzi G *et al*.** | Esmolol as a cardioprotective agent to reduce low cardiac output syndrome after cardiac surgery | 0 | 156 | 1680 |

*PEEP: Positive End-Expiratory Pressure; ARDS: Acute Respiratory Distress Syndrome; ED: Emergency department; ICU: Intensive Care Unit.*

life support strategies in sepsis, these studies are meaningful contributions to acute and critical care. We extend our congratulations to the authors of these influential articles and reaffirm our commitment to publishing research that advances knowledge, guides practice, and improves patient outcomes.

## AVAILABILITY OF DATA AND MATERIALS

Not applicable.

## AUTHOR CONTRIBUTIONS

FG, TCL, EM, ORPN and GL—wrote the initial draft. RMS, JVP, SIR, OK and MB—contributed to the creation and the interpretation of the table and the image. All authors contributed to editorial changes in the final manuscript. All authors read and approved the final manuscript.

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Not applicable.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest. Giovanni Landoni is serving as Editor-in-Chief, and Fabio Guarracino, Ozgur Karcioglu, Eleni Moka, Orlando Rubén Pérez-Nieto, Joseph V. Pergolizzi, Todd C. Lee, Stephanie I. Rizk and Rob Mac Sweeney are serving as the Editorial Board members of this journal. Full responsibility for the editorial process for this article was delegated to GI.

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