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COMMENTARY

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A B S T R A C T

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Annals of Emergency Medicine (North America)

Extracorporeal Cardiopulmonary Resuscitation: Outcomes Improve With Center Experience.

Magnet, I., Behringer, W., Eibensteiner, F., Ettl, F., Grafeneder, J., Heinz, G., … & Poppe, M. (2025). *Annals of Emergency Medicine*. https://doi.org/10.1016/j.annemergmed.2024.12.004.

Study: Extracorporeal cardiopulmonary resuscitation (eCPR) is a rescue therapy for selected patients when conventional cardiopulmonary resuscitation (CPR) fails. Current evidence suggests that the success of eCPR depends on well-structured in- and out-of-hospital protocols. This article describes the Vienna eCPR program, and the interventions implemented to improve clinical processes and patient outcomes.

Methods: In this retrospective study, we report on all patients with inhospital and out-of-hospital cardiac arrest treated with eCPR at our department between 2020 and 2023. During this period, the program was restructured, including the introduction of out-of-hospital and inhospital algorithms and interprofessional training. The primary endpoint was survival with favorable neurologic outcomes at 6 months, defined as a cerebral performance category score of 1 or 2.

Results: Overall, 192 patients were treated with eCPR. The proportion of patients with favorable neurologic outcomes was 25 % (n = 48), increasing each year: 15 % (5/34) in 2020, 19 % (8/42) in 2021, 23 % (12/53) in 2022, and 37 % (23/63) in 2023. This was particularly true for out-of-hospital cardiac arrest patients: 7 % (2/29), 14 % (4/29), 17 % (7/41), and 32 % (16/50), respectively. Simultaneously, rates of witnessed arrest, bystander CPR, and initial shockable rhythm increased, whereas low-flow durations decreased.

Conclusion: After restructuring the Vienna eCPR program, we were able to improve survival rates with favorable neurologic outcomes after eCPR. This improvement was accompanied with increased case volumes, rates of witnessed arrest, bystander CPR, and initial shockable rhythm, and decreased low-flow durations. The learning curve we observed illustrates that outcomes can improve with experience, a summation effect of training, patient selection, and process standardization.

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Canadian Journal of Emergency Medicine (North America)

Barriers and facilitators to caring for patients living with dementia in the emergency department: a qualitative study.

Jelinski, D., Reich, K., Lang, E., Holroyd-Leduc, J., & Goodarzi, Z. (2025). *Canadian Journal of Emergency Medicine*, 1–9.

DOI: https://doi.org/10.1007/s43678-025-00862-0

Purpose

Patients living with dementia are complex and visit the emergency department (ED) more frequently than other populations. There is a knowledge gap regarding challenges in care delivery for these patients from the perspective of interdisciplinary healthcare providers. The aim of this study was to identify the barriers and facilitators to caring for people living with dementia in the ED as perceived by healthcare providers to gain a deeper understanding of current care gaps and inform best care practices.

Methods

Semi-structured interviews were conducted with healthcare providers to understand their experiences in caring for people living with dementia in the ED. Healthcare providers currently employed within in a Calgary zone ED and with experience in caring for people living with dementia in the ED were eligible for participation. The Framework Method based on the Theoretical Domains Framework and the Behavior Change Wheel was used in the analysis to inform change interventions by addressing key factors that influence behavior.

Results

A total of 11 providers participated. Key facilitators to care included

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collaborative team approaches; collateral information from care partners, EMS, and care homes; geriatric medicine staff; addressing non-medical needs; and person-centered care. Key barriers to care included the ED environment encompassing challenges with lack of resources, staff, and time constraints; deteriorating cognition and behavioral challenges; and a lack of dementia-specific guidance and training.

Conclusion

This study highlights key issues in emergency care delivery at the system, unit, provider, and patient levels for people living with dementia through the analysis of healthcare provider experiences. Environmental context and resources, skills, and social/professional role and identity were key domains correlating to the major barriers and facilitators in these findings. Key opportunities for change are identified through which targeted interventions and policies may address dementia-related care gaps within the ED context.

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Emergencias (Europe)

Scale to predict risk for refractory septic shock based on a hybrid approach using machine learning and regression modeling.

Heo S, Jeong D, Choi M, Kim I, Kim M, Lee YR, et al. Emergencias. 2025;37:15–22

DOI: https://doi.org/10.55633/s3me/108.2024

Objective

To develop a scale to predict refractory septic shock (SS) based on clinical variables recorded during initial evaluations of patients.

Methods

Multicenter retrospective study of data for patients with suspected infection registered in the Marketplace for Medical Information in Intensive Care (MIMIC-IV). These data were used for the development and internal validation of the refractory SS scale (RSSS). For external validation, we used retrospective data for 2 cohorts: 1) patients diagnosed with SS in an emergency department (ED cohort) whose data were registered in a Korean SS registry, and 2) patients diagnosed with SS in 6 hospital intensive care units (ICU cohort). A machine-learning automatic clinical scoring system (AutoScore) was used in the development phase. The performance of the RSSS in the validation cohorts was assessed with the area under the receiver operating characteristic curve (AUROC) for each. The primary outcome was the development of refractory SS within 24 h of ICU admission. Refractory SS was defined by the need for a norepinephrine-equivalent dose greater than 0.5 μg/kg/min.

Results

We collected data for 29 618 patients from the MIMIC-IV registry, 3113 patients for the ED cohort, and 1015 for the ICU cohort. The RSSS had 6 predictors: serum lactate level, systolic blood pressure, heart rate, temperature, arterial pH, and leukocyte count. The scale's AUROCs were as follows: 0.873 (95 % CI, 0.846–0.900) in the internal validation, 0.705 (95 % CI, 0.678–0.733) in the ED cohort on arrival, 0.781 (95 % CI, 0.757–0.805) in the ED cohort at the moment of diagnosing hypoperfusion or hypotension, and 0.822 (95 % CI, 0.787–0.857) in the ICU cohort. Calibration was acceptable in all the cohorts.

Conclusion

The RSSS had adequate diagnostic accuracy in multiple cohorts of patients diagnosed in the ED and ICU.

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Hong Kong Journal of Emergency Medicine (Asia)

Synergistic prognostic value of base excess and fibrinogen in predicting mortality after severe trauma.

Han, J., Seok, J., Yoon, S. Y., Kim, S. H., Lee, J. Y., Ye, J. B., … & Sul, Y. (2025). *Hong Kong Journal of Emergency Medicine, 32*(1), e12079.

DOI: https://doi.org/10.1002/hkj2.12079

Purpose

Although base excess (BE) and fibrinogen are established prognostic markers in severe trauma, their combined predictive power remains uncharacterized. This study aimed to determine whether admission BE and fibrinogen levels independently and interactively predict 30-day mortality in severely injured adult trauma patients (ISS $\geq$ 15), thus informing improved resuscitation strategies.

Methods

This retrospective cohort study analyzed 513 adult trauma patients (ISS $\geq$ 15) admitted to a level I trauma center. Optimal BE and fibrinogen cutoffs were identified via ROC analysis. Adjusted Cox proportional hazards regression, controlling for key confounders, assessed the association between these biomarkers and 30-day mortality.

Results

30-day mortality was 12.1 % ($n = 62$). Low BE and low fibrinogen were independently associated with increased mortality ($p < 0.001$ and $p = 0.009$, respectively). Critically, a strong synergistic interaction was identified ($p < 0.001$), with patients exhibiting both low BE and low fibrinogen showing a markedly increased mortality risk (HR 8.46, 95 % CI 3.60–19.90, and $p < 0.001$).

Conclusion

Low admission BE and fibrinogen levels are strongly associated with increased mortality in severe trauma exhibiting a significant synergistic effect. These findings necessitate a multimodal approach to resuscitation targeting both metabolic acidosis and coagulopathy.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.