Journal report – říjen 2025

OBSAH

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study

1: Smith C, McHenry R, Norman S, Hardern R. **Regional retrospective observational analysis of the impact of enhanced care teams on trauma morbidity and mortality outcomes.** Scand J Trauma Resusc Emerg Med. 2025 Oct 24;33(1):175. doi: 10.1186/s13049-025-01481-5. PMID: 41137151; PMCID: PMC12553280.

2: Shi A, Chen J, He X, Chen C, Sun M, Li W, Xu W, Yang W, Han X. **Characterization and management of pain across phases of intraosseous infusion in emergency department patients with non-cardiac arrest.** Saudi Med J. 2025 Oct;46(10):1232-1239. doi: 10.15537/smj.2025.46.10.20250457. PMID: 41087074; PMCID: PMC12541752.

3: Mitra B, Reade MC, Bernard S, Dicker B, Maegele M, Gruen RL. **High ratio of plasma to red cells in contemporary resuscitation of haemorrhagic shock after trauma: a secondary analysis of the PATCH-trauma trial.** Scand J Trauma Resusc Emerg Med. 2025 Oct 2;33(1):154. doi: 10.1186/s13049-025-01476-2. PMID: 41039456; PMCID: PMC12492629.

4: Nutbeam T, Foote E, Rodgers LR, Thomas-Mourne J, Fenwick R. **A randomized controlled trial of verbal guidance versus verbal guidance supplemented by a photographic aid for bystander identification of intramuscular tranexamic acid injection sites in a simulated road injury scenario.** BMC Emerg Med. 2025 Oct 1;25(1):197. doi: 10.1186/s12873-025-01323-8. PMID: 41034724; PMCID: PMC12487021.

5: Burns B, Marschner IC, Buscher H, Coggins A, Oliver M, Maruno K, McNulty R, Hawkins S, Facer R, Pradhananga B, Kushwaha V, Salt G, Seppelt I, Mallows J, Li V, Kachwalla H, Buttfield A, EVIDENCE trial investigators. **Expedited transfer from the scene for refractory out-of-hospital cardiac arrest in Australia: a prospective, multicentre, parallel, open label, randomised clinical trial.** Lancet Respir Med. 2025 Oct;13(10):921-932. doi: 10.1016/S2213-2600(25)00130-4. Epub 2025 Aug 22. PMID: 40854321.

6: Zaboli A, Brigo F, Unterholzer F, Berenzi P, Turcato G. **Discrepancies Between Emergency Transport Modality and Emergency Department Outcomes: An Epidemiological Analysis.** J Public Health Manag Pract. 2025 Nov-Dec 01;31(6):E338-E346. doi: 10.1097/PHH.0000000000002196. Epub 2025 Oct 21. PMID: 40736159.

7: Gamberini L, Carinci V, Pallavicini P, Rovera M, Tartaglione M, Gioachin R, D'ambrosio A, Fiameni R, Baroncini S, Allegri D, Coniglio C, Semeraro F, Ristagno G; INFLICT working group. **Prehospital management of supraventricular tachycardia: a multicentre study of current**

practices with a subgroup propensity score-based comparison of adenosine and electrical cardioversion in unstable patients. Resuscitation. 2025 Oct;215:110707. doi: 10.1016/j.resuscitation.2025.110707. Epub 2025 Jul 7. PMID: 40633750.

8: Pöss J, Sinning C, Roßberg M, Hösler N, Ouarrak T, Böttiger BW, Ewen S, Wienbergen H, Voss F, Dutzmann J, Tigges E, Voigt I, Freund A, Desch S, Michels G, Thiele H, Zeymer U; G-CAR Investigators. **German Cardiac Arrest Registry (G-CAR)-results of the pilot phase.** Clin Res Cardiol. 2025 Oct;114(10):1270-1279. doi: 10.1007/s00392-024-02468-5. Epub 2024 Jun 13. PMID: 38869632; PMCID: PMC12460559.

PREHOSPITAL CARE

– systematic review & meta-analysis & scoping review

1: Masbi M, Tavkoli N, Payrovi H, Dowlati M. **Special care services delivery at disaster scenes: a systematic review.** Int J Emerg Med. 2025 Oct 16;18(1):206. doi: 10.1186/s12245-025-01041-9. PMID: 41102629; PMCID: PMC12532924.

2: Moslehi S, Tavan A, Khezeli M, Soleimanpour S, Narimani S. **Silent crisis on the frontlines: a systematic review of suicidal behaviors among disaster responders - epidemiology, risk pathways, and evidence-based interventions.** Scand J Trauma Resusc Emerg Med. 2025 Oct 3;33(1):161. doi: 10.1186/s13049-025-01479-z. PMID: 41044626; PMCID: PMC12495821.

3: Orso D, Flaibani L, Sisto UG, Bonsano M, Fonda F, Pangallo R, Bove T. **Survival and cost-effectiveness of helicopter versus ground emergency medical services: a systematic review and meta-analysis with meta-regression and trial sequential analysis.** Scand J Trauma Resusc Emerg Med. 2025 Oct 3;33(1):160. doi: 10.1186/s13049-025-01478-0. PMID: 41044612; PMCID: PMC12495656.

4: McCutcheon MMR, Allison JD, Smith SRG. **Impact of Mode of Arrival to Hospital on Early Mortality in Adults With Penetrating Trauma: A Systematic Review, Meta-Analysis, and Narrative Synthesis.** World J Surg. 2025 Oct;49(10):2959-2967. doi: 10.1002/wjs.70087. Epub 2025 Sep 8. PMID: 40922043.

5: Wells B, Nasreldein A, Larsen K, van Wijck F, Carcel C, Christensen H, Hov MR, Caso V, Woodward M, De Silva DA, Nguyen TN, Maloy VT, Allende MI, Opare-Addo PA, Fassbender K, SESAME Study Group. **Sex Differences in Prehospital Stroke Medicine (SESAME): A Systematic Review and Meta-Analysis.** Stroke. 2025 Oct;56(10):2976-2987. doi: 10.1161/STROKEAHA.124.050414. Epub 2025 Aug 4. PMID: 40755301.

Journal report – říjen 2025

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study –

1. Scand J Trauma Resusc Emerg Med. 2025 Oct 24;33(1):175. doi: 10.1186/s13049-025-01481-5.

Regional retrospective observational analysis of the impact of enhanced care teams on trauma morbidity and mortality outcomes.

Smith C(1)(2), McHenry R(3), Norman S(4), Hardern R.

BACKGROUND: In the UK, prehospital enhanced care teams (ECT) including Ground Emergency Medical Services or Helicopter Emergency Medical Services are staffed by doctors and critical care paramedics. To date, it has remained unclear whether the advanced interventions that can be delivered by an ECT generate demonstrable benefit in patient outcome. This study compares the morbidity and mortality of injured patients who received 'standard' paramedic-only care with those who were attended to additionally, or exclusively, by an ECT, comprising Pre-Hospital Emergency Medicine consultant and critical care paramedic.

METHODS: In collaboration with the Northern Trauma Network, a retrospective analysis of Trauma Audit and Research Network (TARN) data and case note review of all severe trauma cases (Injury Severity Score ≥ 9) in Cumbria and the North East of England, between 1 January 2010 to 31 December 2022 was completed. Patients treated by the North East, North West ambulance service and Great North Air Ambulance Services were included. TARN records were used to calculate Ws statistics in ECT and non-ECT groups to provide a measure of mortality adjusted for case mix. Glasgow Outcome Scales were contrasted to evaluate morbidity.

RESULTS: 1724 patients in the ECT group and 3327 in the non ECT group were studied. There was an association between ECT care and improved survival. The difference in observed and expected survival was + 69 in the ECT group and - 57 in the non-ECT group. The difference between the two groups' Ws statistic was 5.33 (95% CI 3.63 to 7.03), equivalent to one extra survivor for every 19 patients treated by an ECT group. There was no significant difference in morbidity between the two groups.

CONCLUSION: This study demonstrates a risk-adjusted significant mortality association in trauma patients, an additional 3.48 to 5.3 survivors per 100 severe (ISS ≥ 9) trauma casualties when treated by an ECT. This study details five key recommendations for future practice within HEMS. The authors encourage other ECT services to conduct further high-quality research.

CLINICAL TRIAL NUMBER: Not applicable.

DOI: 10.1186/s13049-025-01481-5

PMCID: PMC12553280

PMID: 41137151 [Indexed for MEDLINE]

2. Saudi Med J. 2025 Oct;46(10):1232-1239. doi: 10.15537/smj.2025.46.10.20250457.

Characterization and management of pain across phases of intraosseous infusion in emergency department patients with non-cardiac arrest.

Shi A(1), Chen J(1), He X(1), Chen C(1), Sun M(1), Li W(1), Xu W(1), Yang W(1), Han X(1).

OBJECTIVES: To identify risk factors for moderate-to-severe pain during intraosseous infusion (IOI) in non-cardiac arrest patients in the emergency department (ED). Secondary aims include evaluating pain trajectory across procedural stages and assessing the efficacy of a personalized pain management strategy.

METHODS: This mixed-methods study analyzed 220 ED patients undergoing IOI (150 retrospective, 70 prospective). The prospective cohort was randomized to standard care (n=35) or personalized pain management (n=35). Pain was quantified using the numeric rating scale (NRS) and critical-care pain observation tool (CPOT).

RESULTS: During puncture, 35.33% (53/150) reported no/mild pain. Pain severity peaked during flushing, with 73.33% (110/150) experiencing moderate/severe pain. At 15-minute infusion, this decreased to 57.33% (86). Univariate analysis identified gender and BMI as pain-associated factors ($p<0.05$). Multivariate analysis confirmed female gender (OR=13.468) and low BMI (OR=7.250) as independent risk factors ($p<0.05$). Compared to the control group, the personalized strategy group demonstrated significantly lower pain scores during puncture, flushing, and early infusion, with reduced analgesic requirements in the first 2 stages. No between-group differences occurred in puncture success or complication rates.

CONCLUSION: Intraosseous infusion flushing induces the most severe pain, particularly among females and low-BMI patients. Personalized, stage-targeted analgesia significantly improves pain control without compromising safety, supporting its integration into emergency IOI protocols.

DOI: 10.15537/smj.2025.46.10.20250457

PMID: 41087074 [Indexed for MEDLINE]

3. Scand J Trauma Resusc Emerg Med. 2025;33(1):154. doi: 10.1186/s13049-025-01476-2.

High ratio of plasma to red cells in contemporary resuscitation of haemorrhagic shock after trauma: a secondary analysis of the PATCH-trauma trial.

Mitra B(1)(2)(3), Reade MC(4)(5)(6), Bernard S(7)(8), Dicker B(9)(10), Maegele M(11)(12), Gruen RL(13)(14).

BACKGROUND: Plasma transfusion is recommended as an initial intervention in most major haemorrhage protocols for trauma resuscitation. With availability of newer blood components, therapeutic agents and investigations for coagulopathy, the marginal benefits of high ratios of plasma to red cells is uncertain. The aim of this study was to report the association of high ratios of plasma: red cells and 28-day mortality in patients with major trauma.

METHODS: The PATCH-Trauma trial enrolled critically bleeding patients at high risk of trauma induced coagulopathy and randomised them to receive prehospital tranexamic acid or placebo. The sub-group of patients who were managed with massive transfusions in hospital (> 4 units of red cells in first 4 h) were included for this post-hoc analysis. Associations of high ratios of plasma (more than 1 unit of plasma for every 2 units of red cells) and 28-day mortality were reported using multivariable logistic regression analysis after adjustment for potential confounders including age, neurological injury, injury severity, coagulopathy and administration of platelets, fibrinogen concentrates, cryoprecipitate and tranexamic acid.

RESULTS: Among 1310 patients enrolled in the PATCH-trauma trial, 372 patients were included for this analysis; 213 (57.3%) received high ratios of plasma: red cells and 116 (31.4%) deaths were recorded at 28 days. High ratios of plasma: red cells were associated with lower mortality (adjusted odds ratio; aOR 0.50; 95%CI: 0.26-0.96). Older age (aOR 1.02; 95%CI: 1.01-1.03), initial Glasgow Coma Scale 3-8 (aOR 6.57; 95%CI: 2.92-14.80) and trauma induced coagulopathy (aOR 5.64; 95%CI: 2.87-11.1) on hospital arrival were associated with higher mortality.

CONCLUSIONS: Among patients with critical bleeding managed with massive transfusions, high ratios of plasma: red cells were associated with lower mortality, after controlling for potential confounders. Ongoing provision of early plasma for management of critical bleeding is indicated with consideration to prehospital plasma.

REGISTRATION: ClinicalTrials.gov number, NCT02187120 (Registered 09 July 2014).

DOI: 10.1186/s13049-025-01476-2

PMID: 41039456 [Indexed for MEDLINE]

4. BMC Emerg Med. 2025 Oct 1;25(1):197. doi: 10.1186/s12873-025-01323-8.

A randomised controlled trial of verbal guidance versus verbal guidance supplemented by a photographic aid for bystander identification of intramuscular tranexamic acid injection sites in a simulated road injury scenario.

Nutbeam T(1)(2), Foote E(3), Rodgers LR(4), Thomas-Mourne J(5), Fenwick R(4)(6)(7).

BACKGROUND: Non-compressible haemorrhage is a leading cause of preventable death following road injury. Tranexamic acid (TXA), when administered early, improves survival. Intramuscular (IM) administration offers a feasible route for early administration by lay bystanders. However, the ability of bystanders to correctly identify safe IM injection sites remains unclear. This study aimed to evaluate whether verbal guidance supplemented by a photographic aid improves the accuracy of site identification in a simulated road injury scenario.

METHODS: In this randomised controlled trial, 64 lay participants were recruited on a university campus and randomised to receive either (1) verbal guidance alone or (2) verbal guidance plus photographic aid to locate the deltoid injection site on a simulated injured person. Site identification was assessed via sticker placement, and three expert raters with diverse medical backgrounds independently reviewed standardised photographs to determine site safety using a majority agreement rule. The primary outcome was safe site identification. A binomial generalised linear model assessed the association between intervention group and correct site identification. Inter-rater reliability was measured using Fleiss' Kappa.

RESULTS: Participants in the verbal guidance plus photographic aid group were significantly more likely to identify a safe injection site compared to those receiving verbal guidance alone (87.5% vs. 62.5%; OR 4.67, 95% CI 1.33, 19.92, p = 0.03). The presence of concerns regarding site safety was also significantly lower in the photo and verbal group (18.8% vs. 53.1%, p = 0.002). No significant associations were found between accuracy and participant age, gender, prior training, or confidence.

CONCLUSIONS: Supplementing verbal guidance with a photographic aid significantly improves bystander accuracy in identifying safe IM TXA injection sites in a simulated setting. This finding supports the potential integration of visual aids into emergency dispatch protocols to enhance early haemorrhage control in trauma care. Further research is needed to assess real-world application and impact. CLINICAL TRIAL NUMBER: ISRCTN Registry: ISRCTN41280918.

DOI: 10.1186/s12873-025-01323-8

PMID: 41034724 [Indexed for MEDLINE]

5. Lancet Respir Med. 2025 Oct;13(10):921-932. doi: 10.1016/S2213-2600(25)00130-4. Epub 2025 Aug 22.

Expedited transfer from the scene for refractory out-of-hospital cardiac arrest in Australia: a prospective, multicentre, parallel, open label, randomised clinical trial.

Burns B(1), Marschner IC(2), Buscher H(3), Coggins A(4), Oliver M(5), Maruno K(3), McNulty R(6), Hawkins S(7), Facer R(8), Pradhananga B(8), Kushwaha V(9), Salt G(9), Seppelt I(10), Mallows J(10), Li V(10), Kachwalla H(11), Buttfield A(11), Fridgant Y(12), Kruit N(4), Dutton N(13), Arnold J(13), Milligan J(14), Smith J(14), Cartwright B(5), Carey R(15), Bendall J(13), Asha S(16), Wright K(17), Allan M(17), Curtis K(18), Ware S(13), Dyson S(13), Sackley M(19), Taing C(20), Austin DE(21), Ferguson I(22), Morton RL(20), Keech A(23), Dennis M(24); EVIDENCE trial investigators.

BACKGROUND: The benefit of expedited intra-arrest transport with ongoing resuscitation versus more extended on-scene resuscitation for refractory out of hospital cardiac arrest (OHCA) is uncertain. We aimed to determine whether expedited intra-arrest transfer to hospital in adults with refractory OHCA improves favourable neurological outcomes.

METHODS: We conducted a prospective, parallel, multi-centre, open-label randomised, superiority trial across greater Sydney, NSW, Australia. Patients aged 18-70 years with a witnessed OHCA of presumed medical cause, bystander cardiopulmonary resuscitation (CPR), and an initial shockable rhythm or pulseless electrical activity without return of spontaneous circulation after 15 mins of advanced life support or three rounds of professional resuscitation were randomly assigned (1:1) at the scene by New South Wales Ambulance paramedics using a secure online randomisation system. Masking of allocation from ambulance staff and hospital staff receiving the patients was not possible. The intervention consisted of a predefined expedited bundle of pre-hospital care followed by intra-arrest transport with mechanical compression to a cardiac catheterisation centre (15 receiving hospitals) for immediate assessment for coronary angiography, extracorporeal cardiopulmonary resuscitation (ECPR), or both. The control arm consisted of a standard transport strategy of more extended on-scene advanced life support before considering transport and the same therapies. The primary outcome was survival with a good neurological outcome (defined as Cerebral Performance Category [CPC] score of 1-2) at hospital discharge, stratified by initial rhythm. Patients were followed-up until death or for 6 months (last patient followed-up Aug 29, 2024). All analyses were done on an intention-to-treat basis. The trial was prospectively registered with the Australian Clinical Trials Registry, ACTRN12621000668808 and is now complete. Data on safety and adverse events were collected throughout the study period and reported to a data safety monitoring board on a 6 monthly basis.

FINDINGS: Between July 15, 2021 and March 3, 2024, we enrolled 206 patients. Eight patients were later deemed to be ineligible and one patient was excluded due to a randomisation application failure. 197 patients were therefore enrolled; 102 to the expedited strategy (intervention) and 95 to the standard strategy (control). The median age was 57·0 years (range 47-64); 161 (82%) were men and 78 (40%) were White. At hospital discharge, 15 (15%) of 102 patients in the expedited transportation group were alive with a favourable neurological outcome, compared with 15 (16%) of 95 patients in the standard care group (risk difference -1·1% [95% CI -12·2% to 10·0%]; adjusted relative risk 0·95 [95% CI 0·50 to 1·8], p=0·87). 38 patients had a serious adverse event (19%)-35 (92%) were diagnosed with a hypoxic brain injury (17 [49%] in the expedited arm, 18 [51%] in the standard arm), one (3%) had a cerebral stroke, one (3%) had a pulmonary haemorrhage, and one (3%) had a gastrointestinal haemorrhage (all in the standard arm). Adverse events were evenly distributed between treatment arms. No unanticipated (ie, expected sequelae seen in a cardiac arrest trial or in intensive care) adverse events were identified.

INTERPRETATION: Among patients with refractory out-of-hospital cardiac arrest, expedited intra-arrest transport did not significantly improve survival with neurologically favourable outcome. However, the study might have been underpowered to detect a smaller than expected treatment effect. FUNDING: New South Wales Health Translational Research Grant Scheme (H20/93572).

DOI: 10.1016/S2213-2600(25)00130-4

PMID: 40854321 [Indexed for MEDLINE]

6. J Public Health Manag Pract. 2025 Nov-Dec 01;31(6):E338-E346. doi: 10.1097/PHH.0000000000002196. Epub 2025 Oct 21.

Discrepancies Between Emergency Transport Modality and Emergency Department Outcomes: An Epidemiological Analysis.

Zaboli A(1), Brigo F, Unterholzer F, Berenzi P, Turcato G.

BACKGROUND: Prehospital emergency services have evolved significantly, with increased specialization and deployment of advanced transport systems. However, concerns have been raised regarding the potential overutilization of these resources by patients who may not present with clinically urgent conditions. This study aims to investigate the relationship between the mode of arrival to the Emergency Department (ED) and the clinical severity upon evaluation, emphasizing the appropriateness of advanced emergency transport use.

METHODS: We conducted a multicenter retrospective observational study analyzing all ED visits (n = 1 282 976) from January 1, 2019, to December 31, 2023, across seven hospitals in the Province of Bolzano, Italy. Data were extracted from electronic health records. Variables included patient demographics, mode of arrival, triage priority and hospital admission. Logistic regression models adjusted for hospital-level clustering were used to assess associations between transport modality and outcomes.

RESULTS: Most patients (77.4%) arrived by self-transport, while 0.8% arrived by helicopter. Although advanced transport was associated with higher odds of urgent triage and hospital admission, a substantial proportion of patients transported by helicopter (approximately 50%) or physician-staffed ambulance (approximately 30%) were discharged or assigned non-urgent triage codes. Logistic regression confirmed that advanced transport significantly decreased the odds of receiving a non-urgent code and increased the likelihood of admission; however, notable overtriage persisted.

CONCLUSIONS: The findings highlight a mismatch between transport modality and clinical urgency in a significant number of cases. Enhancing emergency dispatch protocols and refining prehospital triage systems are critical to ensuring resource sustainability and optimizing care delivery within public healthcare systems.

DOI: 10.1097/PHH.0000000000002196

PMID: 40736159 [Indexed for MEDLINE]

7. Resuscitation. 2025 Oct;215:110707. doi: 10.1016/j.resuscitation.2025.110707. Epub 2025 Jul 7.

Prehospital management of supraventricular tachycardia: a multicentre study of current practices with a subgroup propensity score-based comparison of adenosine and electrical cardioversion in unstable patients.

Gamberini L(1), Carinci V(2), Pallavicini P(3), Rovera M(4), Tartaglione M(5), Gioachin R(6), D'ambrosio A(7), Fiameni R(8), Baroncini S(1), Allegri D(9), Coniglio C(1), Semeraro F(1), Ristagno G(10); INFLICT working group.

BACKGROUND: Supraventricular tachycardia (SVT) is a common prehospital arrhythmia that can cause life-threatening instability. Adenosine is the first-line treatment for stable SVT, but guidelines differ for unstable cases with hypotension, syncope, myocardial ischaemia, or severe heart failure. The European Resuscitation Council recommends electrical cardioversion (ECV), while the American Heart Association allows for an adenosine trial. This multicentre

observational retrospective study evaluated global prehospital management strategies for SVT, subsequently focusing on adenosine vs ECV in unstable patients.

METHODS: Data from 2019 to 2024 were collected from three Italian physician-staffed Emergency Medical Services. Primary outcome was the rate of successful cardioversion; secondary outcomes included the presence of life-threatening complications following cardioversion. Finally, the diagnostic accuracy of available ECG traces was evaluated. Propensity score-weighted analysis was employed to control for potential cofounding variables.

RESULTS: Among 1234 SVT events, 819 (66.3 %) underwent prehospital cardioversion. Of these, 763 (93.2 %) received adenosine and 56 (6.8 %) underwent ECV. Unweighted cardioversion success rates were 80.1 % for adenosine and 83.9 % for ECV. In unstable patients, ECV had a weighted odds ratio of 2.41 (95 % CI: 1.01-7.14) for successful conversion. ECV was associated with more frequent sedative use compared to adenosine. No complications were observed in either groups. ECG diagnostic accuracy was 90.7 %, with dangerous misdiagnosis, such as ventricular tachycardia, occurring in fewer than 2 % of available ECG readings.

CONCLUSIONS: In patients with prehospital SVT, adenosine is the preferred cardioversion strategy. In unstable cases, adenosine may be a safe first-line attempt before ECV, potentially reducing sedation-related risks. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT06077799.

DOI: 10.1016/j.resuscitation.2025.110707

PMID: 40633750 [Indexed for MEDLINE]

8. Clin Res Cardiol. 2025 Oct;114(10):1270-1279. doi: 10.1007/s00392-024-02468-5. Epub 2024 Jun 13.

German Cardiac Arrest Registry (G-CAR)-results of the pilot phase.

Pöss J(1), Sinning C(2), Roßberg M(3), Hösler N(4), Ouarrak T(5), Böttiger BW(6), Ewen S(7), Wienbergen H(8), Voss F(9), Dutzmann J(10), Tigges E(11), Voigt I(12), Freund A(3), Desch S(3), Michels G(13), Thiele H(3), Zeymer U(5)(14); G-CAR Investigators.

BACKGROUND: In Europe, more than 300,000 persons per year experience out-of-hospital cardiac arrest (OHCA). Despite medical progress, only few patients survive with good neurological outcome. For many issues, evidence from randomized trials is scarce. OHCA often occurs for cardiac causes. Therefore, we established the national, prospective, multicentre German Cardiac Arrest Registry (G-CAR). Herein, we describe the first results of the pilot phase.

RESULTS: Over a period of 16 months, 15 centres included 559 consecutive OHCA patients aged ≥ 18 years. The median age of the patients was 66 years (interquartile range 57;75). Layperson resuscitation was performed in 60.5% of all OHCA cases which were not observed by emergency medical services. The initial rhythm was shockable in 46.4%, and 29.1% of patients had ongoing CPR on hospital admission. Main presumed causes of OHCA were acute coronary syndromes (ACS) and/or cardiogenic shock in 54.8%, with ST-elevation myocardial infarction being the most common aetiology (34.6%). In total, 62.9% of the patients underwent coronary angiography; percutaneous coronary intervention (PCI) was performed in 61.4%. Targeted temperature management was performed in 44.5%. Overall in-hospital mortality was 70.5%, with anoxic brain damage being the main presumed cause of death (38.8%). Extracorporeal cardiopulmonary resuscitation (eCPR) was performed in 11.0%. In these patients, the in-hospital mortality rate was 85.2%.

CONCLUSIONS: G-CAR is a multicentre German registry for adult OHCA patients with a focus on cardiac and interventional treatment aspects. The results of the 16-month pilot phase are shown herein. In parallel with further analyses, scaling up of G-CAR to a national level is envisaged. Trial registration ClinicalTrials.gov identifier: NCT05142124.

DOI: 10.1007/s00392-024-02468-5

PMCID: PMC12460559

PMID: 38869632 [Indexed for MEDLINE]

Journal report – říjen 2025

PREHOSPITAL CARE

– systematic review & meta-analysis & scoping review –

1. Int J Emerg Med. 2025 Oct 16;18(1):206. doi: 10.1186/s12245-025-01041-9.

Special care services delivery at disaster scenes: a systematic review.

Masbi M(1), Tavkoli N(2), Payrovi H(3), Dowlati M(4).

BACKGROUND: Disasters create strain on health systems and require significant preparedness to reduce mortality and morbidity. Special care services; e.g. Advanced Life Support, critical care interventions (intubation; vasopressor therapy) and point of care diagnostics (ultrasound) may be provided in disaster-settings, although actual use of services is dependent on logistical, operational and contextual issues. This systematic review identifies an important gap to understand the effectiveness, feasibility and barriers to, special care services.The overall aim of this systematic review is to synthesise global evidence on the evidence-based practices and improve disaster response.

METHODS: This systematic review utilized PubMed, Scopus, Web of Science, Embase, and grey literature from the time of inception of the different databases to January 2025, from which a total of 4465 records were identified. After a thorough, organized review of the identified records based on our exclusion criteria and inclusion criteria, a total of 31 articles were retained. The systematic review followed PRISMA 2020, and searched for studies on special care services in a pre-hospital disaster setting, and included primary research and review articles that described advanced interventions, and which had no time restrictions on date of publication. Articles that were waived from the cost of in-app purchasing were excluded due to limited resources and could limit the studies that were included. Quality assessment using STROBE, SANRA and checklists, along with the categories of findings using a thematic content analysis based on the dimensions of prehospital care.

RESULTS: Thematic analysis revealed six broad themes: Patient Care and Clinical Management, Operational Efficiency and Logistics, Personnel and Training, Technology and Equipment, System Coordination and Preparedness, and Ethical and Contextual Considerations. Advanced functions like REBOA, ultrasound and AI-related diagnostics improved survival and neurological outcomes, However, they were restricted due to limited resources, lack of training, and lack of coordination, particularly in low resource contexts.

CONCLUSIONS: The reviewed literature demonstrated that critical-care services such as Advanced Life Support (ALS), intubation, and ultrasound resulted in improved morbidity and

mortality outcomes in disaster settings but were limited due to resource constraints, lack of training and inadequate coordination all the more pertinent to low-resource settings.

CLINICAL TRIAL NUMBER: Not applicable. SUPPLEMENTARY INFORMATION: The online version contains supplementary material available at 10.1186/s12245-025-01041-9.

DOI: 10.1186/s12245-025-01041-9

PMCID: PMC12532924

PMID: 41102629

2. Scand J Trauma Resusc Emerg Med. 2025;33(1):161. doi: 10.1186/s13049-025-01479-z.

Silent crisis on the frontlines: a systematic review of suicidal behaviors among disaster responders - epidemiology, risk pathways, and evidence-based interventions.

Moslehi S(1)(2), Tavan A(3), Khezeli M(4), Soleimanpour S(5), Narimani S(6)(7).

BACKGROUND: First responders (including paramedics, firefighters, police, and dispatchers) experience significantly elevated suicide risk due to repeated trauma exposure, high rates of PTSD and depression, and systemic barriers to mental healthcare. This systematic review examines (1) suicide prevalence, (2) psychological and occupational risk factors, and (3) interventions across different emergency service roles and global contexts.

METHOD: This study rigorously adhered to the PRISMA guidelines in conducting a systematic and comprehensive analysis of 24 peer-reviewed studies (up to February 2025), meticulously sourced from PubMed, Scopus, Web of Science, and Embase. Only studies providing unique qualitative or quantitative insights into Suicidal Behaviors Among Disaster Responders were included. The extracted data was meticulously examined using advanced thematic analysis and robust descriptive statistics, ensuring a deep, evidence-based exploration of this critical issue.

RESULTS: The systematic analysis of 24 studies revealed four critical categories shaping suicidal behaviors among disaster responders: (1) Epidemiology and Prevalence, highlighting elevated risks in firefighters and EMS personnel; (2) Psychological and Occupational Risk Factors, including PTSD, depression, and workplace burnout; (3) Systemic and Cultural Barriers, such as stigma and rural access gaps; and (4) Interventions and Solutions, demonstrating efficacy in trauma-focused therapies, peer support, and policy reforms like Houston's zero-suicide program. Thematic synthesis underscored the interplay of individual vulnerabilities and structural failures, urging integrated, occupation-specific prevention strategies.

CONCLUSION: Effective prevention requires integrated clinical interventions (trauma-focused therapies), organizational reforms (routine screenings), and cultural shifts (destigmatization).

DOI: 10.1186/s13049-025-01479-z

PMCID: PMC12495821

PMID: 41044626 [Indexed for MEDLINE]

3. Scand J Trauma Resusc Emerg Med. 2025;33(1):160. doi: 10.1186/s13049-025-01478-0.

Survival and cost-effectiveness of helicopter versus ground emergency medical services: a systematic review and meta-analysis with meta-regression and trial sequential analysis.

Orso D(1), Flaibani L(2), Sisto UG(3), Bonsano M(3), Fonda F(2), Pangallo R(2), Bove T(2)(4).

OBJECTIVE: To synthesise the available literature comparing outcomes of ground emergency medical services (GEMS) and helicopter emergency medical services (HEMS).

METHODS: We conducted a systematic review and meta-analysis, reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, Scopus, Web of Science, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) were searched from 1995 to 2024. Studies comparing HEMS with GEMS in emergency conditions were eligible.

RESULTS: The search retrieved 1,595 records; 181 studies were assessed in full text, and 77 were included, accounting for a pooled population of 2,618,483 patients. The relative risk (RR) of mortality in HEMS compared with GEMS was 1.13 (95% CI 0.96-1.34). The RR of disability was 1.24 (95% CI 0.99-1.55). The total incremental net benefit was €980,000 per QALY per patient, based on cost-effectiveness studies and a willingness-to-pay threshold of €35 million per QALY per patient.

CONCLUSION: Very low-quality evidence, due to high heterogeneity, potential confounding from registry-based enrolment, and possible multiple imputation bias, suggested that HEMS did not improve survival compared with GEMS. High-quality studies are needed to further investigate this question.

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4. World J Surg. 2025 Oct;49(10):2959-2967. doi: 10.1002/wjs.70087. Epub 2025 Sep 8.

Impact of Mode of Arrival to Hospital on Early Mortality in Adults With Penetrating Trauma: A Systematic Review, Meta-Analysis, and Narrative Synthesis.

McCutcheon MMR(1)(2), Allison JD(2)(3), Smith SRG(2)(4).

BACKGROUND: Penetrating injury is a time-critical disease where early definitive treatment is lifesaving. Although most patients with penetrating trauma reach the emergency department (ED) via emergency medical services (EMS), self-presentation or transport with police are also common. This review synthesizes the available evidence in adult penetrating trauma to evaluate if the mode of transport to hospital impacts early mortality.

METHODS: Two groups were defined as follows: transport to hospital with emergency medical services (EMS) and 'other' transport (private or police). Medline, Embase, and CENTRAL databases were searched as well as gray literature. Results were screened by two authors. Eligible studies were assessed for quality and risk of bias and included in both a meta-analysis using a random effects calculation of odds ratio and narrative analysis.

RESULTS: 19 studies were included overall. Meta-analysis using data from nine studies showed EMS transport did not significantly impact early mortality (OR 1.32 [95% CI 0.70-2.48] ($p = 0.39$)). Overall injury-severity adjusted mortality was assessed using data from 14 studies and was also not significantly affected by EMS transport (OR 1.21 [95% CI 0.93-1.59] ($p = 0.16$)). Data comparing injury-to-hospital arrival times for medical and nonmedical transport were limited but suggested nonmedical transport was faster amongst an urban cohort of patients.

CONCLUSIONS: There was no survival benefit associated with EMS transport among this largely USA-based urban cohort of patients with penetrating trauma. Shorter injury-to-hospital arrival times associated with nonmedical transport may, in some cases, outweigh the benefits of prehospital care. These findings support an emphasis on shortening the prehospital phase for severely injured penetrating trauma patients, which may include use of nonmedical transport where transport times are short.

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5. Stroke. 2025 Oct;56(10):2976-2987. doi: 10.1161/STROKEAHA.124.050414. Epub 2025.

Sex Differences in Prehospital Stroke Medicine (SESAME): A Systematic Review and Meta-Analysis.

Wells B(1)(2), Nasreldein A(3), Larsen K(4)(5), van Wijck F(1), Carcel C(6), Christensen H(7), Hov MR(4)(5)(8), Caso V(9), Woodward M(6)(10), De Silva DA(11), Nguyen TN(12), Maloy VT(4), Allende MI(6), Opare-Addo PA(13), Fassbender K(14), Bachhuber M(14), Sandset EC(4)(5), Walter S(14); SESAME Study Group.

BACKGROUND: Several studies have evaluated sex discrepancies in the prehospital management of patients with acute stroke. This systematic review and meta-analysis aims to summarize reported knowledge about sex differences in dispatch center and emergency medical service management. It proposes a roadmap of questions and the next necessary steps to ensure equitable prehospital stroke care.

METHODS: We conducted a systematic review and meta-analysis, using a random-effects model with inverse weighting. PubMed, CINAHL, EMBASE, and EMCARE were searched for studies investigating sex differences in the prehospital management of patients with suspected and acute stroke. The main outcome was the relative risk (RR) for receiving a correct prehospital stroke diagnosis. Additional outcomes are related to prehospital management and time metrics.

RESULTS: Sixteen studies were included, comprising 571 024 male patients and 622 764 female patients. No relevant risk of bias was detected. Female patients were less often correctly identified as stroke suspects than male patients (RR, 0.92 [95% CI, 0.89-0.96]; I2=73%). No differences were observed in the number receiving a dispatch code stroke (RR, 0.95 [95% CI, 0.88-1.02]; I2=96%), prenotification to hospital by emergency medical service (RR, 0.98 [95% CI, 0.96-1.00]; I2=92%), or conveyance to a stroke center (RR, 0.99 [95% CI, 0.79-1.24]; I2=82%). There was no difference in mean time from emergency call to hospital door (mean difference, 1.12 [95% CI, -0.64 to 2.89] minutes; I2=96%). No conclusion could be drawn for outcomes of on-site clinical management, emergency medical service-to-hospital team interaction, and most of the time metrics due to a lack of data.

CONCLUSIONS: This analysis indicates sex differences in the prehospital recognition of acute stroke. However, significant heterogeneity and a lack of data for most steps of prehospital care also highlight the urgent need for high-quality studies to systematically investigate prehospital management disparity between female and male patients with suspected acute stroke.

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