Journal report – leden 2025

OBSAH

HOSPITAL CARE

– clinical trials & RCT & multicenter study

1: Helland AM, Mydske S, Assmus J, Brattebø G, Wiggen Ø, Kvidaland HK, Thomassen Ø. **Experimental hypothermia by cold air: a randomized, double-blind, placebo-controlled crossover trial.** Scand J Trauma Resusc Emerg Med. 2025 Jan 31;33(1):16. doi: 10.1186/s13049-025-01331-4. PMID: 39891247; PMCID:PMC11786356.

2: Burk KJ, Stroh JJ, Larkin K, Chaftari P, Langabeer DM, Menendez JR, Woodruff JF, Hargrave J, Zhu H, Long JP, Yeung SJ, Alagappan K, Qdaisat A. **Empathy Unmasked: Patient Perception of Physician Empathy in an Oncologic Emergency Setting. A Randomized Controlled Trial Comparing Personal Protective Equipment Wear versus Unmasked Video Communication.** J Emerg Med. 2025 Jan;68:43-53. doi: 10.1016/j.jemermed.2024.08.005. Epub 2024 Aug 13. PMID: 39800593.

3: Mühling T, Schreiner V, Appel M, Leutritz T, König S. **Comparing Virtual Reality-Based and Traditional Physical Objective Structured Clinical Examination (OSCE) Stations for Clinical Competency Assessments: Randomized Controlled Trial.** J Med Internet Res. 2025 Jan 10;27:e55066. doi: 10.2196/55066. PMID: 39793025; PMCID: PMC11759906.

4: Bej TA, Wilson BM, Akpoji UC, Mongilardi N, Chengsupanimit TT, Song S, Kowal C, Stryczek KC, Hearns R, Honsberger M, Wilkerson TL, Firestone C, Subramaniam S, Stevenson L, Ball SL, Jump RLP, Perez F. **Feasibility of a Low-Intensity Intervention to Influence Antibiotic Prescribing Rates Use in Outpatient Settings: A Cluster Randomized Controlled Clinical Trial.** Open Forum Infect Dis. 2024 Dec 16;12(1):ofae725. doi: 10.1093/ofid/ofae725. PMID: 39758744; PMCID: PMC11697152.

5: Ho PM, Glorioso TJ, Allen LA, Blankenhorn R, Glasgow RE, Grunwald GK, Khanna A, Magid DJ, Marrs JC, Novins-Montague S, Orlando S, Peterson P, Plomondon ME, Sandy LM, Saseen JJ, Trinkley KE, Vaughn S, Waughtal J, Bull S. **Personalized Patient Data and Behavioral Nudges to Improve Adherence to Chronic Cardiovascular Medications: A Randomized Pragmatic Trial.** JAMA. 2025 Jan 7;333(1):49-59. doi: 10.1001/jama.2024.21739. PMID: 39621340; PMCID: PMC11612915.

6: Chambers LC, Welwean RA, Cho DK, Langdon KJ, Li Y, Hallowell BD, Daly MM, Marshall BDL, Beaudoin FL. **Recovery Capital and Subsequent Overdose Risk and Addiction Treatment Engagement Among Emergency Department Patients at High Risk of Opioid Overdose.** Subst

Use Misuse. 2025;60(3):381-392. doi: 10.1080/10826084.2024.2434003. Epub 2024 Dec 1. PMID: 39618048; PMCID: PMC11769765.

7: Ramakrishnan S, Russell REK, Mahmood HR, Krassowska K, Melhorn J, Mwasuku C, Pavord ID, Bermejo-Sanchez L, Howell I, Mahdi M, Peterson S, Bengtsson T, Bafadhel M. **Treating eosinophilic exacerbations of asthma and COPD with benralizumab (ABRA): a double-blind, double-dummy, active placebo-controlled randomised trial.** Lancet Respir Med. 2025 Jan;13(1):59-68. doi: 10.1016/S2213-2600(24)00299-6. Epub 2024 Nov 29. PMID: 39615502.

PREHOSPITAL CARE

– systematic review & meta-analysis

1: Wang Z, Rostami-Tabar B, Haider J, Naim M, Haider J. A **Systematic Literature Review of Trauma Systems: An Operations Management Perspective**. Adv Rehabil Sci Pract. 2025 Jan 16;14:27536351241310645. doi: 10.1177/27536351241310645. PMID: 39830526; PMCID: PMC11742173.

2: Boulton AJ, Edwards R, Gadie A, Clayton D, Leech C, Smyth MA, Brown T, Yeung J; International Liaison Committee on Resuscitation (ILCOR) Education, Implementation and Team (EIT) taskForce. **Prehospital critical care beyond advanced life support for out-of-hospital cardiac arrest: A systematic review.** Resusc Plus. 2024 Dec 12;21:100803. doi: 10.1016/j.resplu.2024.100803. PMID: 39807287; PMCID: PMC11728073.

3: Birkun AA. **Public awareness of telephone number for medical emergencies: a scoping review.** Clin Exp Emerg Med. 2025 Jan 14. doi: 10.15441/ceem.24.289. Epub ahead of print. PMID: 39807062.

4: Lavery MD, Aulakh A, Christian MD. **Benefits of targeted deployment of physician-led interprofessional pre-hospital teams on the care of critically Ill and injured patients: a systematic review and meta-analysis.** Scand J Trauma Resusc Emerg Med. 2025 Jan 6;33(1):1. doi: 10.1186/s13049-024-01298-8. PMID: 39757222; PMCID: PMC11702211.

5: Sen JPB, Emerson J, Franklin J. **Diagnostic accuracy of prehospital ultrasound in detecting lung injury in patients with trauma: a systematic review and meta-analysis.** Emerg Med J. 2025 Jan 2:emermed-2023-213647. doi: 10.1136/emermed-2023-213647. Epub ahead of print. PMID: 39746800.

6: Aroor SR, Zevallos CB, Asif KS, Singh N, Potter-Vig J, Rodriguez-Calienes A, Menon BK, Ganesh A, Saver JL, Kamel H, Alexandrov AW, Jauch EC, Miao Z, Huo X, Ramakrishnan P, Desai SM, Limaye K, El-Ghanem M, Toth G, Rao CV, Masoud HE, Wang QT, Herial NA, Atchaneeyasakul K,

Journal report – leden 2025

Szeder V, Amuluru K, Urrutia VC, Al-Mufti F, Yavagal DR, Ortega-Gutierrez S. **Mechanical Thrombectomy Access Score: A Systematic Review and Modified Delphi of Global Barriers to Endovascular Therapy.** Stroke. 2025 Jan;56(1):158-167. doi: 10.1161/STROKEAHA.124.047805. Epub 2024 Oct 25. PMID: 39450508.

7: Zaphir JS, Murphy KA, MacQuarrie AJ, Stainer MJ. **Understanding the Role of Cognitive Load in Paramedical Contexts: A Systematic Review.** Prehosp Emerg Care. 2025;29(2):101-114. doi: 10.1080/10903127.2024.2370491. Epub 2024 Jul 30. PMID: 38922409.

Journal report – leden 2025

HOSPITAL CARE

– clinical trials & RCT & multicenter study –

1. Scand J Trauma Resusc Emerg Med. 2025 Jan 31;33(1):16. doi: 10.1186/s13049-025-01331-4.

Experimental hypothermia by cold air: a randomized, double-blind, placebo-controlled crossover trial.

Helland AM(1)(2)(3), Mydske S(4)(5)(6), Assmus J(5), Brattebø G(4)(5)(7), Wiggen Ø(5)(8), Kvidaland HK(9), Thomassen Ø(4)(5)(6).

BACKGROUND: Accidental hypothermia is associated with high morbidity and mortality. Research on treatment strategies for accidental hypothermia is complicated by the low incidence and heterogeneous patient population. We have developed a new method for clinical trials of experimental hypothermia, to enable further studies of active rewarming. If cold ambient air is effective as a cooling method, this would mimic the most frequent clinical setting of hypothermic patients and provide a feasible cooling method for field studies. We aimed to induce mild hypothermia in healthy volunteers by exposure to cold ambient air, and tested the hypothesis that drug-induced suppression of endogenous thermoregulation would be required.

METHODS: In a randomized, double-blind, crossover design, 15 healthy volunteers wearing wet clothes were put in a windy climate chamber set to 5 °C. Each participant completed the experimental procedure twice, once receiving active drugs (meperidine and buspirone) and once receiving placebo. The experiments were separated by a one-week wash-out period. Primary outcome was core temperature at termination, defined as 3 h of exposure or 35 °C. The between-groups difference was assessed using analysis of covariance (ANCOVA) with left censoring (Tobit model) and individual random intercept. Secondary outcomes were trajectory of core temperature and reduction of shivering.

RESULTS: At termination, the active drug vs placebo group differed in temperature by 1.4 °C. With adjustment for the removal of participants reaching 35 °C, the estimated mean difference was 1.7 °C (1.4-2.0, $p < 0.001$). Shivering was effectively reduced, but not completely inhibited by the drug regimen, and core temperature declined at a rate of - 0.82 °C per hour.

CONCLUSION: The novel protocol utilizing cold air as a cooling method and drug-induced suppression of endogenous thermoregulation, is effective and enables future research projects. We have provided suggestions for minor alterations.

DOI: 10.1186/s13049-025-01331-4

Journal report – leden 2025

2. J Emerg Med. 2025 Jan;68:43-53. doi: 10.1016/j.jemermed.2024.08.005. Epub 2024 Aug 13.

Empathy Unmasked: Patient Perception of Physician Empathy in an Oncologic Emergency Setting. A Randomized Controlled Trial Comparing Personal Protective Equipment Wear versus Unmasked Video Communication.

Burk KJ(1), Stroh JJ(2), Larkin K(2), Chaftari P(2), Langabeer DM(2), Menendez JR(2), Woodruff JF(2), Hargrave J(3), Zhu H(4), Long JP(4), Yeung SJ(2), Alagappan K(2), Qdaisat A(2).

BACKGROUND: Amidst the COVID-19 pandemic, telemedicine emerged as an important option that supports and facilitates clinical practice, however, its usefulness in emergency settings that treat patients with cancer is unclear.

OBJECTIVE: To evaluate patient perception of physician empathy in an emergency oncology setting, comparing video interaction to an in-person with personal protective equipment (PPE) approach.

METHODS: In this single-center, prospective, cross-sectional, survey-based randomized controlled trial, patients were randomized 1:1 for the concluding conversation done in-person which included either interacting with physicians wearing PPE or video interaction with physicians without PPE (virtual). Patients' perceptions of the physicians' relational empathy were assessed and compared for each group by using the Consultation and Relational Empathy (CARE) Measure and the Perception of Physician Compassion measure.

RESULTS: Patients (n = 106) in both the PPE and virtual arms provided favorable responses to all questions. The mean overall CARE scores for the PPE and virtual arms were 45.02 and 44.43, respectively (difference, 0.58 [95% CI: -2.10, 3.30]). Regarding the linear physician compassion scores, patients in the virtual arm appeared to consider physicians to be warmer (difference, -0.42 [95% CI: -0.87, 0.04]) but less pleasant (difference, 0.33 [95% CI: -0.40, 1.10]) than did patients in the PPE arm.

CONCLUSIONS: Cancer patients presenting to the emergency department perceive empathy and compassion equally when approached by physicians virtually without PPE or in person while wearing PPE. Virtual services for specific aspects of clinical practice during emergency department visits in an oncology setting can be implemented to ensure safer interactions between patients and physicians without compromising the physician-patient relationship.

DOI: 10.1016/j.jemermed.2024.08.005

PMID: 39800593 [Indexed for MEDLINE]

Journal report – leden 2025

3. J Med Internet Res. 2025 Jan 10;27:e55066. doi: 10.2196/55066.

Comparing Virtual Reality-Based and Traditional Physical Objective Structured Clinical Examination (OSCE) Stations for Clinical Competency Assessments: Randomized Controlled Trial.

Mühling T(1), Schreiner V(1), Appel M(1), Leutritz T(1), König S(1).

BACKGROUND: Objective structured clinical examinations (OSCEs) are a widely recognized and accepted method to assess clinical competencies but are often resource-intensive.

OBJECTIVE: This study aimed to evaluate the feasibility and effectiveness of a virtual reality (VR)-based station (VRS) compared with a traditional physical station (PHS) in an already established curricular OSCE.

METHODS: Fifth-year medical students participated in an OSCE consisting of 10 stations. One of the stations, emergency medicine, was offered in 2 modalities: VRS and PHS. Students were randomly assigned to 1 of the 2 modalities. We used 2 distinct scenarios to prevent content leakage among participants. Student performance and item characteristics were analyzed, comparing the VRS with PHS as well as with 5 other case-based stations. Student perceptions of the VRS were collected through a quantitative and qualitative postexamination online survey, which included a 5-point Likert scale ranging from 1 (minimum) to 5 (maximum), to evaluate the acceptance and usability of the VR system. Organizational and technical feasibility as well as cost-effectiveness were also evaluated.

RESULTS: Following randomization and exclusions of invalid data sets, 57 and 66 participants were assessed for the VRS and PHS, respectively. The feasibility evaluation demonstrated smooth implementation of both VR scenarios (septic and anaphylactic shock) with 93% (53/57) of students using the VR technology without issues. The difficulty levels of the VRS scenarios (septic shock: P=.67; anaphylactic shock: P=.58) were comparable to the average difficulty of all stations (P=.68) and fell within the reference range (0.4-0.8). In contrast, VRS demonstrated above-average values for item discrimination (septic shock: r'=0.40; anaphylactic shock: r'=0.33; overall r'=0.30; with values >0.3 considered good) and discrimination index (septic shock: D=0.25; anaphylactic shock: D=0.26; overall D=0.16, with 0.2-0.3 considered mediocre and <0.2 considered poor). Apart from some hesitancy toward its broader application in future practical assessments (mean 3.07, SD 1.37 for VRS vs mean 3.65, SD 1.18 for PHS; P=.03), there were no other differences in perceptions between VRS and PHS. Thematic analysis highlighted the realistic portrayal of medical emergencies and fair assessment conditions provided by the VRS. Regarding cost-effectiveness, initial development of the VRS can be offset by long-term savings in recurring expenses like standardized patients and consumables.

CONCLUSIONS: Integration of the VRS into the current OSCE framework proved feasible both technically and organizationally, even within the strict constraints of short examination phases and schedules. The VRS was accepted and positively received by students across various levels of technological proficiency, including those with no prior VR experience. Notably, the VRS demonstrated comparable or even superior item characteristics, particularly in terms of discrimination power. Although challenges remain, such as technical reliability and some acceptance concerns, VR remains promising in applications of clinical competence assessment.

DOI: 10.2196/55066

PMCID: PMC11759906

PMID: 39793025 [Indexed for MEDLINE]

4. Open Forum Infect Dis. 2024 Dec 16;12(1):ofae725. doi: 10.1093/ofid/ofae725. eCollection 2025 Jan.

Feasibility of a Low-Intensity Intervention to Influence Antibiotic Prescribing Rates Use in Outpatient Settings: A Cluster Randomized Controlled Clinical Trial.

Bej TA(1), Wilson BM(1)(2), Akpoji UC(3), Mongilardi N(1), Chengsupanimit TT(4), Song S(5), Kowal C(1), Stryczek KC(6), Hearns R(6), Honsberger M(6), Wilkerson TL(6), Firestone C(6), Subramaniam S(6), Stevenson L(6), Ball SL(6), Jump RLP(7)(8), Perez F(1)(2)(9).

BACKGROUND: Primary care providers (PCPs) may modify their antibiotic prescription practices if aware of their potentially damaging impact.

METHODS: We conducted a cluster randomized controlled trial at 12 Veterans Affairs community-based outpatient clinics. PCPs at clinics randomized to the intervention group received quarterly antibiotic use reports with feedback about antibiotics prescribed for acute respiratory infections and adverse event letters alerting about Clostridioides difficile infection or antibiotic-resistant gram-negative bacteria among their patients. The main outcome, antibiotic prescriptions in primary care visits, was compared in the preintervention (April-September 2020), intervention (October 2020 to September 2021), and postintervention periods (September 2021 to September 2022).

RESULTS: Among 52 PCPs at 6 clinics in the intervention group, 66% (33 of 52) and 54% (28 of 52) received ≥1 antibiotic use report and adverse event letter. In the intervention clinics, the proportion of primary care visits with antibiotic prescription during the preintervention, intervention, and postintervention periods was 1.4% (1088 of 77 697), 1.4% (2051 of 147 858), and 1.3% (1692 of 131 530). In the control clinics, this increased from 1.8% (1560 of 87 897)

to 2.1% (3707 of 176 825) and 2.1% (3418 of 162 979), respectively, during the intervention and postintervention periods. The rate of visits with antibiotic prescription did not differ in the preintervention period (odds ratio [95% confidence interval], 1.10 [.87-1.39); P = .43) but did during the intervention (1.30 [1.04-1.62]; P = .022) and postintervention periods (1.38 [1.09-1.74]; P = .007). There were no differences in emergency department visits and hospitalizations.

CONCLUSIONS: PCPs from clinics assigned to a low-intensity intervention combining comparative feedback with adverse event notifications had lower antibiotic prescription rates.

DOI: 10.1093/ofid/ofae725

PMCID: PMC11697152

PMID: 39758744

5. JAMA. 2025 Jan 7;333(1):49-59. doi: 10.1001/jama.2024.21739.

Personalized Patient Data and Behavioral Nudges to Improve Adherence to Chronic Cardiovascular Medications: A Randomized Pragmatic Trial.

Ho PM(1)(2)(3)(4), Glorioso TJ(5), Allen LA(2), Blankenhorn R(1), Glasgow RE(6)(7), Grunwald GK(1)(8), Khanna A(2), Magid DJ(2), Marrs JC(9)(10), Novins-Montague S(7), Orlando S(1), Peterson P(2)(11), Plomondon ME(12), Sandy LM(7), Saseen JJ(6)(13), Trinkley KE(6)(7)(13), Vaughn S(12), Waughtal J(7), Bull S(14).

IMPORTANCE: Poor medication adherence is common. Text messaging is increasingly used to change patient behavior but often not rigorously tested.

OBJECTIVE: To compare different types of text messaging strategies with usual care to improve medication refill adherence among patients nonadherent to cardiovascular medications.

DESIGN, SETTING, AND PARTICIPANTS: Patient-level randomized pragmatic trial between October 2019 to April 2022 at 3 US health care systems, with last follow-up date of April 11, 2023. Adult (18 to <90 years) patients were eligible based on diagnosis of 1 or more cardiovascular condition(s) and prescribed medication to treat the condition. Patients who did not opt out and had a 7-day refill gap were randomized to 1 of 4 study groups.

INTERVENTION(S): Generic text message refill reminders (generic reminder); behavioral nudge text refill reminders (behavioral nudge); behavioral nudge text refill reminders plus a fixed-message chatbot (behavioral nudge + chatbot); usual care.

MAIN OUTCOMES AND MEASURES: Primary outcome was refill adherence based on pharmacy data using proportion of days covered at 12 months. Secondary outcomes were clinical events of emergency department visits, hospitalizations, and mortality.

RESULTS: Among 9501 enrolled patients, baseline characteristics across the 4 groups were comparable (mean age, 60 years; 47% female [n = 4351]; 16% Black [n = 1517]; 49% Hispanic [n = 4564]). At 12 months, the mean proportion of days covered was 62.0% for generic reminder, 62.3% for behavioral nudge, 63.0% for behavioral nudge + chatbot, and 60.6% for usual care (P = .06). In adjusted analysis, when compared with usual care, mean proportion of days covered was 2.2 percentage points (95% CI, 0.3-4.2; P = .02) higher for generic reminder, 2.0 percentage points (95% CI, 0.1-3.9; P = .04) higher for behavioral nudge, and 2.3 percentage points (95%, 0.4-4.2; P = .02) higher for behavioral nudge + chatbot, none of which were statistically significant after multiple comparisons correction. There were no differences in clinical events between study groups.

CONCLUSIONS AND RELEVANCE: Text message reminders targeting patients who delay refilling their cardiovascular medications did not improve medication adherence based on pharmacy refill data or reduce clinical events at 12 months. Poor medication adherence may be due to multiple factors. Future interventions may need to be designed to address the multiple factors influencing adherence. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT03973931.

DOI: 10.1001/jama.2024.21739

PMCID: PMC11612915

PMID: 39621340 [Indexed for MEDLINE]

6. Subst Use Misuse. 2025;60(3):381-392. doi: 10.1080/10826084.2024.2434003. Epub 2024 Dec 1.

Recovery Capital and Subsequent Overdose Risk and Addiction Treatment Engagement Among Emergency Department Patients at High Risk of Opioid Overdose.

Chambers LC(1), Welwean RA(1), Cho DK(2), Langdon KJ(3)(4)(5), Li Y(1), Hallowell BD(6), Daly MM(7), Marshall BDL(1), Beaudoin FL(1).

BACKGROUND: Emergency department (ED) visits are an opportunity to provide prevention services to people at high risk of overdose. Considering patients' resources to initiate and sustain recovery ("recovery capital") may be useful for tailoring ED services, although its relevance in this population is unknown.

METHODS: This secondary analysis used data from ED patients at high risk of opioid overdose enrolled in a randomized controlled trial in Rhode Island (2018-2021). We assessed baseline recovery capital using the Brief Assessment of Recovery Capital (BARC-10), dichotomized as a total score <47 versus ≥47. Post-discharge addiction treatment engagement within 30 days and non-fatal opioid overdose and fatal overdose within 18 months were assessed using statewide administrative data. We used modified Poisson regression and Cox proportional hazards models to estimate the association between recovery capital and (1) treatment engagement and (2) overdose risk, respectively, adjusting for potential confounders.

RESULTS: Among 543 participants, 32.2% had a baseline BARC-10 total score of ≥47, 32.6% engaged in treatment within 30 days, and 25.6% had a non-fatal opioid overdose and 4.2% had a fatal overdose within 18 months. BARC-10 total score was not associated with treatment engagement within 30 days (adjusted relative risk = 0.79, 95% confidence interval [CI] = 0.60-1.05) or non-fatal opioid overdose (adjusted hazard ratio [aHR] = 0.83, 95%CI = 0.57-1.20) or fatal overdose (aHR = 0.45, 95%CI = 0.14-1.40) within 18 months.

CONCLUSION: The majority of ED patients at high risk of opioid overdose had a BARC-10 total score of <47, suggesting low recovery capital. BARC-10 total score was not associated with post-discharge treatment engagement or overdose risk.

DOI: 10.1080/10826084.2024.2434003

PMCID: PMC11769765

7. Lancet Respir Med. 2025 Jan;13(1):59-68. doi: 10.1016/S2213-2600(24)00299-6. Epub 2024 Nov 29.

Treating eosinophilic exacerbations of asthma and COPD with benralizumab (ABRA): a double-blind, double-dummy, active placebo-controlled randomised trial.

Ramakrishnan S(1), Russell REK(2), Mahmood HR(3), Krassowska K(4), Melhorn J(4), Mwasuku C(4), Pavord ID(4), Bermejo-Sanchez L(4), Howell I(4), Mahdi M(4), Peterson S(5), Bengtsson T(5), Bafadhel M(6).

BACKGROUND: Exacerbations of asthma and chronic obstructive pulmonary disease (COPD) are important events and are associated with critical illness. Eosinophilic inflammation is a treatable trait commonly found during acute exacerbations of asthma and COPD. We hypothesised that for patients with eosinophilic exacerbations, a single injection of benralizumab, a humanised monoclonal antibody against interleukin-5 receptor-α, alone or in

combination with prednisolone, will improve clinical outcomes compared with prednisolone, the standard of care.

METHODS: The Acute exacerbations treated with BenRAlizumab trial (ABRA) was a multicentre, phase 2, double-blind, double-dummy, active placebo-controlled randomised trial completed in the UK at Oxford University Hospitals NHS Foundation Trust and Guy's and St Thomas' NHS Foundation Trust. Patients were recruited from urgent care clinics and emergency departments of these two hospitals. At the time of an acute exacerbation of asthma or COPD, adults with blood eosinophil counts of equal to or more than 300 cells per µL were randomly assigned in a 1:1:1 ratio to receive acute treatment with: prednisolone 30 mg once daily for 5 days and 100 mg benralizumab subcutaneous injection once (BENRA plus PRED group); placebo tablets once daily for 5 days and 100 mg benralizumab subcutaneous injection once (BENRA group); or prednisolone 30 mg once daily for 5 days and placebo subcutaneous injection once (PRED group). Randomisation was performed with a centralised interactive computer randomisation service. All patients and study research staff involved in data collection were masked to study blood results and treatment allocation. The co-primary outcomes were proportion of treatment failures over 90 days and total visual analogue scale (VAS) symptoms at day 28 in the pooled benralizumab groups compared with the prednisolone alone group and analysed in the intention-to-treat population. The trial was registered on Clinicaltrials.govNCT04098718.

FINDINGS: Between May 13, 2021, and Feb 5, 2024, 287 patients were screened for study inclusion. 129 were excluded due to not having an exacerbation captured or not meeting the eosinophil exclusion criteria. 158 patients were randomly assigned at acute eosinophilic exacerbation of asthma or COPD where 86 (54%) patients were female and 72 (46%) were male with a mean age of 57 years (range, 18-84). 53 patients were randomly assigned to the PRED group, 53 were randomly assigned to the BENRA group, and 52 were assigned to the BENRA plus PRED treatment group. At 90 days, treatment failures occurred in 39 (74%) of 53 in the PRED group, and 47 (45%) of 105 in the pooled-BENRA group (OR 0·26 [95% CI 0·13-0·56]; p=0·0005). The 28-day total VAS mean difference was 49 mm (95% CI 14-84; p=0·0065), favouring the pooled-BENRA group. There were no fatal adverse events and benralizumab was well tolerated. Notably, hyperglycaemia and sinusitis or sinus infection adverse events were related to the prednisolone study drug only.

INTERPRETATION: Benralizumab can be used as a treatment of acute eosinophilic exacerbations and achieves better outcomes than the current standard of care with prednisolone alone. These results offer a new way of treating eosinophilic endotypes of asthma and COPD exacerbations.

FUNDING: AstraZeneca.

DOI: 10.1016/S2213-2600(24)00299-6

PMID: 39615502 [Indexed for MEDLINE]

Journal report – leden 2025

PREHOSPITAL CARE

– systematic review & meta-analysis –

1. Adv Rehabil Sci Pract. 2025 Jan 16;14:27536351241310645. doi: 10.1177/27536351241310645. eCollection 2025 Jan-Dec.

A Systematic Literature Review of Trauma Systems: An Operations Management Perspective.

Wang Z(1), Rostami-Tabar B(1), Haider J(1), Naim M(1), Haider J(2).

BACKGROUND: Trauma systems provide comprehensive care across various settings, from prehospital services to rehabilitation, integrating clinical and social care aspects. Established in the 1970s, these systems are pivotal yet under-researched in their operational management. This study aims to fill this gap by focussing on the integration of operations management (OM) techniques to enhance the efficiency and effectiveness of trauma systems. By leveraging proven OM strategies from other healthcare sectors, we seek to improve patient outcomes and optimise system performance, addressing a crucial need for innovation in trauma care operations.

METHODOLOGY: A systematic literature review was conducted using the PICOTS framework to explore operational aspects of trauma systems across varied settings, from emergency departments to specialised centres. Searches were performed in 5 databases, focussing on articles published from 2006 to 2024. Keywords related to operational research and management targeted both trauma systems and emergency management services. Our method involved identifying, synthesising, and summarising studies to evaluate operational performance, with a specific emphasis on articles that applied operational research/management techniques in trauma care. All eligible articles were critically appraised using 2 quality assessment tools.

RESULTS: Employing Donabedian's framework to analyse the quality of trauma systems through structure, process, and outcome dimensions, our systematic review included 160 studies. Of these, 5 studies discussed the application of the Donabedian evaluation framework to trauma systems, and 14 studies examined structural elements, focussing on the location of healthcare facilities, trauma resource management, and EMS logistics. The 63 studies on process indicators primarily assessed triage procedures, with some exploring the timeliness of trauma care. Meanwhile, the 78 outcome-oriented studies predominantly evaluated mortality rates, alongside a smaller number assessing functional outcomes.

CONCLUSION: Existing evaluation metrics primarily focussed on triage accuracy and mortality are inadequate. We propose expanding these metrics to include patient length of stay (LOS)

and rehabilitation trajectory analyses. There is a critical gap in understanding patient flow management and long-term outcomes, necessitating focussed research on LOS modelling and improved rehabilitation data collection. Addressing these areas is essential for optimising trauma care and improving patient recovery outcomes.

DOI: 10.1177/27536351241310645

PMCID: PMC11742173

PMID: 39830526

2. Resusc Plus. 2024 Dec 12;21:100803. doi: 10.1016/j.resplu.2024.100803. eCollection 2025 Jan.

Prehospital critical care beyond advanced life support for out-of-hospital cardiac arrest: A systematic review.

Boulton AJ(1), Edwards R(2), Gadie A(3), Clayton D(1)(3), Leech C(1)(4), Smyth MA(1), Brown T(5), Yeung J(1)(3); International Liaison Committee on Resuscitation (ILCOR) Education, Implementation and Team (EIT) taskForce.

AIM: To assess the clinical outcomes of patients with out-of-hospital cardiac arrest attended by prehospital critical care teams compared to non-critical care teams.

METHODS: This review was prospectively registered with PROSPERO and the eligibility criteria followed a PICOST framework for ILCOR systematic reviews. Prehospital critical care was defined as any provider with enhanced clinical competencies beyond standard advanced life support algorithms and dedicated dispatch to critically ill patients. MEDLINE, Embase and CINAHL databases were searched from inception to 20 April 2024. Risk of bias was assessed using the ROBINS-I tool and the certainty of evidence by the GRADE approach. Meta-analyses of pooled data from studies at moderate risk of bias were performed using a generic inverse-variance with random-effects.

RESULTS: The search returned 6,444 results and 17 articles were included, reporting 1,192,158 patients. Three studies reported traumatic patients and one reported paediatric patients. All studies were non-randomised and 15 were at moderate risk of bias. Most studies included prehospital physicians (n = 16). For adult non-traumatic patients, the certainty of evidence was low and prehospital critical care was associated with improved survival to hospital admission (OR 1.95, 95% CI 1.35-2.82), survival to hospital discharge (OR 1.34, 95% CI 1.10-1.63), survival at 30 days (OR 1.56, 95% CI 1.38-1.75), and favourable neurological outcome at 30 days (OR

1.48, 95% CI 1.19-1.84). Prehospital critical care was also associated with improved outcomes for traumatic and paediatric patients and the certainty of evidence was very low.

CONCLUSION: Attendance of prehospital critical care teams to patients with out-of-hospital cardiac arrest is associated with improved outcomes.

DOI: 10.1016/j.resplu.2024.100803

PMCID: PMC11728073

PMID: 39807287

3. Clin Exp Emerg Med. 2025 Jan 14. doi: 10.15441/ceem.24.289. Online ahead of print.

Public awareness of telephone number for medical emergencies: a scoping review.

Birkun AA(1).

OBJECTIVES: Prompt activation of emergency medical services (EMS) constitutes the fundamental component of bystander response to time-dependent health crises. A clear understanding of the public ability to access EMS may help to guide interventions aimed at enhancing community preparedness for emergencies. This review was conducted to summarise studies that examined public knowledge of emergency phone numbers.

METHODS: The scoping review encompassed articles published since 2004 that reported the proportion of subjects who knew emergency phone numbers. Data sources included PubMed, Google Scholar and references of included articles. Relevant data from eligible publications were extracted manually to an author-developed data-charting sheet and analysed descriptively.

RESULTS: Forty-eight articles were analysed. Reported studies, mostly cross-sectional surveys, were conducted in 26 countries, including 16 high-income, nine middle-income and one low-income country. The percentage of subjects who knew emergency numbers varied from 0.0 to 97.8 (median [interquartile range]: 64.3 [32.8-80.0]). For developed countries, it was significantly higher than for developing nations (69.6 [54.1-84.2] and 34.6 [19.4-61.5], respectively; p=0.003). The studies were generally inconsistent regarding the association of subjects' socio-demographic factors with knowledge of emergency numbers, suggesting the existence of geography-specific patterns.

CONCLUSIONS: Available studies observed low community knowledge of emergency numbers, especially in developing countries, and suggest that the problem has a global scale. Further

research efforts are required to determine the best strategies for enhancing the public ability to access EMS.

DOI: 10.15441/ceem.24.289

PMID: 39807062

4. Scand J Trauma Resusc Emerg Med. 2025 Jan 6;33(1):1. doi: 10.1186/s13049-024-01298-8.

Benefits of targeted deployment of physician-led interprofessional pre-hospital teams on the care of critically Ill and injured patients: a systematic review and meta-analysis.

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INTRODUCTION: Over the past three decades, more advanced pre-hospital systems have increasingly integrated physicians into targeted roles, forming interprofessional teams. These teams focus on providing early senior decision-making and advanced interventions while also ensuring rapid transport to hospitals based on individual patient needs. This paper aims to evaluate the benefits of an inter-professional care model compared to a model where care is delivered solely by paramedics.

METHODOLOGY: A meta-analysis and systematic review were conducted using the guidelines of PRISMA 2020. Articles were identified through a systematic search of three databases and snowballing references. A systematic review was conducted of articles that met the inclusion criteria, and a suitable subset was included in a meta-analysis. The survival and mortality outcomes from the studies were then pooled using the statistical software Review Manager (RevMan) Version 8.2.0.

RESULTS: Two thousand two hundred ninety-six articles were found from the online databases and 86 from other sources. However, only 23 articles met the inclusion criteria of our study. A pooled analysis of the outcomes reported in these studies indicated that the mortality risk was significantly reduced in patients who received pre-hospital care from interprofessional teams led by physicians compared with those who received care from paramedics alone (AOR 0.80; 95% CI [0.68, 0.91] p = 0.001). The survival rate of critically ill or injured patients who received pre-hospital care from interprofessional teams led by physicians was increased compared to those who received care from paramedics alone (AOR 1.49; 95% CI [1.31, 1.69] P < 0.00001).

CONCLUSIONS: The results of our analysis indicate that the targeted deployment of interprofessional teams led by physicians in the pre-hospital care of critically ill or injured patients improves patient outcomes.

Journal report – leden 2025

DOI: 10.1186/s13049-024-01298-8

PMCID: PMC11702211

PMID: 39757222 [Indexed for MEDLINE]

5. Emerg Med J. 2025 Jan 2:emermed-2023-213647. doi: 10.1136/emermed-2023-213647.

Diagnostic accuracy of prehospital ultrasound in detecting lung injury in patients with trauma: a systematic review and meta-analysis.

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BACKGROUND: Ultrasound is now readily available in the prehospital setting and its use has been highlighted as one of the top research priorities in prehospital care. Clinical examination remains the standard care for diagnosing lung injury in the prehospital setting, yet this can be challenging and has poor diagnostic accuracy. This review evaluates the accuracy of prehospital ultrasound for the diagnoses of pneumothorax, haemothorax and pulmonary contusions in patients with trauma.

METHODS: A systematic review and meta-analysis was conducted. MEDLINE/PubMed, CINAHL, Embase and the Cochrane Library were searched. Only papers reporting on the diagnostic accuracy of lung ultrasound for traumatic pneumothorax, haemothorax or pulmonary contusions; in a prehospital or helicopter emergency medical service setting; and with CT or operative findings as a reference standard, were included. Non-English studies or articles that reported on animal studies were excluded. The Quality Assessment of Diagnostic Accuracy Studies-2 was used to assess the methodological quality of the included studies.

RESULTS: Six observational studies, four with low risk of bias and two with some concerns, reporting on 1908 thoracic ultrasound examinations in patients with trauma, were included. For pneumothorax, meta-analysis yielded pooled sensitivity of 29% (95% CI 22% to 37%, I2=0%) and pooled specificity of 98% (95% CI 97% to 99%, I2=0%). Insufficient data were reported for a reliable meta-analysis on the presence of haemothorax. Only one study reported on the presence of pulmonary contusions and therefore no analysis was conducted.

CONCLUSION: Prehospital ultrasound is highly specific but has a lower sensitivity for the presence of pneumothorax when compared with hospital studies. Further research is required, alongside education and training of prehospital providers, to further explore the factors that account for the differences observed in this review.

PROSPERO REGISTRATION NUMBER: CRD42023365034.

Journal report – leden 2025

DOI: 10.1136/emermed-2023-213647

PMID: 39746800

6. Stroke. 2025 Jan;56(1):158-167. doi: 10.1161/STROKEAHA.124.047805. Epub 2024 Oct 25.

Mechanical Thrombectomy Access Score: A Systematic Review and Modified Delphi of Global Barriers to Endovascular Therapy.

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BACKGROUND: The availability of mechanical thrombectomy (MT) for acute ischemic stroke is limited, and vast disparities exist between countries. We aim to create a MT access score to measure the drivers of access to help quantify and accelerate treatment worldwide.

METHODS: We used a systematic review complemented by a modified Delphi method. In the first of 3 rounds, 4 independent investigators performed a systematic literature review using key search terms that drive MT access, following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. In the second round, a panel of 6 anonymous international experts selected key attributes needed for scoring. In the final round, a total of 12 attributes were selected on consensus, each given a score on a 0 to 3 scale. An ultimate MT access score (range, 0-36) was proposed as a new tool to use in identifying barriers to MT access and assist in providing an initial framework for public health interventions.

RESULTS: Of 2864 abstracts screened, 121 studies were included in the final systematic review. A total of 34 attributes that potentially drive MT access were initially identified. In the final round, 12 attributes were selected by the expert panel: public awareness, emergency medical services transportation, prehospital large vessel occlusion screening, interhospital transfer policy, emergency department protocols, stroke imaging protocols, emergency department stroke expertise or telestroke availability, interventionalists, MT-capable centers, device availability, and insurance coverage. These attributes were weighted as part of the final score of 0 to 36.

CONCLUSIONS: The MT access score represents the first tool to quantify barriers to global MT access. Its implementation stands not just as an academic achievement but as a beacon of

hope for improving stroke care and outcomes worldwide, bringing us a step closer to bridging the gap in stroke treatment disparities.

DOI: 10.1161/STROKEAHA.124.047805

PMID: 39450508 [Indexed for MEDLINE]

7. Prehosp Emerg Care. 2025;29(2):101-114. doi: 10.1080/10903127.2024.2370491. Epub 2024 Jul 30.

Understanding the Role of Cognitive Load in Paramedical Contexts: A Systematic Review.

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OBJECTIVES: Cognitive load refers to the working memory resources required during a task. When the load is too high or too low this has implications for an individual's task performance. In the context of paramedicine and emergency medical services (EMS) broadly, high cognitive load could potentially put patient and personnel safety at risk. This systematic review aimed to determine the current understanding of the role of cognitive load in paramedical contexts.

METHODS: To do this, five databases were searched (Elsevier Embase, ProQuest Psychology, CINAHL, Ovid Medline, and Ovid PsychINFO) using synonyms of cognitive load and paramedical contexts. Included articles were full text, peer reviewed empirical research, with a focus on cognitive load and EMS work. Two reviewers screened titles, abstracts, and full text using a traffic light system against the inclusion and exclusion criteria. The quality of evidence was assessed using the GRADE framework. This study was registered on PROSPERO (CRD42022384246). No funding was received for this research.

RESULTS: The searches identified 73 unique articles and after title/abstract and full text screening, 25 articles were included in the final review. Synthesis of the research revealed 10 categories of findings in the area. These are clinical performance, cognitive processes, emotional responses, physical expenditure, physiological responses, equipment and ergonomics, expertise and experience, multiple loads, cognitive load measures, and task complexity.

CONCLUSIONS: From these findings it was determined that there is agreement in terms of what factors influence cognitive load in paramedical contexts, such as cognitive processes, task complexity, physical expenditure, level of experience, multiple types of loads, and the use of equipment. Cognitive load influences clinical task performance and has a bi-directional relationship with emotion. However, the literature is mixed regarding physiological responses to cognitive load, and how they are best measured. These findings highlight potential

intervention points where cognitive load can be managed or reduced to improve working conditions for EMS clinicians and safety for their patients.

DOI: 10.1080/10903127.2024.2370491

PMID: 38922409 [Indexed for MEDLINE]