Journal report – březen 2025

OBSAH

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study

1: Hylander J, Gyllencreutz L, Haney M, Westman A. **Ambulance Commanders' Reluctance to Enter Road Tunnels in Simulated Incidents and the Effects of a Tunnel-Specific e-Learning Course on Decision-Making: Web-Based Randomized Controlled Trial.** JMIR Form Res. 2025 Mar 28;9:e58542. doi: 10.2196/58542. PMID: 40153786.

2: Uzun DD, Stock JP, Steffen R, Knapp J, Lefering R, Schmitt FCF, Weigand MA, Münzberg M, Woelfl CG, Häske D. **Trends in analgesia in prehospital trauma care: an analysis of 105.908 patients from the multicenter database TraumaRegister DGU®**. BMC Emerg Med. 2025 Mar 5;25(1):36. doi: 10.1186/s12873-025-01186-z. PMID: 40038613; PMCID: PMC11881501.

3: Visanji M, Allan KS, Charette M, Grunau B, Roy C, Goldstein J, Choisi T, de Montigny L, Lin S, Brissaw J, Cameron-Dermann L, Donoghue M, Haines M, Hutton J, Nowroozpoor A, Olszynski P, Quinn R, Vaillancourt C, Carter A, Abawajy K, Lanteigne PR, Dorian P. **Sports-Related Sudden Cardiac Arrest in Canada: Incidence and Survival**. Can J Cardiol. 2025 Mar;41(3):522-530. doi: 10.1016/j.cjca.2024.11.017. Epub 2025 Feb 6. PMID: 39918517.

PREHOSPITAL CARE

– systematic review & meta-analysis

1: Richter H, Schneider M, Eisenberger J, Jafari N, Haumann H, Häske D. **Impact of the COVID-19 pandemic on prehospital emergency medical service: a scoping review.** Front Public Health. 2025 Mar 19;13:1543150. doi: 10.3389/fpubh.2025.1543150. PMID: 40177094; PMCID: PMC11962900.

2: Meeker SA, Hahn R, Wilt VL, Molnar BE. **Vicarious Traumatization Among Emergency Medical Service Personnel: A Systematic Review.** Trauma Violence Abuse. 2025 Mar 18:15248380251320990. doi: 10.1177/15248380251320990. Epub ahead of print. PMID: 40099545.

3: Marzà-Florensa A, Kiss P, Youssef DM, Jalali-Farahani S, Lanas F, di Cesare M, González Juanatey JR, Taylor S, Uijl A, Grobbee DE, Des Rosiers S, Perel P, Peters SAE. **Sex Differences in Acute Coronary Syndromes: A Scoping Review Across the Care Continuum.** Glob Heart. 2025 Mar 11;20(1):26. doi: 10.5334/gh.1410. PMID: 40094068; PMCID: PMC11908429.

4: Ali Baig MN, Fatmi Z, Khan NU, Khan UR, Raheem A, Razzak JA. **Effectiveness of chain of survival for out-of-hospital-cardiac-arrest (OHCA) in resource limited countries: A systematic**

review. Resusc Plus. 2025 Jan 22;22:100874. doi: 10.1016/j.resplu.2025.100874. PMID: 39959449; PMCID: PMC11830354.

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 Mar 25;42(4):256-263. doi:10.1136/emermed-2023-213647. PMID: 39746800.

Journal report – březen 2025

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study –

1. JMIR Form Res. 2025 Mar 28;9:e58542. doi: 10.2196/58542.

Ambulance Commanders' Reluctance to Enter Road Tunnels in Simulated Incidents and the Effects of a Tunnel-Specific e-Learning Course on Decision-Making: Web-Based Randomized Controlled Trial.

Hylander J(1), Gyllencreutz L(2), Haney M(3), Westman A(1)(4).

BACKGROUND: The optimal response to a major incident in a road tunnel involves efficient decision-making among the responding emergency services (fire and rescue services, police, and ambulances). The infrequent occurrence of road tunnel incidents may entail unfamiliarity with the tunnel environment and lead to uncertain and inefficient decision-making among emergency services commanders. Ambulance commanders have requested tunnel-specific learning materials to improve their preparedness.

OBJECTIVE: We aimed to assess decision-making among ambulance commanders in simulated road tunnel incidents after they had participated in a tunnel-specific e-learning course designed to support timely and correct decisions in this context.

METHODS: We conducted a web-based intervention study involving 20 participants from emergency medical services in Sweden who were randomly allocated to a test or control group. The control group (n=10, 50%) received a lecture on general incident management, while the intervention group (n=10, 50%) completed an e-learning course consisting of 5 modules focused on tunnel structure, safety, and collaboration in response. The participants took part in 2 simulation-based assessments for ambulance commander decision-making in major road tunnel incidents 1 month and 6 months after their allocated study intervention. In each simulation, the participants decided on the best course of action at 15 independent decision points, designed as multiple-choice questions. The primary outcome was the correct response to the question regarding how to appropriately enter the road tunnel. The secondary outcome measurements were correct or incorrect responses and the time taken to decide for each of the 15 decisions. Limited in-depth follow-up interviews were conducted with participants (n=5, 25%), and collected data were analyzed using qualitative content analysis.

RESULTS: All 20 participants completed the first simulation, and 16 (80%) completed the second. The main finding was that none (0/20, 0%) of the participants correctly answered the question on entering the tunnel system in the 1-month assessment. There were no significant differences between the groups (P=.59; 2-sample test of proportions) in the second

assessment. The e-learning course was not associated with more correct answers at the first assessment, including accounting for participant factors (mean difference between groups: -0.58 points, 95% CI -1.88 to 0.73; P=.36). The e-learning course was also not associated with a shorter time to completion compared to the nonintervention group in either assessment. Interviews identified 3 categories linked to the main outcome: information (lack of), risk (limited knowledge and equipment), and mitigation (access to maps and aide-mémoire).

CONCLUSIONS: Participation in a tunnel-specific e-learning course did not result in a measurable change in ambulance commanders' decision-making behavior during simulated road tunnel incidents. The observed hesitation to enter the road tunnel system may have several plausible causes, such as the lack of actionable intelligence and tunnel-specific plans. This novel approach to assessing commander decision-making may be transferable to other educational settings.

DOI: 10.2196/58542

PMID: 40153786 [Indexed for MEDLINE]

2. BMC Emerg Med. 2025 Mar 5;25(1):36. doi: 10.1186/s12873-025-01186-z.

Trends in analgesia in prehospital trauma care: an analysis of 105.908 patients from the multicenter database TraumaRegister DGU®.

Uzun DD(1), Stock JP(2), Steffen R(3), Knapp J(3), Lefering R(4), Schmitt FCF(5), Weigand MA(5), Münzberg M(6), Woelfl CG(7), Häske D(8)(9).

BACKGROUND: The management of pain in patients with traumatic injuries is a common task for emergency medicine providers, particularly in the prehospital setting. However, for sufficient and safe analgesia, correct pain recording and documentation is also necessary. The aim of this study was to assess trends in analgesia over the study period and to identify factors that may enable more sufficient pain management in trauma care.

METHODS: The TraumaRegister DGU® recorded data of patients who were primarily treated at one of the participating hospitals between 2011 and 2020 and received analgesia as part of their prehospital care. This retrospective analysis included a total of 105.908 severely injured patients from Germany, Switzerland, and Austria. Patients with and without analgesia were compared, and factors associated with analgesia were investigated with logistic regression analysis.

RESULTS: The mean age of the patients enrolled was 50 ± 22 years. 71% were male and 29% were female. Out of all the patients, 66% (n = 70,257) received prehospital analgesia. The

average age of patients in the analgesia group was 48 ± 21 years, the non-analgesia group had an average age of 54 ± 23 years. 67% of the male patients received analgesia compared to 64% of the female patients. The mean Injury Severity Score (ISS) in the analgesia group was 21.2 points, compared to 16.5 points in the non-analgesia group. 4% of the patients were under the age of sixteen, and of these, 65% received analgesia. 29% of patients were older than 65 years and received analgesia in 57%. Presence of an emergency physician at scene, was a remarkable independent variable for the receipt of analgesia (Odds Ratio 5.55; $p < 0.001$). Transportation by helicopter was also a significant predictor for analgesia (OR 1.62; $p < 0.001$).

CONCLUSIONS: Analgesia is a crucial aspect of emergency medicine, as evidenced by relevant guidelines. Nevertheless, it is plausible that a considerable proportion of seriously injured patients do not receive optimal analgesic treatment, or at the very least, this is not documented. In this regard, both aspects require optimization.

DOI: 10.1186/s12873-025-01186-z

PMCID: PMC11881501

PMID: 40038613 [Indexed for MEDLINE]

3. Can J Cardiol. 2025 Mar;41(3):522-530. doi: 10.1016/j.cjca.2024.11.017. Epub 2025 Feb 6.

Sports-Related Sudden Cardiac Arrest in Canada: Incidence and Survival.

Visanji M(1), Allan KS(2), Charette M(3), Grunau B(4), Roy C(5), Goldstein J(6), Choisi T(7), de Montigny L(8), Lin S(9), Brissaw J(10), Cameron-Dermann L(3), Donoghue M(3), Haines M(11), Hutton J(4), Nowroozpoor A(12), Olszynski P(13), Quinn R(1), Vaillancourt C(14), Carter A(15), Abawajy K(16), Lanteigne PR(7), Dorian P(17).

BACKGROUND: Sports-related (Sr-) sudden cardiac arrest (SCA) is widely recognized in young competitive athletes, yet occurs more frequently in middle-aged, recreational athletes. Our objective was to describe the epidemiology and characteristics of Sr-SCA in 5 Canadian Provinces (population: 10.9 million).

METHODS: We conducted a retrospective cohort study using emergency medical services records from consecutive out of hospital SCAs, for patients aged 18-85 years, who were treated, and whose SCA was from a presumed cardiac cause, during or ≤ 1 hour after sports activity.

RESULTS: A total of 18,769 SCAs occurred between January 1, 2016 and December 31, 2020, of which 339 (1.8%) were sport-related. Most patients were male (93.8%; 318/339), with an

average age of 58.1 ± 14.3 years old. The incidence of Sr-SCA was 1.2 per 100,000 person-years (95% confidence interval [CI], 1.1-1.4). Men had an almost 16-fold greater incidence than women (2.3 [95% CI, 2.1-2.6] vs 0.2 [95% CI, 0.1-0.2] per 100,000 person-years). Sr-SCAs occurred during 52 unique sports. Almost two-thirds occurred in recreational facilities (60.2%; 204/339), with high rates of bystander witnessed (75.6%; 256/339) and bystander cardiopulmonary resuscitation (73.6%; 248/337). Bystanders delivered automated external defibrillator shocks in 121 of 335 (36.1%) cases. Median emergency medical services response time was 6.2 (interquartile range, 4.8-8.9) minutes, with an initial shockable rhythm reported in 76.9% (249/324). More than half of those with known final vital status (52.0%; 167/321) survived to hospital discharge, which varied on the basis of sport.

CONCLUSIONS: Sr-SCA occurs infrequently, attracts high rates of bystander intervention, and has high survivability.

DOI: 10.1016/j.cjca.2024.11.017

PMID: 39918517 [Indexed for MEDLINE]

Journal report – březen 2025

PREHOSPITAL CARE

– systematic review & meta-analysis –

1. Front Public Health. 2025 Mar 19;13:1543150. doi: 10.3389/fpubh.2025.1543150. eCollection 2025.

Impact of the COVID-19 pandemic on prehospital emergency medical service: a scoping review.

Richter H(1), Schneider M(2), Eisenberger J(2), Jafari N(1), Haumann H(3), Häske D(1).

BACKGROUND: The COVID-19 pandemic has had an unprecedented impact on healthcare systems worldwide. Emergency medical services (EMS) frequently served as the sole point of contact for individuals in need of assistance or emergency support. This study aimed to map the impact of the pandemic on emergency calls and EMS operations.

METHODS: A systematic literature search was conducted in the electronic databases Pubmed and Web of Science. A hand search supplemented the search. Published articles in English or German dealing with frequencies, diagnoses, and factors influencing emergency calls and EMS use were included. Studies on cardio-pulmonary resuscitation were not included.

RESULTS: The initial search yielded 3,359 articles, of which 3,187 were screened by title/abstracts, and 120 full-text articles were analyzed. Fifty articles were then included. Fourteen articles reported the number of emergency calls, 30 on the number of EMS operations, and six on both outcomes. The articles were mostly published in 2020 (n = 18) or 2021 (n = 29) and dealt with the situation of EMS during the COVID-19 pandemic in 13 European countries and 11 non-European countries. However, the quantitative data on changes in emergency calls show considerable variation (standard deviation of 31.3% with a mean of 0.0%, minimum: -50.0% to maximum: 121.0%). The quantitative data on changes in EMS operations show a more significant overall decrease (mean: -12.2%, standard deviation: 24.7%, minimum: -72% to maximum: 56%).

CONCLUSIONS: The heterogeneity of the studies is considerable; overall, there appears to have been a decline in emergency calls, particularly EMS operations. Clear patterns, e.g., by region, cannot be identified.

DOI: 10.3389/fpubh.2025.1543150

PMCID: PMC11962900

PMID: 40177094 [Indexed for MEDLINE]

2. Trauma Violence Abuse. 2025 Mar 18:15248380251320990. doi: 10.1177/15248380251320990. Online ahead of print.

Vicarious Traumatization Among Emergency Medical Service Personnel: A Systematic Review.

Meeker SA(1), Hahn R(2), Wilt VL(3), Molnar BE(2).

Emergency medical services (EMS) professionals are exposed to the trauma experienced by their patients regularly. This exposure to others' traumatic experiences is known as vicarious trauma or indirect trauma. When it becomes problematic for the worker's well-being, the resulting symptoms are referred to as vicarious traumatization or secondary traumatic stress. Existing literature highlights the importance of recognizing vicarious trauma and subsequent symptoms experienced by these professionals, as well impacts this may have on their workplaces. However, comprehensive reviews of vicarious traumatization among those involved in responding to prehospital emergency medical situations are limited. A four-phase Preferred Reporting Items for Systematic Reviews and Meta-Analyses selection process was employed to identify publications from 1995 to 2022 that considered the epidemiology of vicarious traumatization among EMS professionals. Trained reviewers screened articles based on inclusion criteria: (a) EMS professionals; (b) vicarious traumatization/related terms; and (c) analysis of epidemiological data on prevalence, risk/protective factors, or manifestations. Initially, 4,147 unique manuscripts were identified. After removing duplicates, one reviewer screened titles, and additional articles were identified through bibliography searches. Two reviewers independently screened abstracts, resolving disagreements during full-text screening, where a third reviewer settled any conflicts. A total of 31 articles were included in this review. Findings regarding the epidemiology of vicarious traumatization are summarized. The occupational hazard of vicarious/indirect trauma is unavoidable, but vicarious traumatization/secondary traumatic stress can be mitigated with improved workplace measures.

DOI: 10.1177/15248380251320990

PMID: 40099545

Journal report – březen 2025

3. Glob Heart. 2025 Mar 11;20(1):26. doi: 10.5334/gh.1410. eCollection 2025.

Sex Differences in Acute Coronary Syndromes: A Scoping Review Across the Care Continuum.

Marzà-Florensa A(1), Kiss P(1), Youssef DM(1), Jalali-Farahani S(2), Lanas F(3), di Cesare M(2), González Juanatey JR(4), Taylor S(5), Uijl A(1)(6)(7), Grobbee DE(1), Des Rosiers S(8), Perel P(5)(9), Peters SAE(1)(10)(11).

INTRODUCTION: Optimal diagnosis and management of acute coronary syndrome (ACS) is essential to improve clinical outcomes and prognosis. Sex disparities in ACS care have been reported in the literature, but evidence gaps remain. This review aims to map and to summarize the global evidence on sex differences in the provision of care across the ACS continuum.

METHODS: A systematic literature search was conducted in Pubmed, EMBASE, and the World Health Organization Global Index Medicus. The search was restricted to original research articles published between January 1, 2013, and August 30th, 2023, and with a full-text available in English, Spanish, Dutch, or French. The search terms and key words covered five aspects of the ACS care continuum: pre-hospital care, diagnosis, treatment, in-hospital events, and discharge.

RESULTS: Of the 15,033 identified articles, 446 articles (median percentage of women per study: 29%), reporting on 1,483 outcomes, were included. Most studies were conducted in high-income regions (65%). Studies reported on pre-hospital care (8%), diagnosis (9%), treatment (45%), discharge (14%) and events (24%). For 45% of outcomes, results favored men, 5% favored women, and 50% showed mixed results or no sex difference. ACS care aspects with the largest sex differences were pre-hospital care (58% of the outcomes favored men vs 7% favored women) and diagnosis (70% favored men vs 2% favored women).

CONCLUSION: Studies on sex differences in ACS mainly come from high-income regions. Sex differences in ACS management are widely reported and mainly unfavorable to women, especially in the early phases of pre-hospital care and diagnosis.

DOI: 10.5334/gh.1410

PMCID: PMC11908429

PMID: 40094068 [Indexed for MEDLINE]

Journal report – březen 2025

4. Resusc Plus. 2025 Jan 22;22:100874. doi: 10.1016/j.resplu.2025.100874. eCollection 2025 Mar.

Effectiveness of chain of survival for out-of-hospital-cardiac-arrest (OHCA) in resource limited countries: A systematic review.

Ali Baig MN(1)(2), Fatmi Z(3), Khan NU(1), Khan UR(1), Raheem A(1), Razzak JA(2).

AIM: Given the critical disparities in survival for out-of-hospital-cardiac-arrest (OHCA) in resource limited countries and the lack of context-specific evidence to guide resuscitation practices, we aimed to systematically evaluate the effectiveness of the chain of survival components including bystander response, emergency medical services (EMS) response, advanced life support, and post-resuscitation care on outcomes such as return of spontaneous circulation, survival to admission, survival to hospital discharge, and neurological outcomes in these settings.

METHODS: This systematic review, following PRISMA guidelines, included observational and interventional studies on OHCA management from low, lower-middle, and upper-middle-income countries, published in English (2004-2023). PubMed, Embase, CINAHL, and Cochrane Library were searched using predefined terms. Two reviewers independently screened studies, extracted data using the Utstein template, and resolved conflicts with a third reviewer. Data included pre-hospital, patient, and post-resuscitation care factors, as well as short and long-term outcomes. Descriptive analysis and narrative synthesis were conducted, with return of spontaneous circulation (ROSC) rates compared across income groups using t-tests.

RESULTS: Sixteen (16) eligible studies were included. No study was found from low-income countries. ROSC rates ranged from 0.7% to 44%, survival to discharge from 0.6% to 14.1%, and good neurological outcomes (CPC 1-2) from 0.6% to 53.8%. While upper-middle-income countries showed slightly higher ROSC rates, differences were not statistically significant. Risk of bias was moderate to high due to selection bias, inadequate confounding control, and inconsistent reporting. These findings emphasize the need for standardized reporting and further research to improve outcomes in resource limited countries.

CONCLUSION: This review highlights low survival rates for OHCA in resource limited countries, with significant variability and gaps in evidence. Strengthening EMS systems, adopting context-specific strategies, and standardizing reporting are critical to improving outcomes.

DOI: 10.1016/j.resplu.2025.100874

PMCID: PMC11830354

PMID: 39959449

Journal report – březen 2025

5. Emerg Med J. 2025 Mar 25;42(4):256-263. 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.

Sen JPB(1)(2), Emerson J(3), Franklin J(3).

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.

DOI: 10.1136/emermed-2023-213647

PMID: 39746800 [Indexed for MEDLINE]