Journal report – listopad 2024

OBSAH

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study

1: Watkins A, Jones JK, Ali K, Dewar R, Edwards A, Evans BA, Evans L, Ford GA, Hampton C, John R, Jones C, Moore C, Obiako M, Porter A, Pryce A, Quinn T, Seagrove AC, Snooks H, Whitman S, Rees N. **Transient Ischaemic attack Emergency Referral (TIER): randomised feasibility trial results.** Emerg Med J. 2024 Nov 21;41(12):710-716. doi: 10.1136/emermed-2021-212230. PMID: 39389754.

2: Amado V, Zandamela A, Couto MT, Wallis LA, Laflamme L. **Perspectives from clinicians from different levels of care in Maputo, Mozambique: qualitative study of the barriers to and facilitators of paediatric injury care in resource-poor hospital settings.** BMJ Open. 2024 Nov 24;14(11):e085270. doi: 10.1136/bmjopen-2024-085270. PMID: 39581710; PMCID: PMC11590845.

3: Agarwal G, Angeles R, Brar J, Pirrie M, Marzanek F, McLeod B, Thabane L. **Effectiveness of the community paramedicine at home (CP@home) program for frequent users of emergency medical services in Ontario: a randomized controlled trial.** BMC Health Serv Res. 2024 Nov 25;24(1):1462. doi: 10.1186/s12913-024-11952-7. PMID: 39587610; PMCID: PMC11590269.

PREHOSPITAL CARE

– systematic review & meta-analysis

1: Armour R, Nielsen S, Buxton JA, Bolster J, Han MX, Ross L. **Initiation of buprenorphine in the emergency department or emergency out-of-hospital setting: A mixed-methods systematic review.** Am J Emerg Med. 2024 Nov 17;88:12-22. doi: 10.1016/j.ajem.2024.11.031. Epub ahead of print. PMID: 39577213.

2: Friend TH, Thomas HM, Ordoobadi AJ, Bain PA, Jarman MP. **Community emergency medical services approaches to fall prevention: a systematic review.** Inj Prev. 2024 Nov 21;30(6):446-453. doi: 10.1136/ip-2023-045110. PMID: 39038943; PMCID: PMC11581924.

3: Hyldmo PK, Rehn M, Dahl Friesgaard K, Rognås L, Raatiniemi L, Kurola J, Larsen R, Kongstad P, Sandberg M, Magnusson V, Vist GE. **Inhaled analgesics for the treatment of prehospital acute pain-A systematic review.** Acta Anaesthesiol Scand. 2024 Nov;68(10):1306-1318. doi: 10.1111/aas.14527. Epub 2024 Sep 26. PMID: 39327650.

4: Artero-García A, Gómez-Salgado J, Fernández-Carrasco FJ, Vázquez-Lara JM, García-Iglesias JJ, Mérida-Yáñez B, Muñoz-Vela FJ, Rodríguez-Díaz L. **Haemodynamic Changes in Adult Patients Transported in Emergency Medical Helicopters. A Systematic Review.** Ther Clin Risk Manag. 2024 Nov 23;20:775-787. doi: 10.2147/TCRM.S488502. PMID: 39606590; PMCID: PMC11600915.

5: Enomoto Y, Tsutsumi Y, Kido T, Nagatomo K, Tsuchiya A, Inoue Y. **Association between helicopter medical services for pediatric trauma patients and mortality: Systematic review**

and meta-analysis. Am J Emerg Med. 2024 Nov;85:196-201. doi: 10.1016/j.ajem.2024.09.015. Epub 2024 Sep 10. PMID: 39278027.

6: Legere B, Mohamed A, Elsherif S, Saqqur R, Schoenfeld D, Slebonick AM, McCartin M, Price J, Zachrison KS, Edlow JA, Saqqur M, Shuaib A, Thomas SH. **Success with incrementally faster times to endovascular therapy (SWIFT-EVT): A systematic review and meta-analysis.** J Stroke Cerebrovasc Dis. 2024 Nov;33(11):107964. doi: 10.1016/j.jstrokecerebrovasdis.2024.107964. Epub 2024 Aug 23. PMID: 39182706.

Journal report – listopad 2024

PREHOSPITAL CARE

– clinical trials & RCT & multicenter study –

1. Emerg Med J. 2024 Nov 21;41(12):710-716. doi: 10.1136/emermed-2021-212230.

Transient Ischaemic attack Emergency Referral (TIER): randomised feasibility trial results.

Watkins A(1), Jones JK(2), Ali K(3), Dewar R(4), Edwards A(5), Evans BA(1), Evans L(6), Ford GA(7), Hampton C(8), John R(6), Jones C(9), Moore C(10), Obiako M(4), Porter A(1), Pryce A(11), Quinn T(12), Seagrove AC(1), Snooks H(1), Whitman S(11), Rees N(13).

BACKGROUND: Early assessment of patients with suspected transient ischaemic attack (TIA) is crucial to provision of effective care, including initiation of preventive therapies and identification of stroke mimics. Many patients with TIA present to emergency medical services (EMS) but may not require hospitalisation. Paramedics could identify and refer patients with low-risk TIA, without conveyance to the ED. Safety and effectiveness of this model is unknown.

AIM: To assess the feasibility of undertaking a fully powered randomised controlled trial (RCT) to evaluate clinical and cost-effectiveness of paramedic referral of patients who call EMS with low-risk TIA to TIA clinic, avoiding transfer to ED.

METHODS: The Transient Ischaemic attack Emergency Referral (TIER) intervention was developed through a survey of UK ambulance services, a scoping review of evidence of prehospital care of TIA and convening a specialist clinical panel to agree its final form. Paramedics in South Wales, UK, were randomly allocated to trial intervention (TIA clinic referral) or control (usual care) arms, with patients' allocation determined by that of attending paramedics.Predetermined progression criteria considered: proportion of patients referred to TIA clinic, data retrieval, patient satisfaction and potential cost-effectiveness.

RESULTS: From December 2016 to September 2017, eighty-nine paramedics recruited 53 patients (36 intervention; 17 control); 48 patients (31 intervention; 17 control) consented to follow-up via routine data. Three intervention patients, of seven deemed eligible, were referred to TIA clinic by paramedics. Contraindications recorded for the other intervention arm patients were: Face/Arms/Speech/Time positive (n=13); ABCD2 score >3 (n=5); already anticoagulated (n=2); crescendo TIA (n=1); other (n=8). Routinely collected electronic health records, used to report further healthcare contacts, were obtained for all consenting patients. Patient-reported satisfaction with care was higher in the intervention arm (mean 4.8/5) than the control arm (mean 4.2/5). Health economic analysis suggests an intervention arm quality-adjusted life-year loss of 0.0094 (95% CI -0.0371, 0.0183), p=0.475.

CONCLUSION: The TIER feasibility study did not meet its progression criteria, largely due to low patient identification and referral rates. A fully powered RCT in this setting is not recommended.

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Journal report – listopad 2024

2. BMJ Open. 2024 Nov 24;14(11):e085270. doi: 10.1136/bmjopen-2024-085270.

Perspectives from clinicians from different levels of care in Maputo, Mozambique: qualitative study of the barriers to and facilitators of paediatric injury care in resource-poor hospital settings.

Amado V(1)(2), Zandamela A(3), Couto MT(2), Wallis LA(4), Laflamme L(5)(6).

OBJECTIVES: Providing care for injured children is challenging in resource-poor settings. While checklists can assess local capacities and guide the setting of priorities for improvement, key insights can be gained from consultation with locally practising clinicians. This study aimed to highlight barriers to and facilitators of the delivery of paediatric injury care experienced by clinicians from hospitals at different levels of care in Maputo, Mozambique.

DESIGN: We conducted semistructured individual qualitative interviews with clinical staff at four hospitals. Data were analysed using inductive content analysis.

SETTING: The study was conducted in four hospitals, each representing a specific level of care in Maputo, Mozambique.

PARTICIPANTS: We recruited clinicians (doctors, nurses and technicians) involved in paediatric injury care to be interviewed on-site (we target around 10 clinicians per hospital).

RESULTS: From the 40 interviews conducted, four categories of barriers emerged: (1) prehospital care constraints, (2) shortage of child-appropriate resources, (3) inappropriate infrastructure for paediatric emergency care and (4) limited qualified staff available. By contrast, one category of facilitators stood out, namely that of cross-boundaries support and mentorship, between professionals and institutions.

CONCLUSION: From clinicians' perspective, barriers to paediatric injury care are often similar across hospitals and professional groups, and they include the prehospital setting. Resource and infrastructure challenges were emphasized, as expected, and clinicians expressed a clear desire for knowledge and competence sharing.

DOI: 10.1136/bmjopen-2024-085270

3. BMC Health Serv Res. 2024 Nov 25;24(1):1462. doi: 10.1186/s12913-024-11952-7.

Effectiveness of the community paramedicine at home (CP@home) program for frequent users of emergency medical services in Ontario: a randomized controlled trial.

Agarwal G(1)(2), Angeles R(3), Brar J(3)(4), Pirrie M(3), Marzanek F(3), McLeod B(5), Thabane L(4)(6)(7).

OBJECTIVE: To evaluate the impact of the Community Paramedicine at Home (CP@home) program, a community paramedicine home-visit intervention, on reducing emergency medical services (EMS) calls among frequent users.

DESIGN: A 6-month, open-label, pragmatic, randomized controlled trial with parallel intervention and control arms. An online automated platform (randomizer.org) was used to randomly allocate participants using a 1:1 allocation sequence.

SETTING: In homes of frequent EMS users in four paramedic services and regions across Ontario, Canada.

PARTICIPANTS: Eligible participants were frequent callers (≥ 3 EMS calls within six months and ≥ 1 EMS call within the previous month), or had ≥ 1 lift assist call within the previous month, or were referred by paramedics.

INTERVENTION: Community paramedics conducted risk assessments, provided health education, referred appropriate resources, and reported to family physicians for up to three home visits. The control arm received usual care.

PRIMARY OUTCOME MEASURE: EMS calls in 6 months during intervention.

RESULTS: Two thousand two hundred eighty four eligible participants were randomly allocated to the intervention and control groups, with 265 participants lost to follow-up due to inability to retrieve participant records from EMS databases. There were 1025 intervention participants (52.7% female, mean age 69.65 years [standard deviation (SD) = 19.98]) and 994 control participants (52.0% female, mean age 69.78 years [SD = 19.09]). In the post-intervention intention-to-treat analysis (zero-inflated negative binomial regression), the EMS call rate was not significantly lower in the intervention group compared to the control group (incidence rate ratio [IRR] = 0.88, 95% confidence interval [CI]: 0.76, 1.01). In the subgroup analysis, the intervention had a significant effect in the lift assist caller subgroup (IRR = 0.73, 95% CI: 0.58, 0.92), but no significant effect among the frequent caller subgroup (IRR = 0.97, 95% CI: 0.82, 1.14). The sensitivity analyses found a similar association for the lift assist caller subgroup. There was a significant subgroup effect (p-value for interaction < 0.01).

CONCLUSIONS: CP@home had a significant impact on reducing EMS calls for those with a lift assist call but not for the overall sample. This program filled a healthcare gap by shifting primary care delivery, which could reduce the disproportionate number of EMS calls, thus reducing healthcare costs.

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Journal report – listopad 2024

PREHOSPITAL CARE

– systematic review & meta-analysis –

1. Am J Emerg Med. 2024 Nov 17;88:12-22. doi: 10.1016/j.ajem.2024.11.031.

Initiation of buprenorphine in the emergency department or emergency out-of-hospital setting: A mixed-methods systematic review.

Armour R(1), Nielsen S(2), Buxton JA(3), Bolster J(4), Han MX(5), Ross L(5).

INTRODUCTION: People who use substances increasingly access healthcare primarily through emergency medical services (EMS) and emergency departments (EDs). To meet the needs of these patients, EMS and EDs have become access points for medications for opioid use disorder (OUD), specifically buprenorphine. This systematic review aimed to quantify the efficacy of these programs, examining retention in treatment for OUD, rates of re-presentation to ED or EMS, and rates of precipitated withdrawal, as well as summarise clinician and patient perspectives on buprenorphine initiation in these settings.

METHODS: This review considered studies including patients with OUD receiving, and providers initiating, buprenorphine in an ED or EMS setting. A convergent, segregated approach to mixed-methods review was used as recommended by the Joanna Briggs Institute. A search was conducted of MEDLINE, CINAHL, EMBASE, and the Cochrane Library. Where relevant, meta-analyses of odds ratios and proportions were conducted.

FINDINGS: In both randomised (OR 5.97, 95 %CI 2.52-14.14, 227 participants, I2 16.93 %) and observational (OR 4.28, 95 %CI 2.45-7.48, 779 participants, I2 66.97 %) research, buprenorphine in the ED or EMS setting was associated with increased odds of treatment engagement at 30 days. Rates of retention in treatment varied across measured time points, from 77 % (95 %CI 74-80 %, 763 participants, I2 0.01 %) within 24 h, to 35 % (95 %CI 29-40 %) at 12 months. A low rate of precipitated withdrawal was reported (0.00 %, 95 %CI 0.00-1.00 %, 851 participants, I2 0.00 %). Clinicians and patients were generally supportive of ED-initiated buprenorphine, while identifying the initiation buprenorphine as one component of a longitudinal care path for people with OUD. Patients valued clinicians engaging in shared decision-making, while clinicians identified the environment of the ED often made this challenging.

CONCLUSION: The initiation of buprenorphine in the ED setting is associated with higher odds of short and medium-term treatment engagement. Further research is required into EMS-initiated buprenorphine, as well as patient perspectives of ED- and EMS-initiated buprenorphine.

DOI: 10.1016/j.ajem.2024.11.031

PMID: 39577213

2. Inj Prev. 2024 Nov 21;30(6):446-453. doi: 10.1136/ip-2023-045110.

Community emergency medical services approaches to fall prevention: a systematic review.

Friend TH(1)(2), Thomas HM(3)(4), Ordoobadi AJ(2), Bain PA(5), Jarman MP(2)(6).

BACKGROUND: Falls are a leading cause of morbidity and mortality among older adults in the USA. Current approaches to fall prevention often rely on referral by primary care providers or enrolment during inpatient admissions. Community emergency medical services (CEMS) present a unique opportunity to rapidly identify older adults at risk for falls and provide fall prevention interventions in the home. In this systematic review, we seek to assess the efficacy and qualitative factors determining success of these programs.

METHODS: Studies reporting the outcomes of fall prevention interventions delivered by EMS were identified by searching the electronic databases PubMed, Embase, Web of Science Core Collection, CINAHL and the Cochrane Central Register of Controlled Trials through 11 July 2023.

RESULTS: 35 studies including randomised and non-randomised experimental trials, systematic reviews and qualitative research primarily from Western Europe, the USA, Australia and Canada were included in our analysis. Current fall prevention efforts focus heavily on postfall referral of at-risk community members. CEMS fall prevention interventions reduced all-cause and fall-related emergency department encounters, subsequent falls and EMS calls for lift assist. These interventions also improved patient health-related quality of life, independence with activities of daily living, and secondary health outcomes.

CONCLUSIONS: CEMS programmes provide an opportunity for direct, proactive fall prevention on the individual level. Addressing barriers to implementation in the context of current emergency medical systems in the USA is the next step toward widespread implementation of these novel fall prevention interventions.

DOI: 10.1136/ip-2023-045110

3. Acta Anaesthesiol Scand. 2024 Nov;68(10):1306-1318. doi: 10.1111/aas.14527. Epub 2024 Sep 26.

Inhaled analgesics for the treatment of prehospital acute pain-A systematic review.

Hyldmo PK(1)(2), Rehn M(3)(4)(5), Dahl Friesgaard K(6)(7)(8), Rognås L(9)(10)(11), Raatiniemi L(12)(13), Kurola J(14)(15), Larsen R(16), Kongstad P(17)(18)(19), Sandberg M(4), Magnusson V(20), Vist GE(21).

BACKGROUND: Many prehospital emergency patients receive suboptimal treatment for their moderate to severe pain. Various factors may contribute. We aim to systematically review literature pertaining to prehospital emergency adult patients with acute pain and the pain-reducing effects, adverse events (AEs), and safety issues associated with inhaled analgetic agents compared with other prehospital analgesic agents.

METHODS: As part of an initiative from the Scandinavian Society of Anaesthesia and Intensive Care Medicine, we conducted a systematic review (PROSPERO CRD42018114399), applying the PRISMA guidelines, Grading of Recommendations Assessment, Development, and Evaluation (GRADE), and Cochrane methods, searching the Cochrane Library, Epistemonikos, Centre for Reviews and Dissemination, PubMed, and EMBASE databases (updated March 2024). Inclusion criteria were the use of inhaled analgesic agents in adult patients with acute pain in the prehospital emergency care setting. All steps were performed by minimum of two individual researchers. The primary outcome was pain reduction; secondary outcomes were speed of onset, duration of effect, and relevant AEs.

RESULTS: We included seven studies (56,535 patients in total) that compared inhaled agents (methoxyflurane [MF] and nitrous oxide [N2O]) to other drugs or placebo. Study designs were randomized controlled trial (1; n = 60), randomized non-blinded study (1; n = 343), and randomized open-label study (1; n = 270). The remaining were prospective or retrospective observational studies. The evidence according to GRADE was of low or very low quality. No combined meta-analysis was possible. N2O may reduce pain compared to placebo, but not compared to intravenous (IV) paracetamol, and may be less effective compared to morphine and MF. MF may reduce pain compared to paracetamol, ketoprofen, tramadol, and fentanyl. Both agents may be associated with marked but primarily mild AEs.

CONCLUSION: We found low-quality evidence suggesting that both MF and N2O are safe and may have a role in the management of pain in the prehospital setting. There is low-quality evidence to support MF as a short-acting single analgesic or as a bridge to IV access and the administration of other analgesics. There may be occupational health issues regarding the prehospital use of N2O.

DOI: 10.1111/aas.14527

4. Ther Clin Risk Manag. 2024 Nov 23;20:775-787. doi: 10.2147/TCRM.S488502. eCollection 2024.

Haemodynamic Changes in Adult Patients Transported in Emergency Medical Helicopters. A Systematic Review.

Artero-García A(1), Gómez-Salgado J(2)(3), Fernández-Carrasco FJ(4), Vázquez-Lara JM(4), García-Iglesias JJ(2), Mérida-Yáñez B(4), Muñoz-Vela FJ(5), Rodríguez-Díaz L(4).

OBJECTIVE: Patients transported by Helicopter Emergency Medical Services (HEMS) suffer a series of haemodynamic changes, mainly in terms of blood pressure, heart rate, and oxygen saturation, which worsen at different stages of the flight. The aim of this study was to identify haemodynamic changes in adult patients transported by the Helicopter Emergency Medical Service.

METHODS: A systematic review of studies published between January 2013 to April 2023 was conducted following the PRISMA 2020 guidelines criteria in the Pubmed, Scopus and Web of

Science electronic databases. Methodological quality was assessed using the critical appraisal tool for non-randomised studies of the Joanna Briggs Institute (JBI). The followed protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) with code CRD4202222355798. Two independent reviewers read and extracted the information of the studies.

RESULTS: Eight studies were included in the review, which showed significant haemodynamic changes during transport by HEMS. All studies recorded readings at three points of the mission: pre-flight, in-flight, and post-flight. The greatest change in physiological variables is visible in oxygen saturation, during the in-flight phase, with a decrease in this value. Blood pressure mainly increased in various phases of the mission, especially in the in-flight phase. Heart rate also changed across the mission phases, mainly in the pre-flight and post-flight phases, increasing and decreasing during the flight.

CONCLUSION: Patients transported by helicopter undergo haemodynamic changes during the different stages of evacuation (pre-flight, in-flight, and post-flight). However, there is a need for further studies on helicopter transport of patients due to the paucity of publications on this topic.

DOI: 10.2147/TCRM.S488502

5. Am J Emerg Med. 2024 Nov;85:196-201. doi: 10.1016/j.ajem.2024.09.015. Epub 2024 Sep 10.

Association between helicopter medical services for pediatric trauma patients and mortality: Systematic review and meta-analysis.

Enomoto Y(1), Tsutsumi Y(2), Kido T(3), Nagatomo K(4), Tsuchiya A(5), Inoue Y(4).

BACKGROUND: Helicopter emergency medical services (HEMS) have become widespread around the world. However, previous studies of the influence of HEMS on mortality were limited to adult patients only and showed inconsistent and heterogeneous results. This study aimed to examine the association between HEMS and mortality among pediatric emergencies compared to ground emergency medical service (GEMS).

METHODS: We searched relevant databases (MEDLINE, EMBASE, The Cochrane Central Register of Controlled Trials) and included articles in any language. The most recent search was on January 4th, 2024. We included prospective observational cohort studies or clinical trials that compared HEMS with GEMS in pediatric patients. We excluded any study that did not compare two or more groups of participants. Two pairs of researchers blindly screened studies and evaluated risk of bias using the Risk of Bias in Nonrandomized Studies of Interventions tool. We conducted this systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. Data were extracted by four independent reviewers. We calculated the odds ratio using the random-effects model. The primary outcome was mortality.

RESULTS: Our search strategy yielded 1454 results. Of these, seven observational studies met our eligibility criteria; no RCT met the criteria. All studies targeted trauma patients only. HEMS was associated with lower mortality (Odds ratio 0.66, 95 % CI 0.59 to 0.74). Inconsistency between trials was determined to be low due to low heterogeneity (I2 = 0 %). In a subgroup analysis conducted with and without physicians on the HEMS staff, we found no significant differences (I2 = 0 %, p = 0.71).

CONCLUSION: Our systematic review and meta-analysis, which was limited to trauma pediatric trauma patients, revealed that HEMS deployment correlated with decreased mortality. Further research is necessary to more effectively measure the potential influence and applicability of HEMS for pediatric emergencies.

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PMID: 39278027 [Indexed for MEDLINE]

6. J Stroke Cerebrovasc Dis. 2024 Nov;33(11):107964. doi: 10.1016/j.jstrokecerebrovasdis.2024.107964. Epub 2024 Aug 23.

Success with incrementally faster times to endovascular therapy (SWIFT-EVT): A systematic review and meta-analysis.

Legere B(1), Mohamed A(2), Elsherif S(3), Saqqur R(4), Schoenfeld D(5), Slebonick AM(6), McCartin M(7), Price J(8), Zachrison KS(9), Edlow JA(10), Saqqur M(11), Shuaib A(12), Thomas SH(13).

BACKGROUND: A major systematic review and meta-analysis assessing trial data through 2014 (the Highly Effective Reperfusion Evaluated in Multiple Endovascular Stroke Trials, HERMES) demonstrated that particularly over the initial six hours of acute ischemic stroke (AIS), rapid performance of endovascular therapy (EVT) markedly improves outcomes. The current analysis, Success with Incrementally Faster Times to EVT (SWIFT-EVT), aimed to provide an updated metric summarizing latest estimates for modified Rankin Scale (mRS) improvements accrued by streamlining time to EVT.

METHODS: A systematic review and meta-analysis was conducted using electronic databases. Eligible studies reported a time-benefit slope with times from AIS onset (or time last known normal) to EVT commencement; the predictor was onset-to-groin (OTG) time. Primary and secondary outcomes were 90-day functional independence (mRS 0-2) and 90-day excellent function (mRS 0-1), respectively.RESULTS: Five studies were included. Results showed increased change of good outcome with each hour of pre-EVT time savings for mRS 0-2 for 0-270' (OR 1.25, 95 % CI 1.16-1.35, I2 40 %) and 271-360' time frame (1.22, 95 % CI 1.12-1.33, I2 58 %). For the studies assessing mRS 0-1, estimates were found appropriate for both the 0-270' time frame (OR 1.34, 95 % CI 1.19-1.51, I2 27 %) and the 271-360' time frame (OR 1.20, 95 % CI 1.03-1.38, I2 60 %).

CONCLUSIONS: Each hour saved from AIS onset to EVT start is associated with a 22-25 % increased odds of achieving functional independence, a useful metric to inform patient-specific and systems planning decisions.

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PMID: 39182706 [Indexed for MEDLINE]