Journal report – březen 2024

OBSAH

PREHOSPITAL CARE

– clinical trials & RCT

1: Lowder EM, Grommon E, Bailey K, Ray B. **Police-mental health co-response versus police-as-usual response to behavioral health emergencies: A pragmatic randomized effectiveness trial.** Soc Sci Med. 2024 Mar;345:116723. doi:10.1016/j.socscimed.2024.116723. Epub 2024 Feb 24. PMID: 38422686.

PREHOSPITAL CARE

– systematic review & meta-analysis

1: Kulkarni AJ, Batra A, Eisner ZJ, Delaney PG, Pine H, Klapow MC, Raghavendran K. **Prehospital hemorrhage management in low- and middle-income countries: A scoping review.** World J Surg. 2024 Mar;48(3):547-559. doi: 10.1002/wjs.12054.Epub 2024 Jan 24. PMID: 38265259.

2: Schoenfeld DW, Rosen CL, Harris T, Thomas SH. **Assessing the one-month mortality impact of civilian-setting prehospital transfusion: A systematic review and meta-analysis**. Acad Emerg Med. 2024 Mar 22. doi: 10.1111/acem.14882. Epub ahead of print. PMID: 38517320.

3: Schoenfeld D, Thomas CE, McCartin MP, Blumen IJ, Galvagno SM Jr, Thomas SH. **Natural Experiment Outcomes Studies in Rotor Wing Air Medical Transport: Systematic Review and Meta-Analysis of Before-and-After and Helicopter-Unavailable Publications From 1970 to 2022.** Air Med J. 2024 Mar-Apr;43(2):124-132. doi: 10.1016/j.amj.2023.11.005. Epub 2023 Dec 5. PMID:38490775.

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PREHOSPITAL CARE

– clinical trials & RCT –

1. Soc Sci Med. 2024 Mar;345:116723. doi: 10.1016/j.socscimed.2024.116723. Epub 2024 Feb 24.

Police-mental health co-response versus police-as-usual response to behavioral health emergencies: A pragmatic randomized effectiveness trial.

Lowder EM(1), Grommon E(2), Bailey K(3), Ray B(4).

BACKGROUND: People with mental illness are overrepresented in United States (US) criminal legal systems. In response, alternatives to traditional police response to behavioral health emergencies have become more common, despite limited evidence for their effectiveness. We conducted the first randomized controlled trial of a police-mental health co-response team to determine program effectiveness relative to a police-as-usual response on key outcomes identified by community stakeholders.

METHODS: Between January 2020 and March 2021, we randomized behavioral health emergency calls for service in one of six police districts in Indianapolis, Indiana to receive a co-response or police-as-usual response during operational hours between 10 a.m. and 5 p.m. Mondays - Fridays. Eligible calls for service were determined via pre-specified phrases indicating a behavioral health incident over the police dispatch radio. Researchers then communicated random assignment with the co-response team to indicate whether they should respond or withhold. Logistic and negative binomial regression were used to assess group differences in emergency medical services (EMS) events within 12 months of the randomized incident along with jail booking, outpatient encounters, and emergency department visits.

FINDINGS: We randomized 686 calls for service with co-response completed in 264 cases and police-as-usual response in 267 cases. The overall rate of attrition was similar across conditions and the final sample included 211 co-responses and 224 police-as-usual responses. We found no significant differences in any EMS event (odds ratio [OR]: 1.26; 95% confidence interval [CI]: 0.85-1.88, p = .246) or event counts (incidence rate ratio [IRR]: 0.85; 95% CI: 0.52-1.37, p = .504). We also found no differences in secondary outcomes (jail booking, outpatient encounters, and emergency department visits).

DISCUSSION: A police-mental health co-response team model was not more effective than traditional police response on key outcomes. Co-response team models, such as the one reported here, may unintentionally foster emergency services utilization among persons with behavioral health needs. Without a functioning national mental health system, communities in the US will continue to struggle to identify solutions to meet the needs of community members with complex behavioral health issues.

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PREHOSPITAL CARE

– systematic review & meta-analysis –

1. World J Surg. 2024 Mar;48(3):547-559. doi: 10.1002/wjs.12054. Epub 2024 Jan 24.
Prehospital hemorrhage management in low- and middle-income countries: A scoping review.
Kulkarni AJ(1)(2)(3), Batra A(2)(4), Eisner ZJ(1)(2)(3), Delaney PG(2)(5), Pine H(2)(4), Klapow MC(2)(6), Raghavendran K(2)(7).

INTRODUCTION: Low- and middle-income countries (LMICs) account for 90% of deaths due to injury, largely due to hemorrhage. The increased hemorrhage mortality burden in LMICs is exacerbated by absent or ineffective prehospital care. Hemorrhage management (HM) is an essential component of prehospital care in LMICs, yet current practices for prehospital HM and outcomes from first responder HM training have yet to be summarized.
METHODS: This review describes the current literature on prehospital HM and the impact of first responder HM training in LMICs. Articles published between January 2000 and January 2023 were identified using PMC, MEDLINE, and Scopus databases following PRISMA-ScR guidelines. Inclusion criteria spanned first responder training programs delivering prehospital care for HM. Relevant articles were assessed for quality using the Newcastle-Ottawa scale.
RESULTS: Of the initial 994 articles, 20 met inclusion criteria representing 16 countries. Studies included randomized control trials, cohort studies, case control studies, reviews, and epidemiological studies. Basic HM curricula were found in 15 studies and advanced HM curricula were found in six studies. Traumatic hemorrhage was indicated in 17 studies while obstetric hemorrhage was indicated in three studies. First responders indicated HM use in 55%-76% of encounters, the most frequent skill they reported using. Mean improvements in HM knowledge acquisition post-course ranged from 23 to 58 percentage points following training for pressure and elevation, gauze application, and tourniquet application.
CONCLUSIONS: Our study summarizes the current literature on prehospital HM in LMICs pertaining to epidemiology, interventions, and outcomes. HM resources should be a priority for further development.

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2. Acad Emerg Med. 2024 Mar 22. doi: 10.1111/acem.14882. Online ahead of print.
Assessing the one-month mortality impact of civilian-setting prehospital transfusion: A systematic review and meta-analysis.
Schoenfeld DW(1), Rosen CL(1), Harris T(2), Thomas SH(1)(2).

BACKGROUND: Based on convincing evidence for outcomes improvement in the military setting, the past decade has seen evaluation of prehospital transfusion (PHT) in the civilian emergency medical services (EMS) setting. Evidence synthesis has been challenging, due to study design variation with respect to both exposure (type of blood product administered) and outcome (endpoint definitions and timing). The goal of the current meta-analysis was to execute an overarching assessment of all civilian-arena randomized controlled trial (RCT) evidence focusing on administration of blood products compared to control of no blood products.
METHOD: The review structure followed the Cochrane group's Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA). Using the Transfusion Evidence Library (transfusionevidencelibrary.com), the multidatabase (e.g. PubMed, EMBASE) Harvard On-Line Library Information System (HOLLIS), and GoogleScholar, we accessed many databases and gray literature sources. RCTs of PHT in the civilian setting with a comparison group receiving no blood products with 1-month mortality outcomes were identified.
RESULTS: In assessing a single patient-centered endpoint-1-month mortality-we calculated an overall risk ratio (RR) estimate. Analysis of three RCTs yielded a model with acceptable heterogeneity ($I^2 = 48\%$, Q-test $p = 0.13$). Pooled estimate revealed civilian PHT results in a statistically nonsignificant ($p = 0.38$) relative mortality reduction of 13% (RR 0.87, 95% CI 0.63-1.19).
CONCLUSIONS: Current evidence does not demonstrate 1-month mortality benefit of civilian-setting PHT. This should give pause to EMS systems considering adoption of civilian-setting PHT programs. Further studies should not only focus on which formulations of blood products might improve outcomes but also focus on which patients are most likely to benefit from any form of civilian-setting PHT.

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3. Air Med J. 2024 Mar-Apr;43(2):124-132. doi: 10.1016/j.amj.2023.11.005. Epub 2023 Dec 5.

Natural Experiment Outcomes Studies in Rotor Wing Air Medical Transport: Systematic Review and Meta-Analysis of Before-and-After and Helicopter-Unavailable Publications From 1970 to 2022.

Schoenfeld D(1), Thomas CE(1), McCartin MP(2), Blumen IJ(3), Galvagno SM Jr(4), Thomas SH(5).

OBJECTIVE: Helicopter emergency medical services (HEMS) is widely used for prehospital and interfacility transport, but there is a paucity of HEMS outcomes data from studies using randomized controlled trial designs. In the absence of robust randomized controlled trial evidence, judgments regarding HEMS potential benefit must be informed by observational data. Within the study design set of observational analyses, the natural experiment (NE) is notable for its high potential methodologic quality; NE designs are occasionally denoted "quasi-experimental." The aim of this study is to examine all NE outcomes studies in the HEMS literature and to discern what lessons can be learned from these potentially high-quality observational data.

METHODS: HEMS NE studies were identified during the development of a new HEMS Outcomes Assessment Research Database (HOARD). HOARD was constructed using a broad-ranging search of published and gray literature resources (eg, PubMed, Embase, and Google Scholar) that used variations of the terms "helicopter EMS," "air ambulance," and "air medical transport." Among the 221 studies ultimately included in HOARD, 16 NE publications describing 13 sets of observational data comprising myriad diagnostic groups were identified. Of these 16 HEMS NEs, 4 HEMS NE studies assessing trauma outcomes were used in a meta-analysis. A meta-analysis was also performed of 4 HEMS NE studies.

RESULTS: Although the disparity of studies (in terms of both case mix and end points) precluded the generation of a pooled effect estimate of an adjusted mortality benefit of HEMs versus ground emergency medical services, HEMS was found to be associated with outcomes improvement in 8 of the 13 cohorts.

CONCLUSION: The weight of the NE evidence supports a conclusion of some form of HEMS-mediated outcomes improvement in a variety of patient types. Meta-analysis of 4 HEMS NE studies assessing trauma outcomes generated a model with acceptable heterogeneity (I^2 = 43%, Q test: P = .16), which significantly (P < .01) favored HEMS use with a pooled HEMS survival odd ratio estimate of 1.66 (95% confidence interval, 1.23-2.22).

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