

Abstracts selected through the 999 EMS Research Forum peer review process and presented orally and by poster at the 'Working with our communities to deliver pre-hospital and emergency care research' Conference, Tuesday 20 – Wednesday 21 June 2023.

999 EMS Research Forum 2023 meeting abstracts

Prize winners



Highest quality research (Sponsor – 999 EMS Research Forum)

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01 PREDICTORS, EFFECTS AND MISSED OPPORTUNITIES OF FEEDBACK TO EMERGENCY AMBULANCE STAFF: A MIXED-METHODS DIARY STUDY

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10.1136/emered-2023-999.1

Background Clinical performance feedback has been demonstrated to have positive effects on patient care in hospital and primary care settings (Ivers et al., 2012). Emerging evidence suggests that providing prehospital clinicians with feedback on their performance and patient outcomes may similarly improve patient care, patient safety and staff wellbeing (Wilson et al., 2022). The aim of this study was to describe the predictors and outcomes of feedback received by prehospital clinicians in the UK, and to identify situations where prehospital clinicians desired enhanced feedback.

Methods This was an observational mixed-methods study involving online diary entries between March - August 2022. Eligible participants were emergency ambulance staff delivering face-to-face patient care, employed by NHS ambulance trusts in the UK. Baseline survey data was analysed using logistic regression and diary entries were analysed using multilevel modelling and content analysis. Feedback effects were categorised using hierarchical cluster analysis.

Results The baseline survey was completed by n=299 participants, a third of which (n=101) went on to submit n=956 diary entries. Patient outcome feedback was the most frequently received feedback type (n=226). Significant predictors for receiving feedback were paramedic role (p=0.024),

workplace with good feedback-seeking culture (p=0.001) and white ethnicity (p=0.024). Categories of feedback effects were personal development (closure, confidence, job satisfaction), professional development (clinical practice, knowledge) and service outcomes (patient care, patient safety). Feedback on patient satisfaction was associated with positive effects on service outcomes (p=0.017), whilst patient outcome feedback was associated with positive effects on professional development (p=0.056). Feedback was most frequently desired for non-conveyed patients and those with neurological or cardiovascular conditions.

Conclusion Feedback and follow-up to prehospital clinicians improves personal development, professional development and service outcomes. The results of this study highlight subsets of patients and staff that prehospital feedback should be enhanced for to improve clinical decision-making and staff wellbeing.



Best rapid elevator pitch (Sponsor – Library & Knowledge Service for NHS Ambulance Services in England/AMBER)

Betul Yalcin. *University of Lincoln, UK*

02 ETHNIC DIFFERENCES IN PREHOSPITAL CONVEYANCE IN THE EAST MIDLANDS REGION OF THE UK: A RETROSPECTIVE CROSS-SECTIONAL STUDY

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Background Few studies have investigated prehospital conveyance of people from ethnic minority communities. Our aim was to identify differences in prehospital conveyance for ethnic minority people compared with white British people in the East Midlands region, United Kingdom (UK).

Methods Using a cross-sectional design, we analysed retrospective electronic clinical data from a large UK ambulance service, East Midlands Ambulance Service NHS Trust (EMAS), which serves a population of 4.5 million, from 1 January 2018 to 31 December 2021. Patient self-reported ethnicity recorded by ambulance crew in attendance was the exposure using seven categories of white British, EU27 Countries, other white, Asian, black, mixed and any other. The outcome measure was the rate of conveyance to a hospital. Multivariable logistic regression was used to identify predictors of conveyance whilst accounting for sociodemographic characteristics including age, gender, ethnicity, NEWS2 score, socio-economic deprivation, and urban or rural place of attendance.

Results There were 2,324,439 patients who received an ambulance attendance including people of White (88.0%), non-

White (6.3%) and unknown (5.7%) ethnicity. The proportion of Asian patients (3.8%) who received attendance from the ambulance service was higher than other ethnic minority backgrounds. After adjusting for age, gender, ethnicity, NEWS2 score, socio-economic deprivation, and urban or rural place of residence, Asian patients (Odds Ratio [OR] 0.81, 95% Confidence Interval [CI] 0.80, 0.82, $p < 0.001$), Black patients (OR 0.90, 95% CI 0.88, 0.93, $p < 0.001$), and mixed ethnicity patients (OR 0.92, 95% CI 0.89, 0.95, $p < 0.001$) were significantly less likely than white patients to be conveyed to the hospital by ambulance.

Conclusions There were significant differences in prehospital conveyance for ethnic minority patients compared with white-British patients. These differences could be related to language and cultural barriers, and a limited understanding of the health system. More action is needed to tackle ethnic inequalities, reduce inequalities, and remove barriers to equal conveyance.



Research most likely to affect practice (Sponsor – College of Paramedics)

Laura Goodwin. *University of the West of England, Bristol, UK*

03

PREHOSPITAL BIRTH: INEQUALITIES AND NEONATAL HYPOTHERMIA IN THE SOUTH WEST OF ENGLAND

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Background Neonatal hypothermia ($< 36.5^{\circ}\text{C}$) is an important risk factor for babies born before arrival at hospital (BBA). In the prehospital setting babies can become hypothermic within minutes. Paramedic temperature measurement of BBA babies is inconsistent in the UK, with temperatures recorded in only 3-10% of cases. We aimed to examine which groups of women are most likely to experience BBA and what proportion of BBA babies are hypothermic on arrival at hospital in the South West of England.

Methods Anonymised extracts from routinely collected data (hospital neonatal records) were provided by six South West NHS Hospital Trusts from a three-year period (January 2018-January 2021). Records were included if they related to a live birth (≥ 24 weeks) attended by paramedics. Demographic characteristics of the mothers (e.g. age, ethnicity, safeguarding status) and characteristics of the birth (e.g. gestation, temperature

on admission, treatment) were analysed and presented using descriptive statistics.

Results 216 babies were conveyed to hospital by the ambulance service during the above time period. There were 32 records (15%) with no admission temperature documented. Of those with a recorded admission temperature, 35% (64/184) were hypothermic on arrival at hospital. Neonatal hypothermia on arrival at hospital was associated with the need for advanced hospital care and extended length of stay. Characteristics associated with BBA included safeguarding concerns and late booking. Mothers of hypothermic babies were less likely to have had a previous birth, and more likely to have reported a disability at their booking appointment.

Conclusions More should be done to support prehospital temperature management of BBA babies, to prevent neonatal hypothermia. Although these findings may help hospital Trusts to identify those who may be at increased chance of BBA in the South West, the study is limited by the small sample size. Further work would be needed to confirm these associations.

Swansea University
Prifysgol AbertawePopulation Data Science
Research & Innovation InstituteGwyddor Data Poblogaeth
Sefydliad Ymchwil ac Arloesi

Most innovative use of routine data (Sponsor – Population Data Science, Swansea University)

Harriet Moore. *University of Lincoln, UK.*

04

'BEYOND THE EMERGENCY': NOVEL USES OF AMBULANCE DATA TO IDENTIFY VULNERABLE COMMUNITIES AND IMPROVE PRE-HOSPITAL CARE

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Background Ambulance data is often used to elucidate presentation characteristics, including patient demographics and medical conditions. There is a lack of research utilising geographical methods to understand the drivers of medical emergencies. During the COVID-19 pandemic, our team has produced an evolving research portfolio demonstrating novel uses of ambulance data, including geographical data linkage to explore the impact of built environments and socio-economic conditions on the geospatial heterogeneity of acute conditions.

Methods The research utilises 999 call data collated by the East Midlands Ambulance NHS Service including dispatch records, the impressions of paramedics attending emergencies, and paramedic decisions about patient care pathways. The region is a socio-economic, demographic, and geographic