

Important recommendations for future practice regarding departmental handover can be made, most notably, the need to create a civil and pleasant working environment where doctors can flourish.

### 039 PERIPHERAL ADMINISTRATION OF VASOPRESSORS IN TRANSPORT

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**Background** Management of shocked patients frequently requires vasopressor (epinephrine/norepinephrine) administration. Although less potent vasoactive agents are commonly delivered peripherally, historical concerns surround peripheral epinephrine and particularly norepinephrine use; these are primarily administered as infusions via central venous catheter (CVC). Concerns centre on potential extravasation and subsequent skin or tissue necrosis. However, recent studies suggest risks maybe lower than perceived. In the pre-hospital setting, circumstance may demand use of epinephrine/norepinephrine but preclude CVC insertion.

In this study we assessed current practice for peripheral vasopressor usage in a national pre-hospital and retrieval service and associated complications.

**Method and results** A retrospective, cohort study, using routinely collected data from the EMRS electronic record, cross-referenced against contemporaneous paper medical records from 2004–2018. All primary (pre-hospital) and secondary (from remote/rural healthcare facilities) patients over the age of 16 requiring peripheral vasopressors for shock were included.

Data was collected on demographic information, retrieval site and mode of transport, vasopressor used, shock type, duration of use and subsequent complications. Complications were defined as immediate, noted by retrieval team on mission paperwork; or delayed, noted at 24-hour follow-up.

Descriptive statistics for cohort study have been used and all analyses conducted using Stata v12.0

**Conclusions** 6093 missions were reviewed. Vasopressors were administered to 6.8% (417/6093) of patients. Epinephrine infusions were administered to 129 patients and 307 required norepinephrine (19 received both). Peripheral vasopressor infusions were used in 16.1% (67/417) of infusions. Of peripheral infusions, 40 patients received epinephrine and 30 received norepinephrine (three received both). Three epinephrine infusions were during primary missions, all norepinephrine infusions were on secondary retrievals.

Distributive shock was the commonest indication for both (47.5% & 73.3%). There were no reported complications during missions or at 24-hours.

Results suggest pre-hospital use of peripheral epinephrine/norepinephrine is relatively common and safe, with no complications reported across 15 years of practice.

### 040 PREHOSPITAL NATIONAL EARLY WARNING SCORE PREDICTS PATIENT DISPOSITION ALSO IN JAPAN

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The National early warning score (NEWS) was originally developed in the UK for hospitalized patients. We examined if NEWS can be applied for emergency transported patients in Japan.

We assessed the patients transported to one hospital between April 2017 to March 2018. We calculated NEWS from the vitals recorded by ambulance staff. Emergency department (ED) disposition data were categorized into the following groups depending on their outcome: discharged from ED, admitted to a ward, admitted to the intensive care unit or died in ED. We assessed the predictive performance of the NEWS for combined patient dispositions using receiver operating characteristics curves, from which possible cut-off values for risk categorizations were derived. Patient dispositions were compared between NEWS-based three categories adjusting for age, gender and presence of traumatic injury.

**Results** Of 2,847 patients, mean ( $\pm$ standard deviation) NEWS of patients who discharged from ED ( $n=1330$ ), admitted to a ward ( $n=1263$ ), admitted to the ICU ( $n=232$ ), and died in ED ( $n=22$ ) were  $3.7\pm 2.9$ ,  $6.3\pm 3.8$ ,  $9.4\pm 4.0$ ,  $11.7\pm 2.9$ , respectively. Prehospital NEWS's C-statistics (95% confidence interval) for admission to a ward/the ICU or death in ED was 0.733(0.715–0.751), admission to the ICU or death in ED was 0.807 (0.780–0.833), and death in ED was 0.900 (0.868–0.933). After adjusting for age, gender and trauma, odds ratio (95% confidence interval) for admission to the ICU or death in ED of high-risk NEWS category ( $\geq 7$ ) was 13.8 (8.9–21.6) and middle category (5 or 6) was 4.2 (2.5–7.1), each compared to low-risk category ( $\leq 4$ ).

**Conclusion** Our study shows prehospital NEWS can identify patients at risk of adverse outcomes also in Japan.

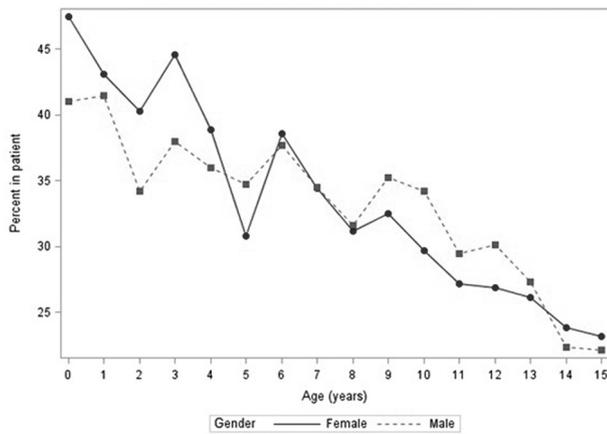
### 041 PRE-HOSPITAL PEWS IS NOT A USEFUL PREDICTOR OF THE NEED FOR HOSPITAL ADMISSION FROM ED

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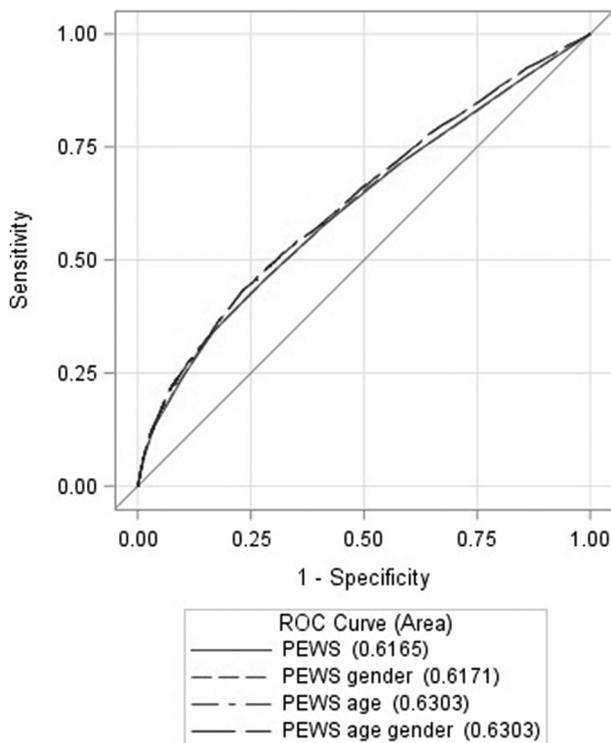
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**Objective** Physiological derangement, as measured by Paediatric Early Warning Score (PEWS) is used to try and identify children with critical illness at an early point to identify and intervene in children at risk. PEWS have shown some utility as a track and trigger system in hospital and also as a predictor of adverse outcome both in and out of hospital. We wanted to examine whether a single pre-hospital PEWS, based on observations made by ambulance staff, was associated with the need for hospital admission.

**Methods** A retrospective analysis of all patients aged  $<16$  transported to hospital by the Scottish Ambulance Survey



Abstract 041 Figure 1 Percent in-patient admission by gender and age



Abstract 041 Figure 2 ROC Curves for comparisons

between 2011 and 2015. Data was matched to outcome data regarding hospital admission or discharge, and length of stay.

**Results** Full data was available for 21,202 paediatric patients, of whom 6340 (29.9%) were admitted to hospital, although this varied considerably by age (figure 1). Pre-hospital PEWS was associated with an odds ratio for admission of 1.173 (95% CI 1.160–1.187). Further analysis of PEWS shows Area Under ROC of 0.617 for PEWS, suggesting poor predictive ability. Gender does not significantly alter this ( $p=0.322$ ) whereas addition of age increase the ROC to 0.630 ( $p<0.001$ ) - see figure 2. There was no association between pre-hospital PEWS and length of hospital stay.

**Discussion** These data show that a single pre-hospital PEWS is a poor predictor of hospital admission for unselected patients in the Scottish Ambulance Service. The decision to admit a child to hospital is not only based on physiological derangement, and hence physiological based scoring systems such as PEWS cannot be used as the sole criteria for hospital admission, from an undifferentiated pre hospital population.

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SCOTTISH CODE RED AUDIT REPORT 2015–2017

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The Scottish Transfusion and Laboratory Support in Trauma (TLST) group previously audited all National Code Red activations between June 1st 2013 and October 31st 2015, generating a number of recommendations to be adopted to optimise the transfusion support given to patients following major trauma in Scotland. A repeat audit was undertaken for all patients for whom a Code Red was activated between 1st November 2015 and 31st December 2017.

A clinical and transfusion lead for each centre entered anonymised data onto a secure electronic database (REDCAP; <http://www.project-redcap.org>) the server of which is held within the University of Edinburgh. This database was maintained by the Edinburgh study team. Each of Scotland’s pre-hospital trauma teams who take patients to hospitals where Code Red Policy is in place, and the receiving hospitals, agreed to enter data into the National Code Red audit for all patients for whom a Code Red was activated during the study period. The project was deemed a service evaluation by the South East Scotland Research Ethics committee (Ref: NR/1408AB11) and therefore did not require full ethics submission. The project was also registered with each hospital’s clinical effectiveness/governance teams where available, and a favourable Caldicott opinion was obtained.

66 activations (24 South-East of Scotland, 32 West, 10 East). Mean age 45 years, 88% male patients. 93% of Code Red patients received blood components with a 300% increase in pre-hospital transfusion (48 patients; 73%); median time from 999 call to Code Red activation reduced to 37 minutes from 99 minutes; 78% patients received pre-hospital TXA (improved from 70%). CRC:FFP ratios improved in comparison to 2013–15. Survival to discharge increased (63% to 66%) despite increased ISS.