12 OUTCOMES AND MODIFIABLE RESUSCITATIVE CHARACTERISTICS AMONGST PAN-ASIAN OUT-OF-HOSPITAL CARDIAC ARREST OCCURRING AT NIGHT – A MULTINATIONAL, PROSPECTIVE, OBSERVATIONAL STUDY

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Aim Studies are divided on the effect of day-night temporal differences on clinical outcomes in out-of-hospital cardiac arrest (OHCA). This study aimed to elucidate the circadian variation in OHCA

Methods This was a prospective, observational study of OHCA cases across multinational Pan-Asian sites. We excluded traumatic cases, less than 18 year-old, cases where resuscitation was not attempted or started but terminated before arrival at Emergency Department, and missing time-of-call-received data. Cases were divided according to time call received by dispatch centres into day (0700 H-1900H) and night (1900 H-0659H). Primary outcome was 30 day survival. Secondary outcomes were prehospital and hospital modifiable resuscitative characteristics.

Results 55881 cases qualified for analysis. 40.3% occurred at night. Incidence was lower at night ($p<0.001$), with a trough at 0300 hour. There was a large increase from 0700 H-0900H. After adjusting for potential confounders, odds of 30 day survival at night was lower with an adjusted odds ratio of 0.79 (95% Confidence Interval, 0.73–0.86, $p<0.001$). Overall, night cases have lower 30 day survival with a trough at midnight. However this diminished when considering only unwitnessed cases. On univariate logistic regression, occurrence at night was associated with decreased provision of bystander CPR, bystander AED application and prehospital adrenaline.

Conclusion In this international cohort, 30 day survival was worse in OHCA occurring at night. There were circadian patterns in incidence. Circadian patterns in 30 day survival diminished when considering only unwitnessed cases. Bystander CPR and bystander AED application were significantly lower at night. This would at least partially explain the decreased survival at night.

Conflict of interest None declared.

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13 ANNUAL TOURNIQUET USE IN UK AMBULANCE SERVICES FOR MAJOR HAEMORRHAGE CONTROL

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Aim The past decade has seen increasing civilian tourniquet use driven largely by a military evidence base¹. This work intended to correlate available data on the frequency of UK prehospital tourniquet use.

Methods Freedom of information requests were made to 13 UK ambulance trusts for numbers of the incidence of tourniquet use from 2015–16 and patient haemodynamic status (blood pressure and pulse) at time of application.

Results Most (9/13) trusts were unable to provide data regarding prehospital haemorrhage control techniques as this something that was not routinely recorded. Two trusts had only recently begun recording tourniquet use and so were unable to provide 12 months of data and another was able to deliver number of recorded uses but not patient haemodynamic status. A single trust was able to provide full details of annual tourniquet use in 31 patients. 14/31 (45%) of patients had a systolic BP of <100 mmHg and a further 6/31 (19%) had a pulse >100 /min at application. 2 patients had a haemostatic pressure dressing applied before tourniquet use.

Conclusion There is a significant lack of data regarding UK ambulance service tourniquet use and this should be urgently increased to improve both research and clinical governance. Many (45%) patients are already in significant levels of shock prior to application of tourniquet use which is associated with very high levels of mortality² and only further data collection will help to understand and ultimately address the reasons underlying this.

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14 INITIAL PREHOSPITAL VITAL SIGNS TO PREDICT SUBSEQUENT ADVERSE HOSPITAL OUTCOMES

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Aim There is growing interest to improve identification of the critically ill patient in the prehospital setting.^{1–3} We aimed to assess whether initial vital physiological signs in the prehospital setting can predict subsequent adverse hospital outcomes, defined as intensive care (ICU) admission or death in the emergency department (ED).

Methods The initial prehospital physiological data of all adult patients, transported by the St John Ambulance Service to the metropolitan public EDs were linked to the ED information system in this retrospective cohort study. Cardiac arrest unwitnessed by paramedics, rural, inter-hospital, non-emergency, and

air transfers were excluded. Area under receiver operating characteristic curve (AUROC) was assessed. Logistic regression with a restricted cubic spline function was used to assess the ability of four physiological variables: systolic blood pressure (BP), heart rate (HR), respiratory rate (RR) and Glasgow Coma Score (GCS) to predict adverse hospital outcomes.

Results Of the 1 79 374 patients, 2268 (1.3%) were subsequently admitted to ICU or died in the ED. AUROC was 0.829 (95% confidence interval 0.820–0.839). The GCS was the most important vital sign, and explained about 56% of the variability of the outcome compared to <11% by each of the other vital signs. A strong non-linearity between initial BP and adverse hospital outcomes was also observed but not with GCS, HR or RR.

Conclusion Initial prehospital vital signs, in particular GCS, may predict subsequent adverse hospital outcomes. Non-linear associations between initial physiological signs and subsequent outcomes should be considered in developing prehospital alert systems.

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15 THE IMPORTANCE OF STAYING ON THE CALL: RECOGNITION OF CARDIAC ARREST AFTER INITIAL DISPATCH

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Aim We compared survival in out-of-hospital cardiac arrest (OHCA) cases recognised at initial dispatch (“primary recognition”) with those subsequently recognised as OHCA (“secondary recognition”) and those not recognised as OHCA (“non-recognition”).

Methods We analysed cases of paramedic-confirmed OHCA in Perth, Western Australia (WA), from January 2014 to December 2015. We excluded traumatic OHCA, paramedic-witnessed arrests, and cases where paramedics did not attempt resuscitation. Emergency ambulance calls in WA are processed using the Medical Priority Dispatch System, via ProQA software. We analysed the ProQA data of each call for the presence of OHCA-specific dispatch codes (including code revisions) and call-taker instructions for cardiopulmonary resuscitation (CPR).

Results Among 1430 cases of OHCA, 84% (n=1195) were recognised by call-takers as OHCA. Of the 1195 recognised cases, 32% (n=386) were identified through secondary recognition. Survival to 30 days was significantly higher among cases with secondary recognition (13.2%) than among cases with primary recognition (7.9%) and non-recognised cases (7.7%) (p=0.008). More than half of all cases of secondary recognition were initially dispatched as Unconscious/Fainting patient.

Conclusion Nearly one third of call-taker recognition of OHCA occurs after initial dispatch. The higher survival probability of patients recognised by secondary recognition is consistent with those patients arresting more recently relative to the timing of the call. For many cases of OHCA, the call-taker's ability to stay on the call and remain alert to the possibility of OHCA may strengthen the chain of survival.

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16 FEASIBILITY OF A PREHOSPITAL ACUTE DYSPNOEA SCORE – A PILOT STUDY

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Aim Dyspnoea is frequent symptom among patients in ambulances after calling the emergency number, and mortality is high (1). However, knowledge regarding patient experience is sparse. As a first step in assessing subjective intensity of acute dyspnoea, we performed a pilot study in a prehospital setting.

Methods A one-month pilot study in the Thy-Mors region of the North Denmark region. Emergency ambulance patients with difficulties breathing were asked to use a verbal rating scale to assess their dyspnoea at; 1) first arrival at patient, 2) approximately halfway to hospital, and 3) arrival at hospital.

Results We included twenty-one patients, 76% were able to use the scale. Five were unable: two due to severe difficulties breathing i.e. an urgent acute situation, one due to difficulties understanding the scale, and two with no reason noted. Arrival at patient scores (median 8, confidence interval 6–8)