1147 PREHOSPITAL ORAL TRANS-MUCOSAL FENTANYL CITRATE: PRELIMINARY EXPERIENCE AND POSSIBLE IMPLICATIONS FOR CIVILIAN MASS CASUALTY RESPONSE

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Aims/Objectives/Background *The data below is pre-publication at the time of abstract submission*

There is scope for improving medical care, including analgesia provision, in the pre-hospital phase of civilian mass casualty incidents (MCIs). The oral trans-mucosal fentanyl citrate (OTFC) lozenge has previously been identified as a possible method to address this need.

Methods/Design We conducted a clinical service evaluation following the introduction of 400µg OTFC lozenges within London's Air Ambulance (LAA) for the provision of pre-hospital analgesia. Our primary objective of the study was to identify potential benefits and limitations for the OTFC lozenge's adoption as a pre-hospital analgesic option in LAA's civilian response to a MCI.

We retrospectively analysed all major trauma patients attended to by LAA between 1stJanuary 2019 and 31st December 2020 who received a OTFC lozenge. We evaluated the patients' mechanism of injury, initial vital signs and at handover at an Emergency Department (ED) and the need for additional rescue analgesia or sedation. We collected data on any adverse features including nausea, drowsiness or respiratory depression.

Results/Conclusions 190 patients were included in the data set, the majority having suffered penetrating trauma. We identified an increased need for rescue analgesia and sedation in blunt trauma patients requiring prolonged extrication or limb reduction. 1% (n=2) of patients presented with nausea requiring withdrawal of the lozenge. No patients had adverse features following use of the OTFC lozenge. Our findings were comparable to previous literature on the use of OTFC lozenges.

We argue that the OTFC lozenge has shown to be a safe and rapid method of delivering pre-hospital analgesia during LAA's routine work. It has the advantage of not requiring intravenous (IV) access and presents a robust option for pre-hospital analgesia during a MCI.

774 SURVEY TO INVESTIGATE THE CURRENT USE OF PRE-HOSPITAL BLOOD PRODUCT BY AIR AMBULANCE SERVICES IN THE UNITED KINGDOM

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Aims/Objectives/Background It is thought that administering pre-hospital blood products (PHBP) in traumatic haemorrhagic shock can increase survival. The resuscitation with Pre-Hospital Blood Products (RePHILL trial) was a multi-centre, randomised controlled trial of pre-hospital blood product administration versus standard care for traumatic haemorrhage designed to answer this question. In 2016 less than half of all air ambulance services (AAS) in the United Kingdom (UK) carried PHBP. In 2019 this number had increased to 18/22 AAS. The aim of this survey was to review the current use of PHBP by AAS in the UK prior to publication of the RePHILL trial.

Methods/Design On the 21st April 2021, all UK AAS were emailed using the contact address published on their website with a standardised email asking about their current use of PHBP. AAS who did not reply were followed up with a second email three weeks later. Complete non-responders had their websites searched for blood product terms to see if the service reported their use.

Results/Conclusions 17 out of 22 AAS replied to the survey. Information was extracted from a further three AAS websites. 17 AAS reported carrying packed red blood cells, seven carried fresh frozen plasma, six carried Lyoplas, two carried fibrinogen and one carried Beriplex. No AAS reported carrying platelets. Two AAS reported not carrying any PHBP.

In 2016 less than half of UK ASS carried PHBP, now almost every service is adopting their use. To have widespread practice changes such as this over the last five years demonstrates how quickly the field of pre-hospital emergency medicine is evolving. Carrying PHBP brings a cost to services and risk to patients. If the RePHILL trial fails to demonstrate an outcome benefit from PHBP once published, it will be interesting to see whether AAS continue to employ a PHBP model for traumatic haemorrhage resuscitation.

809 SURVEY OF CURRENT AND FORMER ACADEMIC CLINICAL FELLOWS IN EMERGENCY MEDICINE IN THE UK

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Aims/Objectives/Background Academic emergency medicine (EM) is a young field in the United Kingdom (UK) with a small critical mass of clinical academics, who have protected time to conduct research alongside clinical duties. There is a little published information on the academic training available to emergency physicians.

In the UK, academic clinical fellowships (ACFs) offer a structured opportunity for trainees to develop skills and experience in research alongside clinical training. We aimed to capture information on the prior experience of emergency medicine (EM) fellows, as well as how the ACFs were structured and the next career steps for fellows upon completion.

Methods/Design A ten-question survey was designed by the project steering committee and circulated UK wide to all current fellows in EM and those that completed the programme in the last five years. Fellows were identified by contacting programme leads in every region. Data was collected via SurveyMonkey® between 18thFebruary 2021 and 25th March 2021.

Results We approached a total of 34 EM ACFs. The survey yielded a 91% (n=31) response rate (13 current, 18 completed within 5 years). One university from Wales and ten from England have supported EM ACF schemes. 59% (n=10) of those who have completed the scheme had their clinical training extended to accommodate research time. In the remainder, fellows were expected to achieve clinical competencies in the same time as trainees who did not spend time on research. In those who had completed the ACF programme (n=18), one third of respondents are doing PhD training (n=6) and one is an academic clinical lecturer.

Conclusion We found variation in how the schemes are implemented. Future research is required to explore the experiences of those undertaking EM ACFs in more detail to identify the features of successful ACF training schemes, and whether any aspects may benefit from standardisation.

781 DRONE DELIVERED DEFIBRILLATORS (THE 3D PROJECT): A SIMULATION STUDY

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Aims/Objectives/Background Cardiopulmonary resuscitation (CPR) and defibrillation can double survival from out-of-hospital cardiac arrest. Members of the public can perform both before the arrival of the ambulance service, but they currently use a public-access Automated External Defibrillator (AED) in around only 5% of out-of-hospital cardiac arrests.

There are several barriers in getting an AED to a patient's side promptly. One means of overcoming these barriers may be to deliver AEDs using Unmanned Aerial Vehicles ('drones'). In this study we aimed to create a technologically feasible solution for drone-delivered defibrillation, and to investigate how easily a bystander performing CPR could use a drone-delivered AED.

Methods/Design We developed a drone capable of flying an AED and lowering it to the ground via winch between July and September 2020 and tested the mechanism in October 2020. On 9th July 2021, we will conduct simulated cardiac arrests in an outdoor controlled test environment. Twenty participants will find a simulated patient, call an experienced 999 call-handler from Welsh Ambulance Service NHS Trust, and start CPR. Once cardiac arrest is confirmed during the 999 call a drone will take off, reach hovering altitude and lower the AED to the ground on-scene. The call-handler will alert the participant, who will then leave the patient to retrieve and attach the AED.

Hands-off CPR time is the primary outcome. Secondary outcomes are: time taken to reach the drone, recover the AED and apply it; usability of drone-delivered AEDs (using a questionnaire adapted from the System Usability Scale); and an exploration of participant behaviours by review of audio (999 calls) and video of the simulation.

Results/Conclusions We will determine what additional burden there is for a lone bystander after introducing a drone-delivered AED to a simulated cardiac arrest scenario. This will inform future work developing protocols for drone delivery of AEDs in clinical trials.

775 ASSESSMENT OF HEADACHE IN THE EMERGENCY DEPARTMENT TO RULE OUT SUBARACHNOID HAEMORRHAGE: A SYSTEMATIC REVIEW OF DIAGNOSTIC ACCURACY

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Aims/Objectives/Background Acute headache accounts for around 2% of Emergency Department attendances. Headache guidelines recommend non-contrast head computed tomography (CT) followed by lumbar puncture to exclude subarachnoid haemorrhage (SAH). Advances in imaging technology have led emergency physicians to question the necessity of routine lumbar puncture after negative CT. This systematic review assessed diagnostic strategies for neurologically intact headache patients.

Methods/Design In February 2020, 18 electronic databases (including MEDLINE and Embase) were searched for studies of any clinical decision rule or diagnostic test for assessing neurologically intact severe headache patients, reaching maximum intensity within an hour. Studies were quality assessed using the QUADAS-2 tool. Diagnostic accuracy data were extracted into 2x2 tables to calculate sensitivity, specificity, false-positive and false-negative rates. Where appropriate, hierarchical bivariate meta-analysis was used to synthesise results.

Results/Conclusions Thirty-seven studies were included. Eight studies assessing the accuracy of the Ottawa SAH clinical decision rule were pooled; sensitivity was 99.5%, specificity was 23.7%. Four studies (with neuroradiology expertise) assessing CT within six hours of headache onset were pooled; sensitivity was 98.7%, specificity was 100%. CT sensitivity beyond six hours was considerably lower (≤90%; 2 studies). Three studies assessing lumbar puncture (spectrophotometric analysis) following negative CT were pooled; sensitivity was 100%, specificity was 95.2%. LP-related adverse events were reported in 5.3–9.5% patients (2 studies).

The evidence suggests that the Ottawa Rule has limited value for ruling out SAH; the high false positive rate means that its use would potentially result in 76% SAH-negative patients undergoing further investigation with no additional benefit. Modern CT within six hours of headache onset (with images assessed by a neuroradiologist) is highly accurate and likely to be sufficient to rule out SAH. However, sensitivity reduces considerably over time. The CT-LP pathway remains a highly sensitive pathway for detecting SAH, although LP resulted in some false-positives and adverse events.

RCEM Moderated Papers

1074 OTTAWA ANKLE RULES CANNOT BE SAFELY USED TO RULE OUT ANKLE FRACTURES IN PATIENTS WHO PRESENT ≥10 DAYS POST-INJURY

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Aims/Objectives/Background The Ottawa ankle rules (OAR) have been validated as a highly sensitive tool to rule out ankle fractures and reduce need for radiography. However, datasets validating OAR to date have excluded patients presenting ≥10 days post-injury and there is a need to ascertain if OAR can be safely used to rule out ankle fractures in this population.

Methods/Design Patients presenting with ankle injuries to an emergency department (ED) in England between June 2015