The majority of EDs in England have now adopted GPED. The increase in Inside/parallel models and the reduction in Inside/integrated models is likely to be related to the availability of capital funding to finance structural changes to EDs so that separate GP services could be provided. Further research is required to understand the relative effectiveness of the various models of GPED identified.

217 THE END-TIDAL AND ARTERIAL CARBON DIOXIDE GRADIENT IN SERIOUS TRAUMATIC BRAIN INJURY AFTER PRE-HOSPITAL EMERGENCY ANAESTHESIA: A RETROSPECTIVE OBSERVATIONAL STUDY

[1]James Price, [2]Daniel Sandbach, [1]Ari Ercole, [2]Alastair Wilson, [2]Ed Barnard. [1]*Cambridge University Hospitals NHS Foundation Trust*; [2]*East Anglian Air Ambulance*

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Aims/Objectives/Background In the United Kingdom (UK), 20% of patients with severe traumatic brain injury (TBI) receive pre-hospital emergency anaesthesia (PHEA). Current guidance recommends an end-tidal carbon dioxide ($ETCO_2$) of 4.0–4.5kPa to achieve a low-normal arterial partial pressure of CO_2 ($PaCO_2$), and reduce secondary brain injury. This recommendation assumes a 0.5kPa $ETCO_2$-$PaCO_2$ gradient. However, the gradient in the acute phase of TBI is unknown. Our primary aim was to report the $ETCO_2$-$PaCO_2$ gradient of TBI patients at hospital arrival.

Methods/Design A retrospective cohort study of adult patients with serious TBI, who received a PHEA by a pre-hospital critical care team in the East of England between 1st April 2015 to 31st December 2017. Linear regression was performed to test for correlation and reported as R-squared (R^2). A Bland-Altman plot was used to test for paired $ETCO_2$ and $PaCO_2$ agreement and reported with 95% confidence intervals (95% CI). $ETCO_2$-$PaCO_2$ gradient data were compared with a two-tailed, unpaired, t-test.

Results/Conclusions 107 patients were eligible for inclusion. Sixty-seven patients did not receive a $PaCO_2$ sample within 30 minutes of hospital arrival and were therefore excluded. Forty patients had complete data and were included in the final analysis; per protocol.

The mean $ETCO_2$-$PaCO_2$ gradient was 1.7 (±1.0) kPa, with only moderate correlation of $ETCO_2$ and $PaCO_2$ at hospital arrival (R^2=0.23, p=0.002). The Bland-Altman bias was 1.7 (95%CI 1.4–2.0) kPa with upper and lower limits of agreement of 3.6 (95%CI 3.0–4.1) kPa and -0.2 (95%CI -0.8–0.3) kPa respectively. There was no significant gradient correlation in patients with a co-existing serious thoracic injury (R^2=0.13, p=0.10), and this cohort had a larger $ETCO_2$-$PaCO_2$ gradient, 2.0 (±1.1) kPa, p=0.01. Patients who underwent pre-hospital arterial blood sampling had an arrival $PaCO_2$ of 4.7 (±0.2) kPa.

Lower $ETCO_2$ targets than previously recommended may be safe and appropriate. The use of pre-hospital $PaCO_2$ measurement is advocated.

215 CURRENT MANAGEMENT OF MODERATE/SEVERE TRAUMATIC PNEUMOTHORACES: A SURVEY OF EMERGENCY CLINICIANS

[1]Edward Carlton, [2]Millie Watkins, [1]Pascale Avery. [1]*North Bristol NHS Trust*; [2]*University of Bristol Medical School*

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Aims/Objectives/Background Traumatic pneumothoraces are present in one-fifth of multiple trauma victims. Traditional teaching mandates the insertion of a chest drain in the majority of cases. However, recent retrospective observational evidence suggests a trend towards conservative management. The aim of this survey was to understand the current emergency medicine (EM) practice in placing chest drains for the management of moderate/severe traumatic pneumothoraces.

Methods/Design This scoping survey was developed through expert consensus. To achieve face validity, clinical sensibility testing was performed using a pilot survey (with user feedback). There were 14 pilot-phase respondents. The survey was then modified to achieve content validity. The survey was sent electronically to senior EM doctors in 15 sites internationally, and involved six clinical/imaging vignettes asking *'how likely are you to insert an intercostal chest drain to manage the pneumothorax in ED?'*. A five-point response was available from *very unlikely* to *very likely*. All pneumothroraces were >1 cm on imaging, but mechanism, physiology and need for ventilation varied.

Results/Conclusions Of a potential 409 respondents, 141 responses were received (34% response rate). Respondents had a range of clinical experience, with the majority qualified more than 10 years (median; 19 years).

For 5/6 cases chest drain insertion was *likely* or *very likely* in >50% of responses, ranging from 52% for a non-compromised 1 cm pneumothorax in a ventilated patient to 98% for a tension pneumothorax on chest x-ray. Chest drain insertion was *unlikely* or *very unlikely* (62% of responses) in one case; an 86-year-old female on rivaroxaban with moderate respiratory compromise (respiratory rate 30 min^{-1}) and a 2 cm pneumothorax.

There is a broad range of clinical practice involving both conservative and invasive strategies in the treatment of moderate/severe traumatic pneumothoraces. There is clinical equipoise for interventional trials to determine the optimal management strategy for this patient group.

203 FINDING VOICES: YOUNG PEOPLE'S EXPERIENCES OF THE EMERGENCY DEPARTMENT

[1]Liza Keating, [2]Sarah Wilson, [3]Jonathan Hill, [4]Jack Dainty. [1]*Royal Berkshire NHS Foundation Trust*; [2]*Frimley Health NHS Foundation Trust*; [3]*University of Reading*; [4]*University of East Anglia*

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Aims/Objectives/Background Self-harm among adolescents is a major concern both because it gives rise to considerable distress and disruption in young people's lives and it commonly recurs. There are currently wide variations in the care of this group of patients and it is widely reported that their experience in the emergency department is poor. Young people who have self-harmed may differ from others attending the ED and we need to know more about these differences to inform ED care and potential improvements. The aim of this study was to establish the needs and expectations among children and young people in the ED and to increase the understanding of the specific needs of adolescents who self-harm through comparison with another patient group in the ED.