

Abstract 1995 Table 1 Systematic review of pulmonary fat emboli associated with intraosseous (IO) use in seven controlled swine studies

Authors	Study Population	Bone	Flush	Infusion method	IO system used	Relevant outcome measure	Relevant results
Plewa et al. 1995. doi:10.1111/j.1553-2712.1995.tb03275.x	n= 16, weight 5.9-12.3kg	Proximal tibia	1 ml NaCl 0.9%	3-way tap, manual pressure	Jamshidi	Post-mortem analysis of lung tissue	No fat emboli
Fiallos et al. 1997. doi:10.1097/0000441-199708000-00008	n= 33, mean weight 30.9kg	Proximal tibia	3 ml NaCl 0.9%	Pressure bag at 300 mmHg	Sussman Raszynsky	Post-mortem analysis of lung tissue	Fat emboli in all lung samples
Hasan et al. 2001. doi:10.1097/00130478-200104000-00007	n= 28, mean weight 30.9kg	Proximal tibia	3 ml NaCl 0.9%	Various	Sur fast	Post-mortem analysis of lung tissue	Approximately 30% had fat emboli in lung tissue
Rubal et al. 2014. doi:10.3109/10903127.2014.980475	n= 35, mean weight 50kg	Proximal or distal tibia	Various	Various	EZIO arrow	Post-mortem analysis of lung tissue	Fat emboli in all lung samples
Auten et al. 2019. doi:10.1016/j.jss.2019.09.005	n= 36, mean weight 80kg	Proximal humerus	10 ml NaCl 0.9%	Various	EZIO	Post-mortem analysis of lung tissue	97% had fat emboli in lung tissue
Kristiansen, et al. 2021. doi:10.1186/s13049-021-00986-z	n=28, mean weight 22.8kg	Proximal tibia	10 ml NaCl 0.9%	Pressure bag at 300 mmHg	EZIO arrow	Post-mortem analysis of lung tissue	Fat emboli in all lung samples
Sulava et al 2021. doi:10.1016/j.jss.2021.04.035	n= 48, mean weight 76.7kg	Various	3 ml NaCl 0.9%	Pressure bag at 360 mmHg	EZIO and FAST	Post-mortem analysis of lung tissue	Approximately 80% had fat emboli in lung tissue

widely accepted, there is a paucity of evidence exploring the risks of fat embolisation in IO infusions. The existing data is of low quality with a high risk of bias. Despite this, pulmonary fat emboli after IO infusion are common. More research is needed to quantify the clinical significance of fat embolism and FES after IO infusion in adult major trauma patients.

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A PROSPECTIVE MULTI-CENTER OBSERVATIONAL STUDY OF CHEST DRAIN INSERTION AND ASSOCIATED COMPLICATIONS IN IRISH EMERGENCY DEPARTMENTS

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Aims and Objectives Chest drains are commonly inserted in the Emergency Department (ED) with a complication rate of 30-40%. Training in chest drain insertion is essential in Emergency Medicine (EM) as approximately 25,000 patients undergo in England and Wales undergo this procedure annually.

There is little research in the Irish setting, specifically regarding the outcomes of patients who receive chest drains in Irish EDs.

This study aims to explore the process of the EM inserted chest drain, elicit the initial complications in the ED and any delayed onset complications at least one week post chest drain insertion.

Method and Design This prospective, multicentre observational study examine the current practice of chest drain insertion in the Irish EDs. This study was conducted by the Irish Trainee Research Network (ITERN) from May 2022 until February 2023. A data collection form was developed based on previous literature and expert consensus opinion of specialists in Cardiothoracic Surgery and EM.

Data was collected during drain insertion and at 1 week post procedure to assess for delayed complications.

Results and Conclusion Data was obtained from 10 sites resulting in 133 drain insertions for 107 patients. The median age was 48 years (IQR 32,69, Range 15-90) and 74.8% (n=80) of patients were male.

On average, 1 drain was inserted per patient (IQR 1,1, Range 1-3).

The indications for drain insertion was spontaneous pneumothorax (n=60), traumatic causes (n=44), pleural effusion (n=2) and iatrogenic pneumothorax (n=1).

The overall rate of successful first attempt at drain insertion was 82.2%.

The immediate complication rate was 32%, the delayed complication rate was 41%. No association was found between drain type, indication or operator and first past success.

This study highlights current practice of chest drain insertion across Ireland. The complication rate of 32% is comparable to international literature. This study shows areas for practice improvement and training to improve patient outcomes.

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TRAUMATIC BRAIN INJURY COAGULOPATHY IS ASSOCIATED WITH RAISED INTRACRANIAL PRESSURE, 7-DAY PROGRESSION OF HAEMORRHAGE AND MORTALITY

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Aims and Objectives Traumatic brain injury is suspected of inducing coagulopathy but the evidence to support this is conflicting. Systemic analyses in isolated TBI (ITBI) have not consistently demonstrated a functional coagulation deficit. While guidelines recognise the need to emergently reverse anticoagulant therapy, no guideline recommends routine coagulation testing in ITBI, and there are no published algorithms for treatment of any ITBI associated coagulopathy.

We hypothesized that there is a specific coagulopathy of ITBI, detectable using functional coagulation tests and that coagulopathy is associated with worse outcomes including raised intracranial pressure (ICP), progression of intracranial haemorrhage (PICH), and mortality.

Method and Design We retrospectively analysed admission laboratory and ROTEM tests from patients with ITBI (head Abbreviated Injury Score of 3 or more and below 3 in all

other body regions) who were enrolled in the prospective observational Activation of Coagulation and Inflammation in Trauma study (REC 07/Q0603/2). Basal cistern compression (BCC) was considered a surrogate for raised intracranial pressure.

Results and Conclusion 237 patients had a severe ITBI. At least one coagulation abnormality was present in 66% of individuals EXTEM CA5<40mm (45%), EXTEM ML<5% (44%), d-dimer>30,000 (38%), fibrinogen<2g/L (38%) and EXTEM CT>80s (29%), aPTT (7%). Coagulation abnormalities were more common in those with more severe injuries, head AIS 5 versus AIS 3 (70% vs 62%) and BCC (81% vs 64%). The presence of any abnormality was associated with BCC (35% vs 18%), 7-day PICH (67% vs 51%) and higher 7-day mortality (21% vs 7.5%). Several admission tests were good or excellent predictors of BCC (d-dimer AUROC 0.832, fibrinogen AUROC 0.745) and 7-day mortality (aPTT AUROC 0.781, FIBTEM CT AUROC 0.717).

Admission ITBI coagulopathy is common and associated with head injury severity and radiological evidence of BCC. The presence of admission coagulopathy was predictive of mortality and basal cistern compression.

2331 A NOVEL APPROACH TO RESEARCH DELIVERY IN THE EMERGENCY DEPARTMENT

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Aims and Objectives Research in the Emergency Department needs to be delivered in real time, within a specific clinical time-frame, and on a wide variety of conditions and states of emergency, on participants presenting in an unscheduled manner in any time.

The research capacity, infrastructure, and culture at the ED in Alder Hey Children's Hospital faced challenges in the immediate period after the Pandemic. There was an opportunity for challenging the previous research model, and embedding a robust research culture. We sought to find research interested staff among the ED clinical staff and develop a hybrid model of working.

Method and Design

Aims:

- embedding research within the permanent staff of the ED
- research active staff being immediately available for recruitment of a participant in the ED

Outcomes:

1. Increase the number of patients screened or recruited in the ED
2. Increase the number of permanent ED staff who are research engaged

Results and Conclusion A three month pilot from January 2022-March 2022. One research naive ED Health Care Assistant was appointed to the role of ED Research Practitioner. Training was performed by the ED Consultant Lead for Research, which included gaining GCP certification, NIHR consent modules, and a two week period of shadowing and sign off prior to working independently. Weekly meetings were held to trouble shoot.

Over a period of 5 weeks at average 37.5hrs a week of independent practice, the ED Research Practitioner screened and recruited a total of 180 patients into 5 ED studies. None of the studies were using Investigative Medicinal Products or novel devices.

The pilot was successful in increasing the number of participants in research within the ED, and in establishing a hybrid role among staff not traditionally research active.

The department now has three ED Research Practitioners and Band 6 Research Nurse and has increased the research portfolio of the ED significantly.

2046 'CALL BEFORE CONVEY' – DELIVERING URGENT CARE FOR PATIENTS IN THE RIGHT PLACE WITH THE RIGHT CLINICIAN, FIRST TIME

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Aims and Objectives Aim: Ensure patients have timely access to the right urgent care, in the right place with the right clinician.

Many people access urgent care via the emergency department (ED) resulting in poor patient experience, delays to care and duplication, also causing overcrowding, leading to harm.

Method and Design Using the model for improvement we defined aims and set measures, including number of patients offered alternatives to ED or admission, with balancing measures of patient reattendance/readmission. The data identified pathways with largest impact potential - chest pain, dyspnoea and falls/frailty/head injury.

Working with our trust clinical communication centre (CCC) as single point of access, ambulances called before conveying patients in these pathways. We worked with specialty consultants from Cardiology, Respiratory, Frailty, Emergency Medicine and Acute Medicine to offer senior decision maker input to pre-hospital conversations to define the best urgent care pathways. We engaged with community falls car, urgent care response team and GPs along with hospital SDECs and virtual wards as well as providing specialty 'hot clinic' appointments where appropriate, to provide alternatives to ED and admission.



Abstract 2046 Figure 1