

obstetric emergencies, and adult codes. There was an average of 20 patients presenting to the ED during these events. Events included a debrief, and typically lasted 60 minutes in total. Participants included individuals from various disciplines working on shift at the time of the event. Questionnaires were administered via email following the event, in which participants were asked to rank their comfort with emergency codes before and after the simulation using two 5-point Likert scales. The data from 39 questionnaires was analyzed. T-tests were used to analyze differences in self-reported comfort scores. **Results:** Questionnaire responders included nurses (41%), respiratory therapists (26%), resident physicians (10%), paramedics (3%), attending physicians (3%), students of various disciplines (10%) and other (7%). 38% of participants reported increases in comfort following simulation when compared to prior. Using the 5-point scale, the average reported score for comfort pre-simulation was 3.59 (95% CI 3.30–3.88), and the average post-simulation score was 3.97 (95% CI 3.76–4.19,  $p = 0.03$ ). **Conclusion:** Our results demonstrate that weekly interprofessional in situ simulation is feasible in a high-volume ED, and significantly improves self-reported provider comfort with the identification and management of high-acuity, low-frequency events. This warrants the implementation of this simulation design to improve staff confidence and has implications for its potential role in improving team dynamics and patient safety.

**Keywords:** Interprofessional, Simulation

#### LO82

##### Exploring eye-tracking technology to assess competency in point-of-care ultrasound

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**Introduction:** Assessment of point-of-care ultrasound (POCUS) competency has been reliant on practical, visual and written examinations performed 1-on-1 with an examiner. These tools attempt to assess competency through subjective ratings, checklists and multiple-choice questions that are labour intensive using surrogate measures. Eye-tracking has been used on a limited basis in various fields of medicine for training and assessment. This technology explores visual processing and holds great promise as a tool to monitor training progress towards the development of expertise. We hypothesize that eye-tracking may differentiate novices and experts as they progress to become competent in interpretation of POCUS images and provide an objective measure in assessment of competency. **Methods:** Medical students, residents and attending physicians working in an academic emergency department were recruited. Participants viewed a series of 16 ultrasound video clips in a POCUS protocol for Focused Assessment using Sonography in Trauma (FAST). The gaze pattern of the participants was recorded using a commercially available eye-tracking device. The primary outcome was the gaze parameters including total gaze time in the area of interest (AOI), average time to fixation on the AOI, number of fixations in the AOI and average duration of first fixation on the AOI. Secondary outcome was the accuracy on the interpretation of the FAST scan. **Results:** Four novices and eight experts completed this study. The total gaze time in the AOI (mean  $\pm$  SD) was 76.72  $\pm$  18.84s among experts vs 53.64  $\pm$  10.33s among novices ( $p = 0.048$ ), average time to fixation on the AOI was 0.561  $\pm$  0.319s vs 1.048  $\pm$  0.280s ( $p = 0.027$ ),

number of fixations in the AOI was 158.9  $\pm$  29.0 vs 121.8  $\pm$  17.5 ( $p = 0.042$ ) and average duration of first fixation was 0.444  $\pm$  0.119s vs 0.390  $\pm$  0.024s ( $p = 0.402$ ). The accuracy of the answers was 79.7  $\pm$  14.1% vs 45.3  $\pm$  21.9% ( $p = 0.007$ ). **Conclusion:** In this pilot study, eye tracking shows potential to differentiate between POCUS experts and novices by their gaze patterns. Gaze patterns captured by eye tracking may not necessarily translate to cognitive processing. However, it allows educators to visualise the thought processes of the learner by their gaze patterns and provide insight on how to guide them towards competency. Future studies are needed to further validate the metrics for competency in POCUS applications.

**Keywords:** eye tracking, medical education, ultrasound

#### LO83

##### Effect of the transition to an entrustability scale on assessor stringency and leniency on daily encounter cards in emergency medicine

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**Introduction:** Workplace based assessments (WBAs) are integral to emergency medicine residency training. However many biases undermine their validity, such as an assessor's personal inclination to rate learners leniently or stringently. Outlier assessors produce assessment data that may not reflect the learner's performance. Our emergency department introduced a new Daily Encounter Card (DEC) using entrustability scales in June 2018. Entrustability scales reflect the degree of supervision required for a given task, and are shown to improve assessment reliability and discrimination. It is unclear what effect they will have on assessor stringency/leniency – we hypothesize that they will reduce the number of outlier assessors. We propose a novel, simple method to identify outlying assessors in the setting of WBAs. We also examine the effect of transitioning from a norm-based assessment to an entrustability scale on the population of outlier assessors. **Methods:** This was a prospective pre-/post-implementation study, including all DEC's completed between July 2017 and June 2019 at The Ottawa Hospital Emergency Department. For each phase, we identified outlier assessors as follows: 1. An assessor is a potential outlier if the mean of the scores they awarded was more than two standard deviations away from the mean score of all completed assessments. 2. For each assessor identified in step 1, their learners' assessment scores were compared to the overall mean of all learners. This ensures that the assessor was not simply awarding outlying scores due to working with outlier learners. **Results:** 3927 and 3860 assessments were completed by 99 and 116 assessors in the pre- and post-implementation phases respectively. We identified 9 vs 5 outlier assessors ( $p = 0.16$ ) in the pre- and post-implementation phases. Of these, 6 vs 0 ( $p = 0.01$ ) were stringent, while 3 vs 5 ( $p = 0.67$ ) were lenient. One assessor was identified as an outlier (lenient) in both phases. **Conclusion:** Our proposed method successfully identified outlier assessors, and could be used to identify assessors who might benefit from targeted coaching and feedback on their assessments. The transition to an entrustability scale resulted in a non-significant trend towards fewer outlier assessors. Further work is needed to identify ways to mitigate the effects of rater cognitive biases.

**Keywords:** assessment, entrustability, rater bias

## LO84

**The incidence of fall-related intracranial bleeding in older adults taking anticoagulants, antiplatelets and neither medication: a meta-analysis**

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**Introduction:** It is unclear whether anticoagulant or antiplatelet medications increase the risk for intracranial bleeding in older adults after a fall. Our aim was to report the incidence of intracranial bleeding among older adults presenting to the emergency department (ED) with a fall, among patients taking anticoagulants, antiplatelet medications, both medications and neither medication. **Methods:** This was a systematic review and meta-analysis, PROSPERO reference CRD42019122626. Medline, EMBASE (via OVID 1946 - July 2019), Cochrane, Database of Abstracts of Reviews of Effects databases and the grey literature were searched for studies reporting on older adults who were evaluated after a fall. We included prospective studies conducted in the ED where more than 80% of the cohort were 65 years or older and had fallen. We contacted study authors for aggregate data on intracranial bleeding in patients prescribed anticoagulant medication, antiplatelet medication and neither medication. Incidences of intracranial bleeding were pooled using random effect models, and I<sup>2</sup> index was used to assess heterogeneity. **Results:** From 7,240 publication titles, 10 studies met inclusion criteria. The authors of 8 of these 10 studies provided data (on 9,489 patients). All studies scored low or moderate risk of bias. The pooled incidence of intracranial bleeding among patients taking an anticoagulant medication was 5.1% (n = 5,016, 95% Confidence Interval (CI): 4.1 to 6.3%) I<sup>2</sup> = 42%, a single antiplatelet 6.4% (n = 2,148, 95% CI: 5.4 to 7.6%) I<sup>2</sup> = 75%, both anticoagulant and antiplatelet medications 5.9% (n = 212, 95% CI: 1.3 to 13.5%) I<sup>2</sup> = 72%, and neither of these medications 4.8% (n = 1,927, 95% CI: 3.5 to 6.2%) I<sup>2</sup> = 50%. A sensitivity analysis restricted to patients who had a head CT in the ED reported incidences of 6.1% (n = 3,561, 95% CI: 3 to 8.3%), 8.4% (n = 1,781, 95% CI: 5.5 to 11.8%), 6.7% (n = 206, 95% CI 1.5 to 15.2%) and 6.6% (n = 1,310, 95% CI: 5.0 to 8.4%) respectively. **Conclusion:** The incidence of fall-related intracranial bleeding in older ED patients was similar among patients who take anticoagulant medication, antiplatelet medication, both and neither medication, although there was heterogeneity between study findings.

**Keywords:** antithrombotics, falls, intracranial bleeding

## LO85

**Unhelmeted injured cyclists in the emergency department: demographics, cycling behaviour, and attitudes towards helmet use**

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**Introduction:** We seek to characterize unhelmeted injured cyclists presenting to the emergency department (ED): demographics, cycling behaviour, and attitudes towards helmet use. **Methods:** This was a prospective cohort study in a downtown teaching hospital, from May 2016 - Sept 2019. Injured cyclists presenting to the ED were recruited if they were not wearing a helmet at time of injury and over age 18. Exclusion criteria included intoxication, inability to consent, or admission to hospital. A standardized survey was

administered by a research coordinator. Descriptive statistics were used to summarize the data, and survey responses reported as percentages. **Results:** We surveyed a convenience sample of 68 unhelmeted injured cyclists (UICs) with mean age of 33.6 years (range 18 to 68, median 29.5 years). Ratio of males to females was 1:1. The majority of UICs cycled most days per week or every day in non-winter months (89.6%, n = 60). Cycling in Toronto was perceived as somewhat dangerous (45.6%, n = 31) or very dangerous (5.9%, n = 4) by most, and very safe (2.94%, n = 2) or somewhat safe (19.12%, n = 13) by few. Almost a third (29.4%, n = 20) had been in a cycling accident in the prior year, some of these (15.0%, n = 3) prompting an ED visit. All cyclists were riding their personal bike (100%, n = 68) at time of injury, and most (98.5%, n = 67) had planned to cycle when they departed home that day. Purpose of trip was primarily for commuting to work (50%, n = 34), social activities (19.1%, n = 13), school (7.4%, n = 5), and recreation (7.4%, n = 5). Bicycle helmet ownership was low (41.2%, n = 28). UICs reported rarely (10.3%, n = 7) or never (64.7%, n = 44) wearing a helmet when cycling. Reported factors discouraging helmet use included inconvenience (33.8%, n = 23), lack of ownership (32.4%, n = 22), discomfort (29.4%, n = 20), and 'messed hair' (14.7%, n = 10). Few characterized helmets as unnecessary (10.3%, n = 7) or ineffective (1.5%, n = 1). The majority had a college diploma or more advanced education (77.9%, n = 53), and spoke English at home (85.3%, n = 58). **Conclusion:** Unhelmeted injured cyclists surveyed were frequent commuter cyclists who do not regard cycling as safe, yet choose not to wear helmets for reasons largely related to convenience rather than perceptions regarding safety or necessity. Initiatives to increase helmet use in this subgroup should address the reasons given for not wearing a helmet, potentially using principles of adult education and behavioral economics.

**Keywords:** bicycle, health promotion, injury prevention

## LO86

**Lack of association between four biomarkers and the presence of persistent post-concussion symptoms after a mild traumatic brain injury**

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**Introduction:** Mild Traumatic Brain Injury (mTBI) is a common problem: each year in Canada, its incidence is estimated at 500-600 cases per 100 000. Between 10 and 56% of mTBI patients develop persistent post-concussion symptoms (PPCS) that can last for more than 90 days. It is therefore important for clinicians to identify patients who are at risk of developing PPCS. We hypothesized that blood biomarkers drawn upon patient arrival to the Emergency Department (ED) could help predict PPCS. The main objective of this project was to measure the association between four biomarkers and the incidence of PPCS 90 days post mTBI. **Methods:** Patients were recruited in seven Canadian ED. Non-hospitalized patients, aged ≥14 years old with a documented mTBI that occurred ≤24 hrs of ED consultation, with a GCS ≥13 at arrival were included. Sociodemographic and clinical data as well as blood samples were collected in the ED. A standardized telephone questionnaire was administered at 90 days post ED visit. The following biomarkers were analyzed using enzyme-linked immunosorbent assay (ELISA): S100B protein, Neuron Specific