(95% CI 59.8-88.7; p < 0.01). Cramping (with bleeding) trended towards a higher rate of LOO (62.7%, 95% CI 54.2-71.1; p = 0.07). SES was not a reliable predictor of LOO, with similar clinical outcome rates above and below the poverty line (57.5% [95% CI 46.7-68.3] vs 59% [95% CI 49.3-68.6] LOO). For anemic patients, the non-live birth rate was 100%, but the number with this variable was small (n = 5). Return visits (58.3%, 95% CI 42.2-74.4), previous abortion (58.8%, 95% CI 49.7-67.8), no living children (60.2%, 95% CI 50.7-69.6) and past pregnancy (55.9%, 95% CI 46.6-65.1) were not associated with higher rates of LOO. **Conclusion:** Identification of a live IUP, anemia, and cramping have potential as predictors of obstetrical outcome in early pregnancy bleeding. This information may provide better guidance for clinical practice and investigations in the emergency department and the predictive value of these variables support more appropriate counseling to this patient population.

**Keywords:** clinical predictors, early pregnancy, vaginal bleeding

### LO02

**Direct laryngoscopy: is it becoming a lost art in resident education?**

C. Botros, BSc, C. Renschler, BSc, MD, K. Dullemond, BSc, MD, J. Yoo, BSc, MD, J. Trojanowski, BSc, MD, University of British Columbia, Vancouver, BC

**Introduction:** Intubation is one of the highest-risk procedures performed in the emergency department (ED) on a regular basis. The British Columbia Airway Registry for Emergencies (BCARE) Network collects data from every ED intubation at two tertiary care centres and one community centre and serves as a valuable quality improvement tool. We compared intubation techniques, success, and complication rates between emergency medicine physicians and trainees. **Methods:** We completed an observational study of all patients intubated in the ED by resident trainees or attending physicians over a period of 28 months from July 2017 to November 2019. Respiratory therapists (RTs) completed a standardized data collection form after every intubation and the data was used to analyze techniques, success, and complication rates. Form completion compliance was periodically reviewed by cross-referencing patient names in the BCARE network with the radiology database for chest x-rays that were performed after intubation in the hospital. **Results:** 642 intubations were performed by EM physicians: 66 by PGY1-2 residents,141 by PGY3-5 residents, and 435 by staff physicians. Airway assessment prior to intubation was completed by PGY1-2 in 78.1% of cases, PGY3-5 in 67.9%, and staff in 62.6%. Direct laryngoscopy (DL) was chosen as first-choice technique 24.2% by PGY1-2, 24.8% by PGY3-5, and 30.1% by attending physicians. Bougie was used 2.7% of cases for all groups. First-pass success was 78.8% for PGY1-2, 86.5% for PGY3-5, and 85.7% for staff. Mean number of attempts were similar at 1.24, 1.18, and 1.20 for R1-2, R3-5, and staff, respectively. There were similar complication rates between all groups, on average 16.9%, with the most common being hypoxemia prior to induction, and desaturation following induction. There was a higher rate of staff performing second intubation attempts following junior residents (50.0%) than senior residents (26.3%). **Conclusion:** Trainees have a stronger preference to use video laryngoscopy (VL) than staff physicians as their first-line technique. Success rates were similar between senior residents and attending physicians, but significantly lower in junior residents, despite number of attempts being similar between the three groups. Complication rates were similar among all 3 groups. This data may suggest that a stronger emphasis for DL use among trainees is important.

**Keywords:** education, intubation, resident

### LO03

**Prospective comparative evaluation of the ESC 1-hour and a 2-hour rapid diagnostic algorithm for myocardial infarction using high-sensitivity troponin-T**

J. Andruchow, MD CM, MSc, T. Boyne, MD, MSc, I. Seiden-Long, PhD, D. Wang, MSc, S. Vatanpour, PhD, G. Innes, MD, MSc, A. McRae, MD, PhD, University of Calgary, Calgary, AB

**Introduction:** Rapid diagnostic algorithms using high-sensitivity cardiac troponin can rapidly diagnose or exclude acute myocardial infarction (MI). However, multiple algorithms have been proposed and it is unclear if some outperform others. The objective of this study was to prospectively compare the diagnostic performance of 1- and 2-hour algorithms in clinical practice in a Canadian population. **Methods:** Emergency department patients with chest pain had high-sensitivity cardiac troponin-T (hs-cTnT) collected on presentation and 1- and 2-hours later at a single academic tertiary hospital and regional percutaneous coronary intervention site over a 2-year period. The primary outcome was index MI, the secondary outcome was 30-day major adverse cardiac events (MACE). All outcomes were 2 physician adjudicated. **Results:** We enrolled 1,167 patients with hs-cTnT collected on ED presentation. Of these, 350 had a valid 1-hour and 550 had a 2-hour hs-cTnT sample. Index MI prevalence was ~11%. Sensitivity of the 1- and 2-hour algorithms for index MI was 97.3% (95% CI 85.8-99.9%) and 100% (95% CI 91.6-100%) and for 30-day MACE was 80.9% (95% CI 66.7-90.9%) and 83.3% (95% CI 73.2-90.8%), respectively. The 1-hour algorithm was 96.3% specific for index MI (95% CI 93.8-98.2%) whereas specificity for the 2-hour algorithm was 97.9% (95% CI 96.3-100%). Both algorithms classified about one-quarter of patients in an indeterminate observational zone with an ~11% MI prevalence. **Conclusion:** Both the 1- and 2-hour algorithms were highly sensitive and specific for MI, but were less sensitive for 30-day MACE. However, the 2-hour algorithm trended toward better performance, likely because its larger delta cutoffs reduce the risk of misclassification owing to analytic variability. These findings suggest algorithms using larger delta cutoffs may provide a greater margin of safety. Further comparative evaluation of rapid diagnostic algorithms using different cutoffs and characterization of patients in the observational zone is warranted.

**Keywords:** high-sensitivity troponin, myocardial infarction, rapid diagnostic algorithms

### LO04

**Decreasing emergency department length of stay for patients with acute atrial fibrillation and flutter: a cluster-randomized trial**

I. Stiell, MD, MSc, D. Eagles, MD, MSc, J. Perry, MD, MSc, P. Archambault, MD, MSc, V. Thiruganasambandamoorthy, MSc, MBBS, R. Parkash, MD, E. Mercier, MD, J. Morris, MD, D. Godin, MD, P. Davis, BSc, MD, MSc, G. Clark, MD, S. Gosselin, MD, B. Mathieu, MD, B. Pomerleau, MD, S. Rhee, MD, G. Kaban, MD, E. Brown, BSc, M. Taljaard, PhD, For the RAFF3 Study Group, University of Ottawa, Department of Emergency Medicine, Ottawa, ON

**Introduction:** CAEP recently developed the acute atrial fibrillation (AF) and flutter (AFL) [AAFF] Best Practices Checklist to promote



https://doi.org/10.1017/cem.2020.60 Published online by Cambridge University Press

optimal care and guidance on cardioversion and rapid discharge of patients with AAFF. We sought to assess the impact of implementing the Checklist into large Canadian EDs. **Methods:** We conducted a pragmatic stepped-wedge cluster randomized trial in 11 large Canadian ED sites in five provinces, over 14 months. All hospitals started in the control period (usual care), and then crossed over to the intervention period in random sequence, one hospital per month. We enrolled consecutive, stable patients presenting with AAFF, where symptoms required ED management. Our intervention was informed by qualitative stakeholder interviews to identify perceived barriers and enablers for rapid discharge of AAFF patients. The many interventions included local champions, presentation of the Checklist to physicians in group sessions, an online training module, a smartphone app, and targeted audit and feedback. The primary outcome was length of stay in ED in minutes from time of arrival to time of disposition, and this was analyzed at the individual patient-level using linear mixed effects regression accounting for the stepped-wedge design. We estimated a sample size of 800 patients. **Results:** We enrolled 844 patients with none lost to follow-up. Those in the control (N = 316) and intervention periods (N = 528) were similar for all characteristics including mean age (61.2 vs 64.2 yrs), duration of AAFF (8.1 vs 7.7 hrs), AF (88.6% vs 82.9%), AFL (11.4% vs 17.1%), and mean initial heart rate (119.6 vs 119.9 bpm). Median lengths of stay for the control and intervention periods respectively were 413.0 vs. 354.0 minutes ($P < 0.001$). Comparing control to intervention, there was an increase in: use of antiarrhythmic drugs (37.4% vs 47.4%; $P < 0.01$), electrical cardioversion (45.1% vs 56.8%; $P < 0.01$), and discharge in sinus rhythm (75.3% vs. 86.7%; $P < 0.001$). There was a decrease in ED consultations to cardiology and medicine (49.7% vs 41.1%; $P < 0.01$), but a small but insignificant increase in anticoagulant prescriptions (39.6% vs 46.5%; $P = 0.21$). **Conclusion:** This multicenter implementation of the CAEP Best Practices Checklist led to a significant decrease in ED length of stay along with more ED cardioversions, fewer ED consultations, and more discharges in sinus rhythm. Widespread and rigorous adoption of the CAEP Checklist should lead to improved care of AAFF patients in all Canadian EDs.
**Keywords:** atrial fibrillation, implementation, quality improvement

**LO05**

**Rate of prescription of oral anticoagulation in patients presenting with new onset atrial fibrillation/flutter**

E. Hatam, BSc, MD, G. Ghate, BSc, MD, M. Columbus, BSc, PhD, C. Garvida, BSc, K. Van Aarsen, BSc, MSc, Western University, London, ON

**Introduction:** Atrial fibrillation (AF) and atrial flutter (AFL) are two common arrhythmias that present to the emergency department (ED) and are a major risk factor for stroke. The 2014 Canadian Cardiovascular Society (CCS) guidelines recommend starting oral anticoagulation (OAC) upon ED discharge for patients with CHADS65 scores of ≥1 to reduce stroke risk. The goal of this study was to identify whether the ED patient population presenting with new onset AF/AFL with CHADS65 ≥ 1 are appropriately initiated on OAC by ED physicians. **Methods:** This was a retrospective chart review (Jan-Dec 2017) of ED visits at two academic hospitals in Ontario. The year 2017 was chosen to allow for adequate time from the publishing of the CCS guidelines for uptake into clinical practice. Inclusion criteria: patients with a new diagnosis of AF/AFL who are discharged by ED physicians. Exclusion criteria: patients with a history of AF/AFL, already on OAC, admitted to hospital, presenting with arrhythmia other than AF/AFL, and charts without adequate information to calculate CHADS65 score. Charts were reviewed in detail to assess CHADS65 score, ED physician decision to prescribe OAC, referral rates to outpatient clinics and timing of follow up. **Results:** A total of 1272 charts were reviewed. 1124 were excluded. 148 charts were identified as patients with new onset AF/AFL presenting to the ED who were discharged by ED physicians. 24/148 (16%) were appropriately prescribed OAC. 124/148 (84%) were not prescribed OAC. Of these 40/124 (32%) were CHADS65 0 while the other 84/124 (67%) were CHADS65 ≥ 1 who should have been considered for OAC. Further review determined that 78/84 (92%) were referred to outpatient clinics for the decision regarding OAC with the mean (SD) number of days to follow up being 11(±15). Importantly 1/84 (1.2%) returned prior to their scheduled appointment with a stroke. Only 6/84 (7%) had no follow up arranged. **Conclusion:** Overall, we found that the rate of OAC prescription by ED physicians for patients being discharged with a new diagnosis of AF/AFL with a CHADS65 score ≥1 was 16%. This is despite the CCS 2014 recommendation of starting OAC for all patients with a CHADS65 score ≥1. It appears that ED physicians are continuing to defer the decision to prescribe OAC to outpatient clinics. Further projects can explore barriers to application of the CCS guidelines and create knowledge translation tools.
**Keywords:** atrial fibrillation, atrial flutter, oral anticoagulation

**LO06**

**Development of practice recommendations for ED management of syncope by mixed methods**

V. Thiruganasambandamoorthy, MSc, M. Taljaard, PhD, N. Hudek, PhD, J. Brehaut, PhD, B. Ghaedi, MSc, P. Nguyen, BSc, M. Sivilotti, MD, MSc, A. McRae, MD, PhD, J. Yan, MD, MSc, R. Ohle, MD, C. Fabian, MD, N. Le Sage, MD, PhD, E. Mercier, MD, MSc, M. Hegdekar, MD, P. Huang, MD, M. Nemnom, MSc, A. Krahn, MD, P. Archambault, MD, J. Presseau, PhD, I. Graham, PhD, B. Rowe, MD, MSc, University of Ottawa, Department of Emergency Medicine, Ottawa, ON

**Introduction:** Emergency department (ED) syncope management is extremely variable. We developed practice recommendations based on the validated Canadian Syncope Risk Score (CSRS) and outpatient cardiac monitoring strategy with physician input. **Methods:** We used a 2-step approach. Step-1: We pooled data from the derivation and validation prospective cohort studies (with adequate sample size) conducted at 11 Canadian sites (Sep 2010 to Apr 2018). Adults with syncope were enrolled excluding those with serious outcome identified during index ED evaluation. 30-day adjudicated serious outcomes were arrhythmic (arrhythmias, unknown cause of death) and non-arrhythmic (MI, structural heart disease, pulmonary embolism, hemorrhage)]. We compared the serious outcome proportion among risk categories using Cochran-Armitage test. Step-2: We conducted semi-structured interviews using observed risk to develop and refine the recommendations. We used purposive sampling of physicians involved in syncope care at 8 sites from Jun-Dec 2019 until theme saturation was reached. Two independent raters coded interviews using an inductive approach to identify themes; discrepancies were resolved by consensus. **Results:** Of the 8176 patients (mean age 54, 55% female), 293 (3.6%; 95%CI 3.2-4.0%) experienced 30-day serious outcomes; 0.4% deaths, 2.5% arrhythmic, 1.1% non-arrhythmic outcomes. The serious outcome proportion significantly increased from low to high-risk categories ($p < 0.001$; overall 0.6% to 27.7%; arrhythmic 0.2% to 17.3%; non-arrhythmic 0.4% to 5.9% respectively).



https://doi.org/10.1017/cem.2020.60 Published online by Cambridge University Press