

LO09

Role of hospitalization for detection of serious adverse events among emergency department patients with syncope: a propensity-score matched analysis of a multicenter prospective cohort

R. Krishnan, MSc, M. Mukarram, MPH, MBBS, B. Ghaedi, MSc, M. Sivilotti, MD, MSc, N. Le Sage, MD, PhD, J. Yan, MD, MSc, P. Huang, MD, M. Hegdekar, MD, E. Mercier, MD, MSc, M. Nemnom, MSc, L. Calder, MD, MSc, A. McRae, MD, PhD, B. Rowe, MD, MSc, G. Wells, PhD, V. Thiruganasambandamoorthy, MSc, MBBS, Ottawa Hospital Research Institute, Ottawa, ON

Introduction: Selecting appropriate patients for hospitalization following emergency department (ED) evaluation of syncope is critical for serious adverse event (SAE) identification. The primary objective of this study is to determine the association of hospitalization and SAE detection using propensity score (PS) matching. The secondary objective was to determine if SAE identification with hospitalization varied by the Canadian Syncope Risk Score (CSRS) risk-category. **Methods:** This was a secondary analysis of two large prospective cohort studies that enrolled adults (age ≥ 16 years) with syncope at 11 Canadian EDs. Patients with a serious condition identified during index ED evaluation were excluded. Outcome was a 30-day SAE identified either in-hospital for hospitalized patients or after ED disposition for discharged patients and included death, ventricular arrhythmia, non-lethal arrhythmia and non-arrhythmic SAE (myocardial infarction, structural heart disease, pulmonary embolism, hemorrhage). Patients were propensity matched using age, sex, blood pressure, prodrome, presumed ED diagnosis, ECG abnormalities, troponin, heart disease, hypertension, diabetes, arrival by ambulance and hospital site. Multivariable logistic regression assessed the interaction between CSRS and SAE detection and we report odds ratios (OR). **Results:** Of the 8183 patients enrolled, 743 (9.0%) patients were hospitalized and 658 (88.6%) were PS matched. The OR for SAE detection for hospitalized patients in comparison to those discharged from the ED was 5.0 (95%CI 3.3, 7.4), non-lethal arrhythmia 5.4 (95%CI 3.1, 9.6) and non-arrhythmic SAE 6.3 (95%CI 2.9, 13.5). Overall, the odds of any SAE identification, and specifically non-lethal arrhythmia and non-arrhythmia was significantly higher in-hospital among hospitalized patients than those discharged from the ED ($p < 0.001$). There were no significant differences in 30-day mortality ($p = 1.00$) or ventricular arrhythmia detection ($p = 0.21$). The interaction between ED disposition and CSRS was significant ($p = 0.04$) and the probability of 30-day SAEs while in-hospital was greater for medium and high risk CSRS patients. **Conclusion:** In this multicenter prospective cohort, 30-day SAE detection was greater for hospitalized compared with discharged patients. CSRS low-risk patients are least likely to have SAEs identified in-hospital; out-patient monitoring for moderate risk patients requires further study.

Keywords: Canadian Syncope Risk Score, hospitalization, syncope

LO10

Low high-sensitivity troponin concentrations identify low-risk chest pain patients unlikely to benefit from further risk stratification

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

Introduction: Very low high-sensitivity troponin-T (hs-cTnT) concentrations on presentation can rule out acute myocardial infarction (AMI),

but the ability to identify patients at low risk of 30-day major adverse cardiac events (MACE) is less clear. This study examines the sensitivity of low concentrations of hs-cTnT on presentation to rule out 30-day MACE. **Methods:** This prospective cohort study enrolled emergency department chest pain patients with non-ischemic ECGs who underwent AMI rule-out with an hs-cTnT assay. The primary outcome was 30-day MACE; secondary outcomes were individual MACE components. Because guidelines recommend using a single hs-cTnT strategy only for patients with more than 3-hours since symptom onset, a subgroup analysis was performed for this population. Outcomes were adjudicated based on review of medical records and telephone follow-up. **Results:** Of 1,167 patients enrolled, 125 (10.7%) experienced 30-day MACE and 97 (8.3%) suffered AMI on the index visit. More than one-third (35.6%) had presenting hs-cTnT concentrations below the limit of detection (5ng/L), which was 94.4% (95%CI 88.8-97.7%) sensitive for 30-day MACE and 99.0% (95%CI 94.5-100%) sensitive for index AMI. Of 292 (25.0%) patients with hs-cTnT < 5 ng/L and at least 3-hours since symptom onset, only 3 experienced 30-day MACE (sensitivity 97.6%, 95%CI 93.2-100%) and none suffered AMI within 30-days (sensitivity 100%, 95%CI 96.3-100%). **Conclusion:** Among patients with non-ischemic ECGs and >3 -hours since symptom onset, low hs-cTnT concentrations on presentation confer a very low risk of 30-day MACE. In the absence of a high risk clinical presentation, further risk stratification is likely to be low yield.

Keywords: high-sensitivity troponin, myocardial infarction, risk stratification

LO11

STAR-EM: An innovative summer research program for medical students in an urban Canadian academic emergency department
S. Friedman, MD, MPH, D. Porplycia, BSc, MSc, J. Lexchin, MD, K. Hayman, MD, MPH, S. Masood, MD, MPH, E. O'Connor, MD, MSc, E. Xie, MD, MSc, J. Bryan, MD, MA, MSPH, T. Smith-Gorvie, MD, MSc, D. Lim, BSc, MBA, MD, J. Leung, MD, MScCH, H. Sheikh, MD, University Health Network, University of Toronto, Toronto, ON

Innovation Concept: Research training programs for students, especially in emergency medicine (EM), may be difficult to initiate due to lack of protected time, resources, and mentors (Chang Y, Ramnanan CJ. Academic Medicine 2015). We developed a ten-week summer program for medical students aimed at cultivating research skills through mentorship, clinical enrichment, and immersion in EM research culture through shadowing and project support. **Methods:** Five second year Ontario medical students were recruited to participate in the Summer Training and Research in Emergency Medicine (STAR-EM) program at University Health Network, Toronto, from June - Aug, 2019. Program design followed review of existing summer research programs and literature regarding challenges to EM research (McRae, Perry, Brehaut et al. CJEM 2018). The program had broad emergency physician (EP) engagement, with five EP research project mentors, and over ten EPs delivering academic sessions. Curriculum development was collaborative and iterative. All projects were approved by the hospital Research Ethics Board (REB). **Curriculum, Tool or Material:** Each weekly academic morning comprised small group teaching (topics including research methodology, manuscript preparation, health equity, quality improvement, and wellness), followed by EP-led group progress review of each student's project. Each student spent one half day per week in the emergency department (ED), shadowing an EP and identifying

patients for recruitment for ongoing mentor-initiated ED research projects. Remaining time was spent on independent student project work. Presentation to faculty and program evaluation occurred in week 10. Scholarly output included one abstract submitted for publication per student. Program evaluation by students reflected a uniform impression that course material and mentorship were each excellent (100%, $n = 5$). Interest in pursuing academic EM as a career was identified by all students. Faculty researchers rated the program as very effective (80%, $n = 4$) or somewhat effective (20%, $n = 1$) in terms of enhancing productivity and scholarly output. **Conclusion:** The STAR-EM program provides a transferable model for other academic departments seeking to foster the development of future clinician investigators and enhance ED research culture. Program challenges included delays in REB approval for student projects and engaging recalcitrant staff to participate in research.

Keywords: innovations in EM education, medical education

LO12

ClerkCast: a novel online free open access emergency medicine curriculum for medical students

B. Forestell, BSc, L. Beals, BHSc, T. Chan, MD, BHSc, MHPE, BEd, McMaster University, Hamilton, ON

Innovation Concept: Canadian medical students completing their Emergency Medicine (EM) clerkship rotations must develop approaches to undifferentiated patients. Increasingly used in post-graduate EM education, Open Educational Resources (OERs) are a convenient and flexible solution to meeting medical student educational needs on their EM rotation. We hoped to supplement Canadian medical student EM education through the development of 'ClerkCast', a novel OER and podcast-based curriculum on CanadiEM.org. **Methods:** We utilized the Kern Six Step approach to curriculum development for 'ClerkCast'. A general needs assessment involved a review of available OERs and identified a lack of effective EM OERs specific for medical students. A specific online needs assessment was used to determine which EM topics required further education for medical students. The survey was shared directly with key Canadian medical student and undergraduate medical educator stakeholder groups, and distributed globally through the CanadiEM social media networks. Results of the needs assessment highlighted shared perceptions of educational needs for medical students, with an emphasis on increased need for education on critical care and common EM presentations. We used the topics determined to be highest priority for the development of our first ten episodes of 'ClerkCast'. **Curriculum, Tool or Material:** Podcast episodes are released from CanadiEM biweekly. Episodes are 30 to 45 min in length, and focus on cognitive approaches to a common EM presentation for medical students. Content is anchored on medical student interactions with a staff or resident EM co-host. Podcasts are supplemented by infographics and blog posts highlighting the key points from each episode. Learners are also encouraged to interact with the content through review quizzes on a provided question bank. Quality assurance of the content is provided by physician co-hosts who review episode scripts both prior to recording. Post-production feedback is elicited via comments on the curriculum's host website, CanadiEM.org, and through direct email correspondence to the ClerkCast address. **Conclusion:** With an ever increasing number of OERs in EM and critical care, the systematic development of new resources is important to avoid redundancies in content and medium while also addressing unmet learner needs. We describe the successful use of the Kern

Six Steps for curriculum development for the creation of our novel EM OER for Canadian medical students, 'ClerkCast'.

Keywords: free open access medical education, innovations in EM education, medical students

LO13

Development of a national, standardized simulation case template

J. Baylis, BSc, MD, C. Heyd, MD, B. Thoma, MD, MSc, MA, A. Hall, MD, MMed, T. Chaplin, MD, A. Petrosioniak, MD, MSc, T. McColl, MD, M. O'Brien, MD, MSc, J. Deshaies, MD, K. Caners, MD, University of British Columbia, Kelowna, BC

Innovation Concept: A major barrier to the development of a national simulation case repository and multi-site simulation research is the lack of a standardized national case template. This issue was recently identified as a priority research topic for Canadian simulation based education (SBE) research in emergency medicine (EM). We partnered with the EM Simulation Education Researchers Collaborative (EM-SERC) to develop a national simulation template. **Methods:** The EM Sim Cases template was chosen as a starting point for the consensus process. We generated feedback on the template using a three-phase modified nominal group technique. Members of the EM-SERC mailing list were consulted, which included 20 EM simulation educators from every Canadian medical school except Northern Ontario School of Medicine and Memorial University. When comments conflicted, the sentiment with more comments in favour was incorporated. **Curriculum, Tool or Material:** In phase one we sought free-text feedback on the EM Sim Cases template via email. We received 65 comments from 11 respondents. An inductive thematic analysis identified four major themes (formatting, objectives, debriefing, and assessment tools). In phase two we sought free-text feedback on the revised template via email. A second thematic analysis on 40 comments from 12 respondents identified three broad themes (formatting, objectives, and debriefing). In phase three we sought feedback on the penultimate template via focus groups with simulation educators and technologists at multiple Canadian universities. This phase generated 98 specific comments which were grouped according to the section of the template being discussed and used to develop the final template (posted on emsimcases.com). **Conclusion:** We describe a national consensus-building process which resulted in a simulation case template endorsed by simulation educators from across Canada. This template has the potential to: 1. Reduce the replication of effort across sites by facilitating the sharing of simulation cases. 2. Enable national collaboration on the development of both simulation cases and curricula. 3. Facilitate multi centre simulation-based research by removing confounders related to the local adoption of an unfamiliar case template. This could improve the rigour and validity of these studies by reducing inter-site variability. 4. Increase the validity of any simulation scenarios developed for use in national high-stakes assessment.

Keywords: innovations in EM education, medical education, simulation

LO14

Interdepartmental program to improve outcomes for acute heart failure patients seen in the emergency department

I. Stiell, MD, MSc, M. Taljaard, PhD, A. Forster, MD, MSc, L. Mielniczuk, MD, G. Wells, PhD, G. Hebert, MD, H. Clark, MD, C. Clement, J. Brinkhurst, BA, C. Sheehan, BA, E. Brown, BSc, M. Nemnom, MSc, J. Perry, MD, MSc, University of Ottawa, Department of Emergency Medicine, Ottawa, ON