

LO61**Geographic variation in Transient Ischemic Attack (TIA)/minor stroke care in Alberta emergency departments (EDs)**

M. Leong, E. Lang, MD, S.D. Coutts, MD, J. Stang, BComm, D. Wang, MSc, C. Patocka, MD, University of Calgary, Calgary, AB

Introduction: The risk of recurrent stroke following a transient ischemic attack (TIA) has been estimated to be as much as 5 percent in the first 48 hours and ten percent in the first week following initial TIA symptoms, but can be modified as a result of intensive risk factor management. Care pathways for these patients vary between different regions within Alberta with Edmonton admitting more TIA patients and Calgary using computed tomography angiography (CTA) based triage. To examine regional differences in the quality of care, the rate of admission for stroke within 90 days of an index ED visit for TIA/minor stroke was investigated. **Methods:** Data analysts from the Data Integration, Measurement and Reporting (DIMR) branch of Alberta Health Services (AHS) used the National Ambulatory Care Reporting System (NACRS) to identify patients in Alberta who were admitted for stroke within 90-days of an index emergency department (ED) visit for TIA/minor stroke from April 2010 to March 2016. Information extracted included patient demographics, region of residence (Edmonton, Calgary or non-major urban [NMU]), return diagnosis and timing of return ED visit. Analysis included descriptive summaries and proportions were compared using a χ^2 test. **Results:** During the study period, there were 26,232 index visits to Alberta EDs for TIA/minor stroke. 5426 (26.1%) of patients were admitted on their index visit. Calgary (22.5%) had lower rates of admission on index visit followed by Edmonton (31.4%) and the NMU (46%). 20,806 (79.3%) were discharged home following their index visit. Of the patients discharged on their index visit 729 (3.5%) had an admission for stroke within 90-days of their index ED visit with rates in Edmonton (3.8%) and the NMU regions (3.8%) being significantly higher than Calgary (2.8%, $p < 0.01$). **Conclusion:** Our study demonstrates significantly lower rates of admission for stroke within 90-days of ED visit for minor stroke/TIA in Calgary compared to Edmonton and the NMU. Further work should focus on validating this result and consideration of standardized care pathways that promote effective resource utilization and quality of care.

Keywords: transient ischemic attack, minor stroke, epidemiology

LO62**Systolic blood pressure is a strong predictive marker for TIA and mild stroke in younger patients**

C. Sedgwick, BSc, M. Bibok, PhD, N.S. Croteau, MA, M.L. Lesperance, PhD, R. Balshaw, PhD, K. Votova, K. Blackwood, BA, S.D. Coutts, MD, A. Penn, MD, University of British Columbia Island Medical Program, Victoria, BC

Introduction: Age and systolic blood pressure (SBP) are important predictors of Acute Cerebrovascular Syndrome (ACVS). Yet, the effect of SBP is confounded by age, making its independent contribution to ACVS risk difficult to quantify. Here we use logistic regression to explore the role of SBP in younger and older ED patients. **Methods:** Data comprised 1019 ED patients (ACVS 70%, 30% non-ACVS) enrolled during a 28-month period of an ongoing prospective, observational, multi-site stroke biomarker study (SpecTRA). We used logistic regression to examine the effects of age, sex, and the age:SBP interaction as predictive markers of the diagnosis of ACVS. **Results:** Participants (53% male) ranged in age from 18 to 97 years (Q1 = 58, median = 70, Q3 = 80). SBP ranged from 84 to 248 mmHg (Q1 = 137, median = 154, Q3 = 174). In our initial regression model, age, sex,

SBP and the age:SBP interaction were all significant ($p < 0.01$). Using cubic regression splines for age, sbp and their interaction yields the same conclusion ($p < 0.01$). To better understand the role of SBP in younger vs. older patients, we stratified the sample at the median age (70 years of age). In the younger group ($n = 510$), participants were 55% male, 60% ACVS, and had SBP ranging from 91 to 236 mmHg (Q1 = 133, median = 148, Q3 = 165). In the older group ($n = 509$), participants were 51% male, 82% ACVS and had SBP ranging from 84 to 248 mmHg (Q1 = 143, median = 159, Q3 = 179), a shift of approximately 10 mmHg between the groups. The logistic regression model was then fit separately to each group without the age:SBP interaction term. In the younger group, we found SBP to be highly significant ($p < 0.001$), with an odds-ratio (OR) of 1.18 per 10 mmHg (95% CI: 1.10-1.29). In the older group, we found that SBP was not significant ($p = 0.91$), with an OR of 1.00 per 10 mmHg (95% CI: 0.91-1.08). Age and sex were also significant risk factors in the younger group (each $p < 0.01$), though not in the older group (both $p > 0.07$). **Conclusion:** Our findings suggest that for ED patients suspected of ACVS, SBP is a clinically relevant predictor for younger patients, with higher SBP associated with an increased risk of ACVS, regardless of patient age and sex. SBP does not appear to be a strong predictor for patients over 70. ED physicians can leverage this finding by attributing greater importance to elevated SBP in younger patients than older patients when working toward a clinical suspicion of ACVS.

Keywords: acute cerebrovascular syndrome, blood pressure, clinical decision support

LO63**External validation of the BIG score to predict mortality in pediatric blunt trauma**

C. Grandjean-Blanchet, J. Gravel, MD, MSc, G. Emeriaud, MD, M. Beaudin, MD, CHU Sainte-Justine, Montréal, QC

Introduction: The BIG score is a new pediatric trauma score composed of the admission base deficit (BD), the international normalized ratio (INR) and the Glasgow Coma Scale (GCS). A score < 16 identifies children with a high probability of survival following blunt trauma. The objective of this study was to measure the criterion validity of the BIG score to predict in-hospital mortality among children visiting an emergency department with blunt trauma requiring an admission to the intensive care unit. **Methods:** This was a retrospective cohort study performed in a single tertiary care pediatric hospital between 2008 and 2016. Participants were all children (< 18 years) visiting the emergency department for a blunt trauma requiring intensive care unit admission or who died at the emergency department. All charts were reviewed by a member of the research team using a standardized report form. To insure quality of data abstraction, 10% of the charts were reviewed in duplicate by a second rater blinded to the first evaluation. The primary outcome was in-hospital mortality. Baseline demographics, initial components of the BIG score, Injury Severity Score (ISS) and disposition were extracted. The primary analysis was the association between a BIG score ≥ 16 and in-hospital mortality. It was calculated that the inclusion of at least 25 deaths would provide confidence intervals of ± 0.20 for proportions in the worst-case scenario. **Results:** Twenty-eight children died among the 336 who met the inclusion criteria. The inter-rater agreement for data abstraction was excellent with kappa scores or intraclass correlation coefficients higher than 0.8 for all variables. Two hundred eighty-four children had information on the three components of the BIG score and they were included in the primary analysis. A BIG score ≥ 16 demonstrated a sensitivity of 0.93 (95%CI: 0.76-0.98) and specificity of 0.83 (95%CI 0.78-0.87) to identify mortality. Using ROC curves, the area under the curve was higher for the BIG score

(0.97; 95%IC: 0.95-0.99) in comparison to the ISS (0.78; 95%IC: 0.71-0.85). **Conclusion:** The BIG score is an excellent predictor of survival for children visiting the emergency department following a blunt trauma.

Keywords: children, blunt trauma, mortality

LO64

Emergency department directed multifaceted interventions to improve outcomes after asthma exacerbations: a 3-armed randomized controlled trial

C. Villa-Roel, MD, PhD, S.R. Majumdar, MD, MPH, R. Leigh, MD, PhD, A. Senthilselvan, PhD, M. Bhutani, MD, B. Borgundvaag, PhD, MD, E. Lang, MD, R.J. Rosychuk, PhD, B.H. Rowe, MD, MSc, University of Alberta, Edmonton, AB

Introduction: Approximately 20% of Canadians who present to emergency departments (EDs) with acute asthma relapse within 4 weeks of discharge. The reasons are likely multi-factorial; however, the lack of timely primary care provider (PCP) follow-up and inadequate patient self-management are thought to be important variables. Therefore, we tested the effectiveness of ED-directed multifaceted interventions that targeted PCPs and enhanced patient self-management to reduce asthma relapse following ED discharge. **Methods:** Adults with acute asthma discharged from 6 Alberta EDs were randomly allocated, in a centralized and concealed manner, to receive usual care (UC), opinion leader [OL] guidance to their PCPs, or OL guidance + nurse case-management [OL+CM] for patients (NCT01079000). The main outcome was asthma relapse within 90-days of ED discharge. Secondary outcomes included PCP visits, time to relapse, hospitalizations and asthma-related quality of life (QoL). Outcomes were collected independently and assessors were masked to intervention assignment. **Results:** From 943 screened patients, 367 patients were allocated to the study arms (UC = 146; OL = 110; OL+CM = 111). Median age was 28 years, 64% were women, median peak flow at discharge was 350 L/min; 77% were discharged home on prednisone and 85% on either inhaled corticosteroids (ICS) or ICS/long-acting β_2 -agonists. Compared with UC, both interventions significantly **increased** rates of relapse at 90-days: UC = 12%, OL = 28%, OL+CM = 19%; $p = 0.006$. Based on an absolute increased risk of 0.16 (95% CI: 0.05, 0.25), the number needed to treat for harm was 6 (95% CI: 3.9, 19.0) for the OL arm. Across study differences in PCP follow-up visits, time to relapse, hospitalizations or asthma-related QoL were not identified. **Conclusion:** Two different theory-informed and evidenced-based interventions intended to decrease asthma relapse robustly and significantly increased rates of relapse compared with UC. While the reasons for these unintended consequences require further study, we caution against the adoption of similar interventions by other EDs.

Keywords: asthma, education

LO65

Outpatient care gaps in subjects presenting to emergency departments with acute asthma

C. Villa-Roel, MD, PhD, M. Bhutani, MD, S.R. Majumdar, MD, MPH, R. Leigh, MD, PhD, B. Borgundvaag, PhD MD, E. Lang, MD, A. Senthilselvan, PhD, R.J. Rosychuk, PhD, B.H. Rowe, MD, MSc, University of Alberta, Edmonton, AB

Introduction: Many patients presenting to Emergency Departments (EDs) with acute asthma have limited or no access to health care providers, medications and preventive resources. This study explored outpatient care gaps among subjects presenting to the ED for acute asthma, before being discharged. **Methods:** Cross-sectional analysis of data obtained in a comparative effectiveness trial conducted in six EDs in Alberta

(NCT01079000). Data were collected through patient interviews and chart reviews at ED presentation. Two clinician-investigators independently reviewed and adjudicated the following preventive actions: use of spacer devices, written asthma action plans (AAPs) and asthma medication; influenza immunization, cigarette smoking, and referral to asthma education. Agreement between adjudicators was calculated based on kappa (κ) statistics. **Results:** The median age of the study population ($n = 367$) was 28 years and 64% were women. Overall, 26% of patients reported not having a regular family physician. Agreement between reviewers was excellent ($\kappa = 0.96$). More than half (59%) reported not using spacer devices despite being indicated and 3% reported having a written AAP. Following the recommendations of the current asthma guidelines, 38% of the patients required the initiation of inhaled corticosteroids (ICS), 11% required the addition of ICS/long-acting β -agonists combination agents and 39% required reinforcement of adherence with preventer medications. Finally, 37% reported receiving influenza vaccination in the past year, 7% had been referred to asthma education in the last 10 years, and 31% were still smoking, suggesting that cessation counselling was indicated. **Conclusion:** The ED encounter for patients with acute asthma represents a unique opportunity to establish important partnerships across the continuum of asthma care (e.g., link them with a family doctor). This study provided a robust assessment of the outpatient care gaps in this patient population, which identified many areas for targeted interventions. The method of delivery and type of messaging needs further study.

Keywords: asthma, education

LO66

Did the Choosing Wisely Canada campaign work? A retrospective analysis of its impact on emergency department imaging utilization for head injuries

S. Masood, MD, L.B. Chartier, MD, CM, Department of Medicine, University of Toronto, Toronto, ON

Introduction: Head injuries are a commonly encountered presentation in emergency departments (ED) and the Choosing Wisely Canada (CWC) campaign was released in June 2015 in an attempt to decrease imaging utilization for patients with minor head injuries. The impact of the CWC campaign on imaging utilization for head injuries has not been explored in the ED setting. In our study, we describe the characteristics of patients with head injuries presenting to a tertiary care academic ED and the impact of the CWC campaign on CT head utilization. **Methods:** This retrospective cohort study used linked databases from the province of Ontario, Canada to assess emergency department visits with a primary diagnosis of head injury made between June 1, 2014 and Aug 31, 2016 at the University Health Network in Toronto, Canada. We examined the number of visits during the study period, the proportion of patients that had a CT head performed before and after the release of the CWC campaign, as well as mode of arrival, and disposition. **Results:** There were 4,322 qualifying visits at our site during the study period. The median presenting age was 44.12 years (IQR 27.83,67.45), the median GCS was 15 (IQR 15,15) and the majority of patients presenting had intermediate acuity (CTAS 3). Overall, 43.17% of patients arrived via ambulance, 49.24 % of patients received a CT head and 10.46% of patients were admitted. Compared to patients presenting before the CWC campaign release, there was no significant difference in the rate of CT heads after the CWC (50.41% vs 47.68%, $P = 0.07$). There were also no significant differences between the two groups in mode of arrival (ambulance vs ambulatory) (42.94% vs 43.48%, $P = 0.72$) or admission rates (9.85% vs 11.26%, $P = 0.15$). However, more patients belonged to the high acuity groups (CTAS 1 or 2) in the post CWC campaign release group (12.98% vs 8.11% $P < 0.001$). **Conclusion:** Visits for head