

data from Ontario, Canada. Patients who were discharged home from an ED in Ontario with a primary diagnosis of chest pain from April 1, 2004 to March 31, 2010 were included. High-risk patients were defined as the presence of diabetes or pre-existing cardiovascular disease, while low-risk patients were defined as the absence of these conditions. ED volume was categorized as low, medium, or high, based on tertiles of annual chest pain patient volume. The primary outcome of this study was all-cause mortality one year after the index ED visit. Mantel-Haenszel Chi-Square was used to compare crude outcome rates. **Results:** There were 56,767 high-risk patients. The average age was 66 years and 53% were male. All-cause mortality rates were 6.8%, 6.3%, and 6.0% ( $p = 0.028$ ), and rates of hospitalization for acute coronary syndrome were 5.8%, 4.6%, and 4.0% ( $p < 0.001$ ) among low, medium, and high volume EDs respectively. There were 216,527 low-risk patients. The average age was 64 years and 42% were male. All-cause mortality rates were 2.0%, 1.9%, and 1.6% ( $p < 0.001$ ), and rates of hospitalization for acute coronary syndrome were 1.5%, 1.4%, and 1.0% ( $p < 0.001$ ) among low, medium, and high volume EDs respectively. **Conclusion:** Higher volume EDs were associated with decreased rates of all-cause mortality and admission for acute coronary syndrome among chest pain patients who were discharged home. Future research should study the reasons for this finding and attempt to improve outcomes in lower volume EDs.

**Keywords:** chest pain

#### LO006

##### Interarm blood pressure differential as a clinical marker for acute aortic dissection in the emergency department

S.W. Um, BSc, R. Ohle, MA, MB, BCh, BAO, J.J. Perry, MD, MSc; University of Ottawa, Ottawa, ON

**Introduction:** Acute Aortic Dissection (AAD) is life threatening, requiring early diagnosis. Although previous literature suggest interarm BP differential is an independent predictor of AAD, up to 20% of a healthy population can have a significant differential. Our objectives were to assess the rate of bilateral BP measurement in acute non-traumatic truncal pain patients, and the association of BP differential with non-traumatic AAD. **Methods:** This is a historical matched case control study: participants were adults >18 years old presenting to two tertiary care EDs with a triage diagnosis of truncal (i.e. chest, abdominal, flank, back) pain. Cases were selected based on an ED or in-hospital diagnosis of non-traumatic AAD confirmed by CT or Echo. Controls were from a single calendar year matched in a 1:1.5 ratio by sex and age within 5 years. ED and referral consult BP measurements were used. Exclusion criteria: clear diagnosis on basic investigation (i.e. UTI, pneumonia, pneumothorax, acute fracture) or pain >14 days/no pain. Sample size of 126 cases and 183 controls was calculated based on 20% exposure in controls (80% power and alpha of 5%), to detect an OR >2. P-values were calculated using chi square analysis. **Results:** A total of 294 (119 cases, 175 controls) patients were included (mean 66 +/-14.5yrs, 59.5% male). Cases (199 potential: 119 included; 80 excluded). Controls (8239 potential: 305 reviewed; 175 included; 130 excluded). Bilateral BP was measured in 70.6% of cases ( $n = 84$ , mean difference = 15.5mmHg) versus 31.3% of controls ( $n = 55$ , mean difference = 10.9mmHg). Among included controls, most common diagnoses were: Unspecified Chest (36.0%) or Abdominal (9.7%) Pain, ACS (12.6%), Muscular Back Pain (5.1%), and Renal Colic (4.0%). BP differential >10mmHg was found in 58.8% of cases and 40.7% of controls ( $P = 0.10$ ). A BP differential >20mmHg was found in 31.3% of cases and 22.2% of controls ( $P = 0.37$ ). BP differential >20mmHg did not significantly increase the odds of AAD (OR 2.0 (95%CI

0.82-4.90),  $p < 0.129$ ). **Conclusion:** Interarm BP differential is not routinely measured in ED patients with acute non-traumatic truncal pain, and there is no significant difference in the presence or magnitude of differentials in patients with or without AAD. Therefore, physicians should not rely on BP differentials to aid in their diagnosis or exclusion of AAD.

**Keywords:** aortic dissection, blood pressure

#### LO007

##### A pragmatic randomized and controlled evaluation of nurse-initiated protocols

M.J. Douma, BSN, D. O Dochartiagh, BScN, MSc, C.A. Drake, BScN, K.E. Smith, BSc, MD; Royal Alexandra Hospital, Edmonton, AB

**Introduction:** Emergency department (ED) overcrowding is a common and complicated challenge for EDs worldwide. Nurse-initiated protocols, diagnostics and/or treatments implemented by nurses prior to patients being seen by a physician or nurse practitioner, have been suggested as a potential strategy to improve patient flow. **Methods:** This randomized, pragmatic, controlled evaluation of 5 nurse-initiated protocols occurred in a crowded inner-city ED. Six physicians and 44 registered nurses, 3 clinical nurse educators and 3 unit managers were involved in revising 5 patient-complaint focused protocols prior to evaluation. Thirty (30/180) emergency nurses were provided 1 hour of training on inclusion and exclusion criteria, procedure and evaluation methods. Data was abstracted in a manner concealing patient allocation. Primary outcomes evaluated included time to diagnostic test, treatment, consultation or ED length of stay. This evaluation was completed following both the CONSORT and SQUIRE guidelines. **Results:** Time to acetaminophen for the intervention group ( $n = 11$ ) was 1h:04 min on average (95%CI 30min to 1h:37min) whereas the control group ( $n = 9$ ) was 3h:35min (95%CI 2h:21min to 4h:48min). The average length of stay of a suspected fractured-hip in the intervention group ( $n = 5$ ) was 3h:34min (95%CI 1h:49min to 5h:19min) and 7h:34min for the control group ( $n = 4$ ) was (95%CI 5h:26min to 9h:42min). Time to troponin in the intervention group ( $n = 29$ ) was one quarter (average 48min, 95% CI 32min to 64min) of the time it was in the control group ( $n = 14$ ) (average 3h:16min, 95%CI 1h:53min to 4h:39min;  $p < 0.001$ ). The vaginal bleeding in pregnancy protocol reduced length of stay by roughly fifty-percent; the intervention group ( $n = 11$ ) had a length of stay of 4h:57min (95%CI 3h:46min to 6h:08min) compared to 8h:33min (95% CI 6h:23min to 10h:44min) for the control ( $n = 7$ ) ( $p < 0.001$ ). There was no statistical difference in the length of stay for patients who received protocolized diagnostics for abdominal pain. **Conclusion:** Targeting specific patient groups with carefully written protocols can improve the timeliness of care. A cooperative and collaborative interdisciplinary group are essential to success. Having a system in place to ensure ongoing quality in protocol application and interdisciplinary support has proven more difficult than improving the primary outcomes in this evaluation.

**Keywords:** nurse protocols, standing orders, order sets

#### LO008

##### Assessment of the need for diagnostic imaging in extremity injuries by advanced care paramedics

P. Froese, M.B. Butler, MSc, S.G. Campbell, MB, BCh, K. Magee, MD, R.P. Mackinley; Charles V. Keating Emergency and Trauma Centre, Halifax, NS

**Introduction:** Emergency department (ED) crowding is a national challenge. Initiatives to help address this at our ED include the use of a six-bed fast-track unit staffed by advanced-care paramedics (ACPs). Institutional byelaws only allow diagnostic imaging (DI) ordering by