LO75

Interrater agreement and time it takes to assign a Canadian Triage and Acuity Scale score in 7 emergency departments

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Introduction: The Canadian Triage and Acuity Scale (CTAS) is the standard used in all Canadian (and many international) emergency departments (EDs) for establishing the priority by which patients should be assessed. In addition to its clinical utility, CTAS has become an important administrative metric used by governments to estimate patient care requirements, ED funding and workload models. Despite its importance, the process by which CTAS scores are derived is highly variable. Emphasis on ED wait times has also drawn attention to the length of time the triage process takes. The primary objective of this study was to determine the interrater agreement of CTAS in current clinical practice. The secondary objective was to determine the time it takes to triage in a variety of ED settings. **Methods:** This was a prospective, observational study conducted in 7 hospital EDs, selected to represent a mix of triage processes (electronic vs. manual), documentation practices (electronic vs. paper), hospital types (rural, community and teaching) and patient volumes (annual ED census ranged from 38,000 to 136,000). An expert CTAS auditor observed on-duty triage nurses in the ED and assigned independent CTAS in real time. Research assistants not involved in the triage process independently recorded the triage time. Interrater agreement was estimated using unweighted and quadratic-weighted kappa statistics with 95% confidence intervals (CIs). **Results:** 738 consecutive patient CTAS assessments were audited over 21 seven-hour triage shifts. Exact modal agreement was achieved for 554 (75.0%) patients. Using the auditor's CTAS score as the reference standard, on-duty triage nurses over-triaged 89 (12.1%) and under-triaged 95 (12.9%) patients. Interrater agreement was "good" with an unweighted kappa of 0.63 (95% CI: 0.58, 0.67) and quadratic-weighted kappa of 0.79 (95% CI: 0.67, 0.90). Research assistants captured triage time for 3808 patients over 69 shifts at 7 different EDs. Median (IQR) triage time was 5.2 (3.8, 7.3) minutes and ranged from 3.9 (3.1, 4.8) minutes to 7.5 (5.8, 10.8) minutes. **Conclusion:** Variability in the accuracy, and length of time taken to perform CTAS assessments suggest that a standardized approach to performing CTAS assessments would improve both clinical decision making, and administrative data accuracy.

Keywords: triage, interrater agreement, reliability

LO76

Emergency department procedural sedation in elderly patients

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Introduction: The use of procedural sedation and analgesia (PSA) for the performance of Emergency Department (ED) procedures has been reported to be safe and effective. However, few studies have evaluated the safety of PSA in the elderly, with conflicting results. Our primary objective was to determine if elderly patients undergoing PSA for the management of an orthopedic injury had an increased risk of adverse events (AEs) during the procedure. **Methods:** This retrospective review of prospectively recorded data between 2006 and 2016 included patients aged ≥16 years undergoing PSA at a single institution to facilitate treatment of a fracture or dislocation. Patients were separated into 3 age groups for analysis: young (18-40), middle-aged (41-64) and elderly (≥65). Elderly patients were divided into 3 subgroups. The primary AEs studied include hypoxia ($S_pO_2 < 90$ %) and hypotension (systolic blood pressure <100 mmHg, or >15% reduction from baseline if initial <100 mmHg). Logistic regression (LR) models tested for associations between age and outcome measurements. Effect sizes were described as odds ratios (OR) and 95% confidence intervals. **Results:** 4171 patients were studied, including 1125 patients ≥65 years of age. More than 90% of the time, propofol was used as a single agent sedative. Fentanyl was given as an analgesic adjunct in 88% of patients. Medication dosing declined as patients aged. In the young group, the average total propofol dose was 2.34 mg/kg compared to 1.42 mg/kg in the elderly (≥85 years subgroup: 1.07 mg/kg). Despite this, hypoxia was more likely to occur in elderly patients (2.3%) compared to younger patients (0.4%). LR models demonstrated that hypoxia was more likely to occur in: the elderly [OR 4.29 (1.58,11.70)], patients with an ASA classification score of 3 or higher [OR 4.71 (1.89,11.70)], and higher dosing of fentanyl in the elderly [OR 2.35 (1.21,4.57)]. Oral or nasal airway, assisted ventilation, and suctioning were required in less than 1% of all patients. Endotracheal intubation was never required. Hypotension was more likely in elderly patients (11.6%) than younger patients (8.3%). **Conclusion:** When performing PSA, clinicians should be aware of the increased risk of AEs in the elderly, particularly hypoxia, and modify selection, dosing, and administration of the PSA medication(s) appropriately. Future study should examine the intermediate and long-term outcomes of elderly patients following ED PSA.

Keywords: procedural sedation, geriatric, fracture

LO77

Compliance of older emergency department patients to community-based specialized geriatric services

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Introduction: The Geriatric Emergency Management (GEM) model has been developed to facilitate identification of older patients that are at higher risk of functional decline, repeat Emergency Department (ED) visits and future hospitalization. Those identified at risk, are referred for more in-depth evaluation and management in community-based specialized geriatric services. Our objective was to: 1) determine the compliance rate to outpatient evaluation following ED recommendation; and 2) identify barriers and facilitators to attendance. **Methods:** We conducted a prospective cohort study at two sites of an academic, tertiary level hospital ED between July and December 2016. We enrolled a convenience sample of ED patients, 65 years and older who were seen by a GEM nurse, referred to outpatient specialized geriatric services and consented to study participation. The GEM nurses conducted targeted geriatric assessments, identifying those who would benefit from further community management. We conducted a chart review and a structured telephone follow-up at 6 weeks. Descriptive statistics were used. **Results:** A total of 101 patients were prospectively enrolled, with 30.4% of eligible participants declining outpatient referral. Enrolled subjects had a mean age of 83.3 years, 58.4% female and 62.0% cognitively impaired. Reasons for referral to specialized geriatric services included: mobility (86.1%), cognition (57.4%), pain (38.6%), mood (34.7%), medication management (33.6%) and nutrition (30.7%). Outpatient referrals were to: geriatric day hospital (51.5%), geriatric outreach (22.7%), falls clinic (11.8%) and geriatric psychiatry (9.9%). Compliance with follow-up within 6 weeks was 64.4%. Barriers to attendance included: patient did not feel specialized geriatric services was needed (52.6%); admitted to hospital (10.5%); reported not called for appointment (15.8%); forgot appointment (5.3%) and transportation (5.3%). Family support with scheduling and transportation to

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appointments, reported by 68.6%, was the most common enabler to compliance. **Conclusion:** Over one third of older ED patients referred by GEM for further specialized geriatric services are non-compliant with their community-based evaluation, while one in four older ED patients decline referral to these evaluations while in the ED. Future work should focus on interventions that promote increased referral acceptance and address barriers to attendance.
Keywords: geriatrics, elderly, out-patient referrals

LO78

Frailty Assessments of Older Canadians Using Emergency Health Services: The FOCUS Study

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Introduction: The Clinical Frailty Scale (CFS) has been validated internationally to predict adverse outcomes and mortality. Frailty assessments in the Emergency Departments (ED) are challenging to due to a lack of training and time. We studied the use of a tablet-based CFS that used graphics and short descriptors to assist choice of the 9 frailty categories. **Methods:** We conducted a prospective observational cohort study of people >65 years seen in the ED of 3 Canadian academic centers. We excluded critically ill patients, and those with significant visual impairment or inability to communicate in English or French. We compared agreement on the tablet-based CFS between 4 categories of assessors: Patients, ED Physicians, trained Research Assistance and Caregivers using the kappa statistic. **Results:** We enrolled 274/380 eligible patients who provided complete data (72.1%). Their average age was 75.8 years, and 48.9% were female. Their median MOCA score was 23/30 (IQR = 17-26) and their median OARS was 26/28 (IQR 22-28). Agreement between physicians and research assistants was good ($\kappa = 0.60$, 95% CI 0.50-0.70), as was physician-caregiver agreement and patient-caregiver agreement ($\kappa = 0.66$, 95% CI 0.40-0.93). Agreement between physicians and patients was only moderate ($\kappa = 0.47$, 95% CI 0.36-0.58). **Conclusion:** There was less agreement between physicians and patient self-assessments for the CFS compared to physicians-research assistant agreement and care-giver patient assessments of frailty. Future research should validate whether MD, patient, or caregiver rated CFS have higher predictive validity.
Keywords: frailty, emergency medicine, computer assisted assessments

LO79

Patient-centred outcomes with use of CT angiography in patients presenting with acute stroke and TIA: a systematic review and meta-analysis

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Introduction: It remains unclear whether widespread use of computed tomography angiography (CTA) in acute strokes and transient ischemic attacks (TIAs) has tangible benefits for patient outcomes or management. We conducted a systematic review and meta-analysis of observational studies and randomized controlled trials (RCTs) investigating the use of CTA and patient-important outcomes (recurrent stroke, mortality, disability, and emergency department (ED) revisits) or changes in management in patients presenting with acute stroke or TIA. PROSPERO: 349590 **Methods:** MEDLINE, EMBASE, and the Cochrane Registry were searched through May 24, 2016 for eligible trials. We included observational cohort studies and RCTs evaluating use of CTA against a control group for outcomes of interest in patients presenting acutely with suspected stroke or TIA. Two independent reviewers extracted data and assessed study quality using the Newcastle Ottawa Scale. Data for mortality and stroke rate were pooled by the generic inverse variance method and expressed as risk ratios (RRs) with 95% confidence intervals (95% CI). Data for disability were reported as the mean difference (MD) and 95% CI. Heterogeneity was assessed using the Cochran's Q statistic and quantified by the I^2 statistic. Overall strength of the evidence was assessed by the GRADE approach. **Results:** Three observational cohort studies involving 979 patients over an average of 1 year follow up met inclusion criteria; there were no eligible RCTs. CTA use in acute stroke or TIA patients was associated with a decreased mortality rate (RR = 0.55, 95% CI 0.33 to 0.91, P = 0.02; $P_{het} = 0.88$, $I^2 = 0\%$). No changes were detected in stroke rate (RR = 0.84, 95% CI 0.40 to 1.73, P = 0.63; $P_{het} = 0.79$, $I^2 = 0\%$). One study with data for disability showed no changes in mRS (MD = 0.01, 95% CI -0.70 to 0.73, P = 0.97). There were no eligible studies with data for ED revisits or changes in management. The strength of the evidence was assessed as very low quality due to imprecision for mortality, stroke rate, and disability. **Conclusion:** CTA use was associated with significantly reduced mortality in acute stroke and TIA patients, possibly due to confounding from poor baseline status of patients not receiving CTA. No significant changes were found for stroke rate or disability. There is a need for RCTs to confirm the effects of CTA use on patient outcomes and management.
Keywords: stroke, transient ischemic attack, computed tomography angiography

LO80

Chest radiograph ordering for acute asthma presentations to emergency departments in Alberta: regional, site, and physician level variation

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Introduction: Most acute asthma presentations to the emergency department (ED) are uncomplicated and do not require chest radiographs (CXR). Evidence suggests that the proportion of acute asthma patients receiving CXRs in the ED is high and varies substantially within and across sites and studies. This study explored CXR ordering and variation in acute asthma presentations to Alberta's EDs. **Methods:** Administrative health data for Alberta was obtained from the National Ambulatory Care Reporting System (NACRS) for all adult (>17 years) acute asthma (ICD-10-CA: J45) ED visits from 2011-2015. Patients with a primary or secondary diagnosis of asthma were included, provided they had a Canadian Triage and Acuity Scale score of 2-5. NACRS data were linked with Alberta Health Services' (AHS) diagnostic imaging database. Preliminary analysis on variation in imaging at the zone, ED site, and physician level was completed using SAS (v.9.4). Physicians who saw less than an average of 10 asthma patients per year were excluded. **Results:** Overall, 51,511 acute asthma ED presentations occurred (~10,000/year). The average proportion of CXRs among presentations was 39.5% (2011-2015) with an average annual increase of 6.7%. From 2011-2015, CXR ordering varied across the five AHS zones (variation [V]: 25%; range: 26.0%-51.0%). Substantial variation was observed across ED sites V: 60%; range: 5.9-66.4%) and physicians (V: 89%; range: 1.4-90.6%). The mean CXR ordering among physicians was 44%. **Conclusion:** From 2011-2015, CXR use among acute asthma ED presentations has increased. Substantial variation in CXR use suggests that evidence-based interventions are needed to improve imaging appropriateness.
Keywords: diagnostic imaging, asthma, emergency department

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