

**Keywords:** shared decision making, acute respiratory infections, patient education

#### P082

##### **Correlation between serum and blood gas: a review on the accuracy of electrolyte readings obtained blood gases**

J. Lindgren, BComm, S. Dowling, MD; University of Calgary, Calgary, AB

**Introduction:** In the Emergency Department (ED), increasing time pressures and acuity require physicians to have access to quick and reliable data to guide patient care decisions. Blood gases (BGs) allow quick access to key information, and are used frequently in the ED. Our objective was to review the literature on reliability and accuracy of electrolyte measurements obtained from BGs in high acuity settings. **Methods:** A comprehensive literature review was conducted in September of 2015. The search strategy, done in conjunction with a medical librarian, identified studies that assessed the accuracy of BGs when compared to traditional laboratory serum measurements. Prior to the review we determined sodium and potassium would be the area of focus. Eligibility parameters for the studies included samples from acute care areas - the ED and ICU - and a comparison of BG and serum values taken simultaneously from the patient. **Results:** Our review included 12 studies, 9 in adult and 3 in pediatrics. There were approximately 1,135 patients included, consisting of 851 adult and 284 pediatric cases. The results were mixed; 9 studies agreed that sodium and potassium readings from BGs were accurate enough to guide acute care decisions, 5 did not. Furthermore, important questions were raised regarding the varying accuracy of BGs depending on what physiological level the electrolytes were at during the time of collection, i.e. at critical vs non-critical levels. **Conclusion:** This is the first literature review to examine the existing evidence on the accuracy of BGs in acute care environments. Given the variability in the results, a larger study needs to be done to determine the validity and reliability of blood gases for electrolytes in acute care settings. Only by ensuring the accuracy of data collected via point-of-care BGs can the most informed decisions be made surrounding patient care in acute care settings.

**Keywords:** blood gas, electrolytes

#### P083

##### **Why do older adults in assisted living facilities use the emergency department: are all these visits necessary?**

E. Losier, BSc, A. McCollum, BSc, P. Jarrett, MD, R. McCloskey, MN, PhD, P. Nicholson, MN, M. Howlett, MD; Dalhousie Medicine New Brunswick, Saint John, NB

**Introduction:** Special Care Home (SCH) residents require supervision for activities of daily living but not regular nursing care. Emergency Department (ED) use by seniors in SCHs is poorly studied. A recent study in Nova Scotia found seniors represented over 20% of ED visits. We studied SCH resident ED visits in a community with a population of 30,000 aged over 65 years and with 785 SCH beds, to define reasons for ED visits to a tertiary ED, and if these could be avoided. **Methods:** We performed a retrospective chart review of SCH residents' visits to an ED (SCH-ED) which has 56,000 total ED (TED) visits over one year. Reasons for visit, admission data, and avoidability were collected. A geriatrician and ED physician independently reviewed visits. Initial disagreement on avoidability (27%) was adjudicated through case discussion. **Results:** Demographic data revealed 344 ED visits by 111 SCH residents over one year; 37% of visits resulted in admission. 13.9% of

residents visited the ED on at least one occasion (average 3.1 visits); mean age 78.4 years; female 66.7%; ambulance arrival 91.0%. The three most common chief complaints were *shortness of breath, weakness and abdominal pain*. Most SCH-ED visits were Canadian Triage and Acuity Scale (CTAS) Level 3 (63.4%, TED 53.3%). Of CTAS Level 3 visits, 35.3% were admitted (TED 12.9%). SCH-ED visits were avoidable in 40.6% of cases. Gastrointestinal (18%), pain (16.5%), falls, functional decline or injury (14%) and respiratory (12%) were the most common avoidable diagnostic groups, accounting for 57% of total SCH visits.

**Conclusion:** ED visits by SCH residents demonstrated increased acuity and admission rates with a high number of repeat visits. Of all SCH-ED visits, 40% were potentially avoidable. Further study may determine if improved community services reduces ED visits or hospital admission. Gastrointestinal, respiratory, falls and pain diagnoses may be important areas of focus.

**Keywords:** assisted living, seniors, emergency visit

#### P084

##### **Waiting makes me sick: is it time for formal triage in primary care?**

J. MacKay, MD, P.R. Atkinson, MD, M. Howlett, MD, E. Palmer, MD, J. Fraser, BN, E. Vaillancourt; Dalhousie University, Integrated Family/Emergency Residency Program, Saint John, NB

**Introduction:** Patient morbidity and mortality are influenced by delay in access to care and lack of continuity of care. Patients frequently present to the emergency department (ED) for care despite being registered with a primary care (PC) provider. Advanced access is an open scheduling system promoted by the College of Family Physicians of Canada that triages primary care (PC) patients to be seen within 24 hours, reducing care delay. We wished to determine the prevalence of formal triage systems in PC appointment allocation. **Methods:** We performed linked cross sectional surveys to quantify the number of ambulatory patients presenting to a tertiary urban ED (with an annual census of 56,000 visits) who felt unable to access primary care. PC practices were also surveyed to assess use of formal triage methods and measure access using the metric of time to third next available appointment. Descriptive statistics were calculated. **Results:** In the patient survey, 381 of 580 patients consented to participate. Of those, 324 patients reported reasons for their ED visit. Perception that wait time for PC was "too long" was reported in 73/324 (23%); 86% reported wait times of greater than 48 hours. The PC practice response rate was 63.8% (46/72). The mean time to third next available appointment was 7.7 (95% CI 4.9-10.5) days (median 5 days, range 0-50 days). No PC practice reported utilizing a formal triage system when booking appointments. **Conclusion:** No primary care practices in the surveyed region used a formal triage system to allocate appointments, despite a range of wait times that extended up to 50 days. The safety of primary care appointment allocation may be improved with introduction of a formal triage system, especially if overall wait times cannot be reduced.

**Keywords:** triage, primary care, advanced access

#### P085

##### **A low-cost solution to high-risk problem: enhancing communication of emergency physician x-ray interpretations to reading radiologist**

D.J. MacKinnon, MD, M. McGowan, MHK, T. Dowdell, MD, G. Bandiera, MD, Med; St. Michael's Hospital, Toronto, ON

**Introduction:** There was a recognized lack of available system for Emergency Physicians (EPs) to communicate their x-ray interpretations to the reading Radiologist; this resulted in unnecessary flagging of cases with significant findings already seen by the EP or the possibility of

incorrectly assuming a finding was seen by the EP. Our aim was to develop an IT-based system that permitted Radiologists to view EPs documented x-ray interpretations real-time. Based on engagement with both groups, it was essential that the system be user friendly and not add significantly to an already busy workload. **Methods:** An online reporting system was introduced in 2011, but with complaints that interpretations were not readily accessible, nor automatic. A revised system was launched in 2014 with 2 improvements: i) EP entered interpretation onto “sticky note” in PACs directly; and ii) EP interpretation “popped up” when a film was opened by Radiologist. **Results:** Both systems allowed data collection of the percentage of events EPs entered an interpretation. Prior to 2011, 0% of films had EP interpretations available to Radiologist, 33% with initial, and 53% with PACS. The revised system has enabled EPs to enter their x-ray interpretation which has resulted in improvement both *subjectively*, based on regular feedback from both EPs and Radiologists, and *objectively*. **Conclusion:** From this and other quality improvement initiatives, we have learned the importance of engaging frontline practitioners in process changes, specifically the impact on workflow. Also, utilizing existing IT systems and resources can result in positive change with minimal costs.

**Keywords:** communication, x-ray, quality

#### P086

##### **Accuracy of the Ottawa Ankle Rules when applied by allied health providers in a pediatric emergency department**

J. MacLellan, MD, T. Smith, BSc, J. Baserman, MD, S. Dowling, MD; University of Calgary, Calgary, AB

**Introduction:** The Ottawa Ankle Rules (OAR) are a clinical decision tool used to minimize unnecessary radiographs in ankle and foot injuries. The OAR has been shown to be a reliable rule to exclude fractures in children over 5 years of age. However, there is limited data to support its use by other health care workers in children. Our objective was to determine the sensitivity and specificity of the OAR, to detect clinically significant fractures, when applied by allied health providers (AHPs). **Methods:** Children aged 5 to 17 years presenting with an acute ankle or foot injury were enrolled. Patients assessed by a physician prior to an AHP, presenting for reassessment or > 24 hours after the injury, having open, penetrating or neurovascular injury, or multiple injuries were excluded. Patients with metabolic bone disease, a previous x-ray, or the inability to communicate or ambulate before the injury were also excluded. Baseline data on x-ray use was collected in a convenience sample of 100 patients. AHPs then completed an OAR learning module. Then in phase 2, AHPs applied the OAR to a convenience sample of 186 patients. Both AHPs and physicians performed inter-observer assessments. **Results:** When AHP's applied the ankle portion of the OAR, the sensitivity was 88% (95% CI 46.7-99.3) and the specificity was 32.5% (95% CI 24.5-41.6) for clinically significant fractures. When AHP's applied the foot portion of the OAR, the sensitivity was 87.5% (95% CI 46.7-99.3) and the specificity was 15.6% (95% CI 7.0-30.1) for clinically significant fractures. In total, 2 clinically significant fractures (1 foot fracture and 1 ankle fracture) were missed by AHP's. Inter-observer agreement was  $\kappa = 0.24$  for the ankle rule and  $\kappa = 0.32$  for the foot rule. The missed ankle fracture had a positive OAR when performed by a physician as an inter-observer assessment. The missed foot fracture was a distal metatarsal fracture that was outside of the “foot zone” as defined by the OAR. **Conclusion:** The sensitivity of the OAR when applied by AHP's was very good. Both clinically significant fractures that were missed by AHP's would likely have been picked up by a physician assessment. More training and practice using the OAR

would likely improve AHP's inter-observer reliability. Our data suggest the OAR may be a useful tool for AHP's to apply as a screening tool prior to physician assessment.

**Keywords:** Ottawa Ankle Rule, radiography, allied health providers

#### P087

##### **Overview of reviews: relevant treatment modalities for management of low back pain in the emergency department**

B. Burgesson, MD, J. Hayden, PhD, K. Magee, MD; Dalhousie Medical School, Halifax, NS

**Introduction:** Low Back Pain (LBP) remains a condition with relatively high incidence and prevalence. It affects 70-85% of people at some point in their lives and causes significant disability. LBP management may be best suited to a primary care setting, yet it is one of the most common reasons for presentation to Emergency Departments (ED). Nationally representative data from the United States found that LBP related disorders are a frequent cause of ED visits, accounting for 2.7 million visits to US EDs annually. There are numerous treatment modalities for LBP, however the task is identifying those that have relevance in an ED setting. Although there is extensive research available on management of LBP in primary care settings, treatment outcomes differ from that in the ED setting. This makes management of LBP a challenge for ED physicians. Few studies and no systematic reviews focus on treatment of LBP in the ED setting. **Methods:** The objective of our study is to compare effectiveness of treatment modalities relevant for management of LBP in the ED setting. We conducted an Overview of Systematic Reviews following robust methods advocated by Cochrane. We included systematic reviews of randomized controlled trials (RCTs). A medical librarian assisted in completing of an extensive search of the Cochrane Library, PubMed, and EMBASE. We used transparent criteria to select relevant reviews and assess interventions for ED relevance. We collected key data points from the included reviews including pain and functional limitation outcomes. Evidence will be synthesized for important outcome measures following the approach of Jones et al (2012). **Results:** We screened 4740 citations and identified 346 likely relevant systematic reviews. Comparative effectiveness review synthesis will be completed before the conference. We will report effectiveness of each of the included interventions and as well as make head to head comparisons of said relevant interventions. **Conclusion:** Currently most LBP patients presenting to the ED are inundated with a variety of potential treatment modalities, all alleging efficacy in LBP management. Physicians may use the evidence from this synthesis, and related knowledge translation tools, to guide decisions in effectively treating patients presenting to the ED with LBP.

**Keywords:** low back pain, emergency department, treatment effectiveness

#### P088

##### **British Columbia emergency practitioner workforce and training survey**

J. Marsden, MD, C. Archibald, J. Christenson, MD; University of British Columbia, Vancouver, BC

**Introduction:** Understanding physician human resources in British Columbia's (BC) emergency settings is essential to plan for training, recruitment and professional development programs. In 2014 we conducted an online and phone survey to the site leads for the 95 Emergency Departments (ED) attached to hospitals in BC. **Methods:** A