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Potential benefits of incentive spirometry following a rib fracture: a propensity-score analysis.

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Introduction: Incentive spirometry (IS) is commonly used in post-operative patients for respiratory recovery. Literature suggest that it can possibly improve lung function and reduce post-operative pulmonary complication. There is no recommendation about the use of IS in the emergency department (ED). However, rib fractures, a common complaint, increase the risk of pulmonary complications. There is heterogeneous ED practice for the management of rib fractures. The objective of this study is to assess the benefits of IS to reduce potential delayed complications in ED discharged patients with confirmed rib fracture. **Methods:** This is a prospective observational planned sub-study in 4 canadians ED between November 2006 and May 2012. Non-admitted patients over 16 y.o. with a main complaint of minor thoracic injury and at least one suspected/confirmed rib fracture on radiographs were included. Discharge recommendations of IS use was left to attending physician. IS training was done by ED nurses. Main outcomes were pneumonia, atelectasis and hemothorax within 14 days. Analyses were made with propensity score matching. **Results:** 450 patients with at least one rib fracture were included. Of these, 182 (40%) received IS with a mean age of 57.0 y.o. Patients with IS seem to have worse condition. 61 (33.5%) had 3 fractures comparatively to 56 (20.9) for patient without IS. Although, the groups were similar for mean age, sex and mechanism of injury. There were in total 76 cases of delayed hemothorax (16.9%), 69 cases of atelectasis (15.3%) and five cases of pneumonia (1.1%). The use of IS was not protector for delayed hemothorax (RR = 0.80, 95% CI [0.45 1.36]) and nor for atelectasis or pneumonia (RR = 0.74, 95% CI [0.45 1.36]) **Conclusion:** Our results suggest that unsupervised and broad incentive spirometry use does not seem to add a protective effect against the development of delayed pulmonary complications after a rib fracture. Further study should be made to assess the usefulness of IS in specific injured population in the ED.

Keywords: intensive spirometry, rib fracture, pulmonary complication

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Emergency department visits for upper gastrointestinal bleeding: a population-based Alberta cohort

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Introduction: Upper gastrointestinal bleeding (UGIB) is a common medical condition presenting to emergency departments (ED) and associated with substantial morbidity, mortality, and healthcare expenditures. Our aim was to evaluate the incidence of patients presenting to ED with UGIB in a large population-based surveillance cohort. **Methods:** The National Ambulatory Care Reporting System (NACRS) was used to identify all presentations to emergency departments for UGIB in Alberta from fiscal year 2010 to 2015 (n = 56,519) using the International Classification of Diseases Codes (ICD-10) in any diagnostic position. Baseline characteristics and UGIB incidence were calculated using descriptive statistics. Joinpoint regression models were used to calculate the average annual percent change (AAPC) with 95% confidence intervals (CI). **Results:** The median age of 56519 UGIB presentations was 56 years (interquartile range: 41 to 74 years), 56% were male, and 245% had at least one comorbidity. At time of disposition from the ED, 48.3% were admitted to or transferred to another hospital, 51.4% discharged, and 0.3% died in the emergency department. Further, 10.8% underwent upper endoscopy during their admission to the emergency department. The annual incidence of UGIB were 230.6 (2010), 232.8 (2011), 241.0 (2012), 242.2 (2013), 244.6 (2014), and 242.2 (2015) per 100,000 person-years. Between 2010 and 2015 the incidence of UGIB presenting to ED significantly increased overtime (AAPC = 1.1; 95% CI: 0.3 to 2.0). **Conclusion:** UGIB is a common presentation to emergency departments and has been increasing overtime. Future studies are necessary to evaluate the underlying cause of UGIB and to determine its burden to Albertas healthcare system.

Keywords: epidemiology, upper gastrointestinal bleeding

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Procedural sedation in Canadian emergency departments a national survey of pharmacological agent selection and practice variation

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Introduction: Emergency department (ED) physicians strive to provide analgesia, amnesia and sedation for patients when performing painful procedures through the use of procedural sedation (PS). Examination of the literature suggests that the application of PS appears to be variable with institutional influences and clinician disagreement on pharmacology, airway management, and monitoring. The primary goal of this research project was to describe the variability of practice with respect to pharmacologic choices and clinical applications of PS among Canadian ED physicians. **Methods:** An electronic survey was distributed through the Canadian Association of Emergency Physicians (CAEP). Practicing physician members of CAEP were invited to complete the survey. The 20 question survey encompassed various aspects of PS including physician choices regarding PS indications and pharmacology. The primary outcome was the quantification of practice variability among ED physicians with respect to the above listed aspects of PS. The data was presented with simple descriptive statistics. **Results:** To date, 278 ED physicians responded to our survey (response rate 20.3%). Respondents were primarily academic hospital (53.2%) or community hospital based (38.2%). With emergency medicine training as: CCFP-EM (55.2%), FRCPC (30.1%), and CCFP (9.0%). There was relative agreement on the following interventions requiring PS: 98.4% applied PS for electrical cardioversion and 98.1% for brief (<10 mins) orthopedic manipulations. However, only 36.3% utilized PS for burn debridement in the ED. PS was utilized less frequently (78.1%) for prolonged (>10mins) orthopedic manipulations than brief manipulations. For all procedures aggregated, in hemodynamically stable patients with an American Society of Anesthesiology (ASA) score of 1, ED physicians utilized propofol 76.3% of the time. Additional agents were utilized at the following rates: fentanyl-propofol (7.6%), ketamine (7.6%), and fentanyl (4%). This inclination towards propofol alone appears to be consistent across modality of ER training, type of ER setting (rural vs. academic), and volume of PS performed. **Conclusion:** This study demonstrates that Canadian ED physicians have a clear preference for propofol as a first line pharmacologic agent when administering PS in hemodynamically stable, ASA1 patients. Conversely, there appears to be more variation amongst ED physicians with respect to second line pharmaceutical choices for PS.

Keywords: procedural sedation, pharmacology, survey

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