were specifically designed to assess for neuroleptic side-effects. Four studies were at high risk of bias. In primary analysis, PAD had no effect on the incidence of extra-pyramidal symptoms (7 studies, n = 1393 patients, RR 0.70 [0.40-1.22]), akathisia (5 studies, n = 1094 patients, RR 0.81 [0.36-1.82]) and sedation (5 studies; n = 1079, RR 1,48 [0.90-2.42]). Higher dosage of diphenhydramine was not associated with a greater reduction of extra-pyramidal side-effects. In a sensitivity analysis excluding an outlier study (n = 120, RR 6.63 [1.55-28,35]), PAD was associated with a significant decrease in extra-pyramidal side-effects (6 studies, n = 1273, RR 0.56 [0,38-0.82]), but not with any of the secondary outcome measures. **Conclusion:** Conclusion: When excluding an outlier study, PAD was associated with a significant reduction of extra-pyramidal side-effects. However, PAD did not significantly influence the incidence of akathisia. Overall quality of evidence is low. Further studies are warranted. PAD represents an interesting treatment option against neuroleptic side-effects, but its widespread usage whitout strong evidence to support it raises concerns.
Keywords: neuroleptic side-effects, diphenhydramine, systematic review

PL04

Effectiveness of hospital avoidance interventions among elderly patients: a systematic review

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Introduction: Overuse of acute care services, particularly emergency department (ED) use, is an important topic for healthcare providers and policy makers within Canada and abroad. Prior work has shown that frail elderly patients with complex medical needs and limited personal and social resources are heavy users of ED services and are often admitted when they present to the ED. Updated information on the most effective strategies to avert ED presentation and hospital admission focused specifically on elderly patients is needed. **Methods:** This systematic review addressed the question: what interventions have demonstrated effectiveness in decreasing ED use and hospital admissions in elderly patients? Comprehensive literature searches were conducted in databases including Ovid Medline, EMBASE, CINAHL, and the Cochrane Central Register of Controlled Trials with no language or date restrictions. Citations were limited to interventional studies. Grey literature and reference list searches, as well as communication with experts in the field were performed. Consensus or a third reviewer resolved any disagreements. Original research regarding interventions conducted in populations 65 years or older with acute illness, either living in community or facility-living were included. Primary outcomes were ED visits and hospital admissions. Secondary outcomes included: mortality, cost, and patient-reported outcomes such as health-related quality of life and functional status. **Results:** Forty-three relevant studies were identified including 22 randomized controlled trials (RCT), 2 cluster-RCT, 2 trials with non-random allocation, 4 before-after studies, 6 quasi-experimental studies, and 7 cohort studies. Intervention settings included: home visits (22), long-term care (7), outpatient or primary care clinics (8), and ED (3) or inpatient (3). Data characterization revealed that home-based, outpatient and/or primary care-based strategies reduced ED visits and hospitalizations, particularly those which included comprehensive geriatric assessments, home visits or regular face-to-face contact and interdisciplinary teams. Hospital-based models generally showed no difference in ED or inpatient service utilization. There was, however, considerable variability across individual studies with respect to reporting of outcomes, statistical analyses performed, and overall risk of bias. **Conclusion:** Various interventional strategies have been studied to avert ED presentation and hospital admission for frail elderly patients. More rigorous methodology and standardization of outcome measures is needed to quantitatively assess the effects of these programs.
Keywords: elderly, emergency department avoidance, systematic review

Oral Presentations

LO01

Analysis of bystander CPR quality during out-of-hospital cardiac arrest using data derived from automated external defibrillators

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Introduction: Out-of-hospital cardiac arrest (OHCA) is associated with high mortality, and CPR quality is one of the few modifiable factors associated with improved outcomes. Particularly, bystander CPR has been shown to improve survival and neurological outcomes in OHCA. However, the quality of CPR performed by bystanders in OHCA is unknown. We evaluated bystander CPR quality during OHCA, utilizing data stored within Automated External Defibrillators (AEDs), and matched with cases enrolled in the Resuscitation Outcomes Consortium (ROC) database. **Methods:** This cohort study included adult OHCA cases from the Ottawa ROC site between 2011-2016, which were of presumed cardiac etiology, not witnessed by EMS, and where an AED was utilized by a bystander with >1 minute of CPR process data available. AED data from Ottawa Paramedic Services was matched to each case identified by the ROC database. AED data was analyzed using manufacturer software to determine overall measures of bystander CPR quality, changes in bystander CPR quality over time, and bystander adherence to existing 2010 Resuscitation Guidelines. **Results:** 100 cases met all inclusion criteria. 75.0% of patients were male, with a mean age of 62.3 years. 58.0% of arrests occurred in the home setting, and 24.0% were witnessed arrests. Initial rhythm was ventricular fibrillation/ventricular tachycardia in 36.0% of cases. Overall survival rate was 42.0%, with a modified Rankin Score of 3.7 (95% CI: 2.9-4.5). Bystanders demonstrated high-quality CPR over the course of resuscitation, with a chest compression fraction (CCF) of 75.9% (73.6-78.1), a compression depth of 5.26 cm (5.03-5.49), and a compression rate of 111.2/min (107.7-114.7). Mean peri-shock pause was 26.8 seconds (24.6-29.1). Adherence rates to 2010 Resuscitation Guidelines for compression rate and depth were 66.0% (60.9-71.1) and 54.9% (48.6-61.3), respectively. CPR quality was lowest in the first minute of resuscitation, during which rhythm analysis took place (mean 40.5 sec). In cases involving a shockable rhythm, overall latency from initiation of AED to shock delivery was 59.2 sec (45.5-72.8). **Conclusion:** We found that bystanders perform high-quality CPR, with strong adherence rates to existing Resuscitation Guidelines. Our findings provide evidence of the quality of bystander CPR performed during OHCA.
Keywords: cardiac arrest, cardiopulmonary resuscitation, bystander cardiopulmonary resuscitation

LO02

Characteristics and predictors of pediatric emergency department use in Manitoba: a population based study

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Introduction: Within Manitoba, little is known about the current state of pediatric emergency department (ED) use or the state of provincial