determinants include homecare dependency, EMS arrival, hypoxia or dyspnea, IV bolus and weakness or altered mentation. Age, sex, acuity, vital signs and laboratory findings were weak predictors.
Keywords: emergency, geriatric, outcomes

LO17

Barriers and enablers that influence guideline-based care of geriatric falls patients presenting to the emergency department

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Introduction: Geriatric patients commonly present to the emergency department (ED) after a fall. Unfortunately, recent evidence suggests that ED physicians are poorly adherent to published ED-specific geriatric falls guidelines. This study applied a theoretical domains framework (TDF)-driven approach to systematically investigate barriers and enablers in the provision of guideline-based care to older patients presenting to the ED with a fall. **Methods**: From June to September 2017, semi-structured interviews of staff ED physicians practicing in Ontario, Canada were conducted and analyzed. An interview guide based on the TDF was used to capture 14 domains that may influence provision of guideline-based care. Interview transcripts were analyzed, and specific beliefs were generated by grouping similar responses. Relevant domains were identified based on frequencies of beliefs, existence of conflicting beliefs, and evidence of strong beliefs that would influence provision of guideline-based care. **Results**: Eleven interviews were conducted with practicing ED physicians. Thirty specific belief statements across 13 different TDF domains (all except Optimism) were identified as relevant. Overall, Ontario ED physicians are supportive of providing guideline-based care and believe it would lead to better outcomes for geriatric falls patients. Important barriers include knowledge, skills, time and workload constraints, and inconsistent allied health support. **Conclusion**: This study identified important barriers and enablers to provision of guideline-based care in geriatric ED falls patients. These results will help guide implementation of guidelines nationally and internationally, with a focus on improved knowledge dissemination, implementation of training interventions, and improvements in allied health coverage and supports.
Keywords: falls, geriatrics, guidelines

LO18

The effectiveness of parenteral agents to reduce relapse in patients with acute migraine in emergency settings: a systematic review

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Introduction: Although a variety of parenteral agents exist for the treatment of acute migraine, relapse after an emergency department (ED) visit is still a common occurrence. The objective of this systematic review was to update a previous review examining the effectiveness of parenteral agents for the treatment of acute migraine in the ED or equivalent acute care setting; our review focused on those studies aiming a reduction in relapse after an ED visit. **Methods**: A comprehensive search of 10 electronic databases and grey literature was conducted to identify comparative studies to supplement the previous systematic review. Two independent reviewers completed study selection, quality assessment, and data extraction. Any discrepancies were resolved by third party adjudication. Relative risks (RR) with 95% confidence intervals (CIs) were calculated using a random effects model and heterogeneity (I2) was reported. **Results**: Titles and abstracts of 5039 unique studies were reviewed, of which, 51 studies were included. Sixty-four studies from the original review were included, resulting in a total of 115 included studies. Relapse was reported in 44 (38%) included studies and occurred commonly in patients receiving placebo or no interventions (median = 39%; IQR: 14%, 47%). Overall, no differences in headache relapse were found between patients receiving sumatriptan or placebo (RR = 1.09; 95% CI: 0.55, 2.17; I2 = 93%; n = 8). Conversely, patients receiving neuroleptic agents experienced fewer relapses compared to placebo (RR = 0.27; 95% CI: 0.12, 0.58; I2 = 0%; n = 3); however, patients receiving neuroleptics reported an increase in adverse events (RR = 1.87; 95% CI: 1.17, 3.00; I2 = 0%; n = 3). Compared to placebo, patients receiving dexamethasone were less likely to experience a headache recurrence (RR = 0.71; 95% CI: 0.53, 0.95; I2 = 60%, n = 9); however, no differences were found in reported adverse events (RR = 1.09; 95% CI: 0.81, 1.47; I2 = 0%; n = 3). **Conclusion**: Relapse is a common occurrence for patients with migraine headaches. This review found patients receiving neuroleptics or dexamethasone experienced fewer headache recurrences. Conversely, triptan agents appear to have minimal effect on reducing the risk for headache recurrence following discharge from an acute care setting. Limited available data on adverse events is an important limitation to inform decision-making. Guidelines should be revised to reflect these results.
Keywords: migraine, parenteral agents, relapse

LO19

Should emergency physicians bother offering triptans to patients with acute migraine? A systematic review of parenteral agents

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Introduction: Acute migraine headaches are common causes of presentation to the emergency department (ED). There is great variability in the efficacy of the available parenteral agents to manage pain, though triptans are among the recommended treatments. The objective of this systematic review was to update a previous review examining the effectiveness of parenteral agents for the treatment of acute migraine in the ED or equivalent acute care setting; our review examined pain management in emergency settings and assessed the effectiveness of triptan agents. **Methods**: A comprehensive search of 10 electronic databases and grey literature was conducted to supplement the previous systematic review. Two independent reviewers completed study selection, quality assessment, and data extraction. Any discrepancies were resolved by third party adjudication. Pain scale scores were analyzed using standardized mean difference (SMD) with 95% confidence intervals (CIs) calculated using a random effects model; heterogeneity (I2) was reported. **Results**: Titles and abstracts of 5039 unique studies were reviewed, of which, 51 studies were included. Sixty-four studies from the original review were included, resulting in a total of 115 included studies. Pain was measured within the ED or equivalent acute care setting using a variety of pain scales, most commonly the 0-10 cm or 100 mm visual analog scale. Four studies compared pain scores between patients receiving sumatriptan vs. other agents, of which, patients receiving sumatriptan reported higher pain scale scores (SMD = 0.53; 95% CI: 0.04, 1.02; I2 = 80%). In particular, patients receiving sumatriptan reported higher

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pain scale scores than patients receiving metoclopramide (SMD = 0.68; 95% CI: 0.31, 1.04; n = 1) or ketorolac (SMD = 1.39; 95% CI: 0.56, 2.21; n = 1). Overall, studies comparing anti-inflammatory agents (i.e., ketorolac or dexketoprofen) to other agents reported improved pain scale scores among patients receiving anti-inflammatory agents (SMD = -0.38; 95% CI: -0.73, -0.03; I2 = 66%; n = 5). **Conclusion**: Limited evidence suggests that patients treated with metoclopramide or anti-inflammatory agents experience greater pain reduction compared to patients treated with sumatriptan. This review will conduct a network analysis of parenteral agents to examine the comparative effectiveness of parenteral agents to manage pain among patients with acute migraine. Further analysis will also consider the balance between efficacy and adverse events.

Keywords: migraine, pain, parenteral agents

LO20

Naloxone dosing for suspected opioid and ultra-potent opioid overdoses: A systematic review

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Introduction: Optimizing naloxone dosing in the context of increasing fentanyl and ultra-potent opioid (UPO) prevalence is an important consideration for emergency health care providers. The goal of this systematic review was to evaluate the association between initial and cumulative naloxone doses on effective reversal and adverse events in undifferentiated and fentanyl/UPO overdoses. **Methods**: We searched Embase, MEDLINE, Cochrane Central Register of Controlled Trials, DARE, CINAHL, Science Citation Index, reference lists, toxicology websites, and conference proceedings from July to October 2018 and back to 1972. Our search included pertinent indexing terms for UPOs. We included interventional and observational studies reporting on naloxone administration for opioid toxicity reversal in people ≥12 years old. Additionally, we accessed non-traditional evidence sources (case reports and series) given this rapidly changing field. We conducted inclusion screens, data extraction and quality assessments in duplicate. We summarized study characteristics and where reported, analyzed number of patients with clinical response. Response was defined as not receiving further naloxone doses and remaining alive. **Results**: We included 174 studies (108 case reports and series, 55 observational, 9 interventional) with 26,660 subjects (median age 35.1; 74.2% male). We observed lower response among patients exposed to fentanyl/UPO versus heroin for initial naloxone doses ≤0.4mg (56.8% versus 80.2%) and > 0.4mg (27.0% versus 82.1%). Mean cumulative doses were higher for fentanyl/UPO (2.10 mg, SD 1.80 mg) versus heroin (1.48 mg, SD 1.68 mg) overdoses. In North American studies the median cumulative dose used was higher for fentanyl/UPO versus heroin overdoses. A dose-response curve for fentanyl/UPO studies showed marked variability in doses among responders, indicating heterogeneity. Adverse events reporting was inconsistent; 10% of subjects experienced withdrawal based on studies in which they were reported. **Conclusion**: This is the first systematic review to summarize proportion of patients with clinical response by naloxone dose provided. While variable reporting, study quality, heterogeneity, and our outcome definitions limit the conclusions we can draw, it appears that higher initial doses and in some cases, higher cumulative naloxone doses were used and may be necessary to reverse toxicity due to fentanyl/UPO compared to other opioids. High-quality prospective studies assessing effectiveness and safety are needed.

Keywords: fentanyl, naloxone, opioid-related disorders

LO21

One-year mortality of patients treated in the emergency department for an opioid overdose: a single-centre retrospective cohort study

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Introduction: Opioid overdoses (OODs) have become a public health emergency, yet little is known about their long-term outcomes following an OD. We determined the one-year all-cause mortality and associated risk factors in a cohort of patients treated in an urban emergency department (ED) for an OOD. **Methods**: We reviewed records of all patients who visited St. Paul's Hospital ED from January 2013 to August 2017 and had a discharge diagnosis of OOD or had received naloxone in the ED as per pharmacy records. Patients with a suspected OOD were identified on structured chart review. A patient's first visit for an OOD during the study period was used as the index visit, with subsequent visits excluded. The primary outcome was mortality during the year after the index visit. Mortality was assessed by linking patient electronic medical records with Vital Statistics data. Deaths that occurred in the ED on the index visit were excluded. Patients admitted to hospital following ED treatment were included in this study. We described patient characteristics, calculated mortality rates, and used Cox regression to identify risk factors. **Results**: A total of 2239 patients visited the ED for an OOD during the study period, with a median patient age of 37 years (IQR 29, 49). Males comprised 73% of patients, while 28% had no fixed address, and 21% received take-home naloxone at the index visit. In total, 137 patients (6.1%) died within 1 year of the index visit. Eighty-one deaths (3.6%) occurred within 6 months, including 24 deaths (1.1%) that occurred within 1 month. The highest mortality rate occurred in 2017, with 8.0% of patients entering the cohort that year dying within 1 year. Gender did not significantly impact mortality risk. A Cox regression analysis controlled for gender, housing status, and whether take-home naloxone was provided at the index visit indicated that advancing age (adjusted hazards ratio [AHR] 1.03; 95%CI: 1.01-1.04 for each year increase in age) and the index visit calendar year (AHR 1.30; 95%CI: 1.10-1.54 for each yearly increase in the study period) were significant factors for mortality within 1 year. **Conclusion**: The mortality rate following an opioid OD treated in the ED is high, with over 6% of patients in our study dying within 1 year. The rising mortality risk with increasing calendar year may reflect the growing harms of fentanyl-related OODs. Patients visiting the ED for an OOD should be considered high risk and offered preventative treatment and referrals prior to discharge.

Keywords: mortality, opioid, overdose

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