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