LO017

Review of prehospital naloxone use in Ontario: Is a mandatory patch point necessary?

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Introduction: Recent years have brought an epidemic of opioid abuse to Canada. At present, in Ontario, Naloxone may not be administered by any paramedic without the direct online medical approval of a Base Hospital Physician (BHP). The objective of this study was to review the use of Naloxone by Emergency Medical Service (EMS) personnel, under the existing Advanced Life Support Patient Care Standards (ALS-PCS) medical directive for opioid toxicity, for safety and potential complications that may occur with removal of the mandatory patch point. **Methods:** This study was a retrospective ambulance call report review of consecutive Naloxone requests placed to a BHP of the Regional Paramedic Program of Eastern Ontario (RPPEO) between Oct 1st, 2013 and Oct 31st, 2015. The RPPEO consists of 10 prehospital services, both urban and rural jurisdictions, and has a mix of advance care and primary care paramedics. All ambulance call reports are electronically stored at the secured RPPEO data warehouse. Data was extracted using a standardized data collection tool. All ambulance call reports were reviewed by 2 independent authors (VC, NC). Compliance with the existing medical directive for opioid toxicity was determined. We calculated the frequency of denied Naloxone requests and the rationale for each patch refusal was recorded. We also categorized all adverse events associated with Naloxone administration. **Results:** From 244 patches, 215 patients were administered Naloxone. Only 7.8% (19/215) of requests for Naloxone were refused; 78.9% (15/19) did not meet existing inclusion criteria for Naloxone administration in the ALS-PCS medical directive for opioid toxicity because the patient's respiration rate was above 12/min. Of the 215 patients who were administered Naloxone, adverse events were extremely uncommon: 5 (2.3%) became violent or verbally abusive, 1 (0.5%) was transiently hypertensive and 4 (1.9%) vomited. **Conclusion:** Requests for Naloxone to a BHP are common and yet are seldom declined. The use of prehospital Naloxone is associated with few adverse events. These results demonstrate that it would be safe to remove online medical direction for Naloxone from the ALS-PCS medical directive for opioid toxicity if combined with updated paramedic education.

Keywords: emergency medical services (EMS), xaloxone, opioid

LO018

The utility of ECG characteristics as prognostic markers in pulseless electrical activity arrests: a retrospective observational cohort study

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Introduction: Compared to pseudo-pulseless electrical activity (PEA with myocardial contractions present), true PEA is hypothesized to carry a poorer prognosis and to show bradycardia and a wide QRS complex on ECG. Our objective was to study the predictive potential of ECG characteristics on survival to hospital discharge (SHD) for out-of-hospital cardiac arrest (OHCA) patients with PEA initial rhythm. **Methods:** We studied a cohort of OHCA patients prospectively enrolled between Sept. 2007 and Oct. 2009 at the Ottawa/OPALS site (13 cities, 7 EMS, and 6 Fire services) of the ROC PRIMED study. We included adult (≥ 18) non-traumatic OHCA with PEA initial rhythm where resuscitation was attempted, and for which ECG characteristics were available. We measured mean heart rate (HR), mean QRS interval, and presence of P waves (each with kappa agreement) using the first six QRS complex available. We report patient and system characteristics using descriptive statistics and determined the impact of ECG characteristics (HR, QRS width, P waves) on return of spontaneous circulation (ROSC) and SHD using multivariate regression analysis. **Results:** Demographics of 332 included cases were: mean age 71.7; male 58.4%; home residence 76.5%; bystander witnessed 56.3%; bystander CPR 28.5%; interval from dispatch to paramedic arrival 6min:24sec; ROSC at ED arrival 26.5%; SHD 5.4%. Survivors had higher mean HR (66.1 vs. 52.0 bpm, $p = 0.83$; kappa = 0.69) and shorter mean QRS intervals (108.3 vs. 129.6 ms, $p = 0.01$; kappa = 0.74) compared to non-survivors. Presence of p waves could not reliably be ascertained (kappa = 0.35). Predictors of ROSC were: ALS paramedic on scene (AdjOR = 8.90, 95%CI 1.11-71.41; $p = 0.04$), successful intubation (AdjOR = 3.35, 1.75-6.39; $p = 0.0002$), and use of atropine (AdjOR = 0.27, 0.14 - 0.50; $p < 0.0001$). Predictors of survival were: location of arrest (AdjOR = 1.49, 1.11 - 1.99; $p = 0.007$), and use of atropine (AdjOR = 0.06, 0.02-0.22; $p < 0.0001$). Despite various cutoff explorations, ECG characteristics were not predictive of ROSC or survival in multivariate analyses. Survivors had HR as low as 6 bpm and QRS as wide as 357 ms. **Conclusion:** Early ECG characteristics could not predict ROSC or SHD in a population of OHCA PEA victims, and should not be used to terminate resuscitation efforts. Atropine administration was consistently associated with decreased likelihood of ROSC and survival.

Keywords: cardiac arrest, electrocardiogram (ECG), emergency medical services (EMS)

LO019

The prevalence and characteristics of non-transported EMS patients in Nova Scotia

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Introduction: An undefined yet potentially significant risk for Emergency Medical Services (EMS) systems are patients who access 911 with an ambulance response who are not transported to hospital (non-transport). Our objective was to determine the prevalence and associated characteristics of non-transport and potentially clinically adverse non-transports in Nova Scotia. **Methods:** We conducted a secondary analysis of pooled cross-sectional, population-based administrative data in a provincial EMS system that provides care to 920,000 residents. Electronic patient care record (ePCR) data was retrospectively analyzed for one calendar year (2014). The dependent variables were non-transport status and potentially adverse non-transport status. Potentially adverse non-transports were defined as a repeat call within 48 hours for a related complaint with the outcome of transport or death. Independent variables include patient characteristics, (age, sex, vitals and paramedic clinical impression), operational (crew type and response code) and environmental (time, date, and location). For both objectives we determined the prevalence of the outcome of interest, and associated characteristics. **Results:** There were 74,471 EMS responses between January to December 2014, 18.9% (n = 14, 094/74,471) resulted in a non-transport. The characteristics most associated with non-transport are: age, paramedic clinical impressions, number of co-morbidities, response mode, and incident location type. As age decreased, the likelihood of non-transport increased. Younger non-transported patients (0-15 years old) (OR 2.2, 99.9% CI 1.9-2.5) are more likely to have non-transport. Relative to other paramedic

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