

Naloxone Administration for Suspected Opioid Overdose in the Pre-Hospital and Emergency Department Settings: A Retrospective Study

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Background: Training and access to naloxone rescue kits to law enforcement officers and emergency medical technicians (EMTs) is promoted in an effort to reduce opioid-related deaths by increasing the number of first responders trained to provide pre-hospital intervention. In this study, we compare the characteristics and clinical outcomes of cases of naloxone administration in the pre-hospital and ED settings.

Methods: This is a retrospective review of patients treated with naloxone for suspected opioid overdose, in either the pre-hospital or ED setting, at a single center over a 4 year period. A pre-hospital case was defined as a patient receiving an initial naloxone dose in the pre-hospital setting by emergency personnel. An ED case was defined as a patient receiving an initial naloxone dose while in the ED. Comparisons were analyzed with independent t-tests for continuous data and chi-squared tests for categorical data.

Results: There was a total of 243 cases of naloxone administration for suspected opioid overdose (173 male, 70 female) with 174 pre-hospital cases and 69 ED cases. Overdose-related morbidity was identified in 51.4% of total cases, with no significant difference between the two groups. During the period of hospitalization, two patients died in the ED group and no patients died in the pre-hospital group ($p=0.024$). The relative risk for in-hospital death was 0.08 in pre-hospital cases compared to ED cases, which is not statistically significant (95% CI=0.004-1.645, $p=0.102$). The cause of death was brain death in one patient, and metastatic colon cancer causing a small bowel obstruction in the other patient.

Discussion: Suspected opioid overdoses initially treated with naloxone in the pre-hospital setting were associated with less in-hospital mortality compared to the ED setting. Furthermore, abnormal physical exam findings and overdose-related morbidities were either less common or no different among pre-hospital cases.

Conclusion: These findings show there is no significant observed adverse effects related to naloxone administration in the pre-hospital setting and may support expansion of naloxone access to emergency personnel to promote early interventions.