Title: Characterization of Naloxone Administration in Pediatric Patients Presenting with Altered Mental Status at an Urban, Tertiary Care Children's Hospital

Introduction: St. Christopher's Hospital for Children (SCHC) in Philadelphia, PA is located in the zip code with the 2022 highest annual incidence of overdose related deaths in the city. Eighty-three percent of these fatalities involved opioids [1]. Opioids represent an important ingestion risk for young children as well. Among children between 1-5 years of age, the number of general ED visits for opioid ingestions tripled between 2004-2011, with an estimated 4,321 ED visits in 2011. [2] Moreover, opioids were the most common substance contributing to pediatric death in a review of 731 poisoning related fatalities between 2005-2018, among children 0-5 years of age. [3] In pediatric patients, naloxone is administered to children presenting with altered mental status (AMS) and toxidrome consistent with opioid ingestion, including respiratory depression and pupillary miosis. Naloxone may also be administered to children presenting with AMS and respiratory depression of unknown etiology to assess for clinical response [4]. We aimed to characterize the frequency of naloxone use in the SCHC Pediatric Emergency Department (SCHC PED).

Methods:

We conducted a retrospective chart review of pediatric patients with AMS who received naloxone in the SCHC PED between March 3, 2021-October 18, 2023. Charts were categorized based on criteria including age; presence of symptoms consistent with opioid toxidrome; clinical response to naloxone; whether the final diagnosis was an opioid ingestion; whether the Child Protection Team was consulted; and whether a report was filed with Child Protective Services (CPS).

Results:

87 patients (0.06-20.99 years; median age 2.45 years [IQR 1.32-13.20]) met inclusion criteria. 47.1% (41/87) had clinical response to naloxone; 30.1% (25/83) had a final diagnosis of opioid ingestion. A final diagnosis of opioid toxidrome was determined based on urine drug screen (UDS) and comprehensive serum or urine drug confirmatory testing that resulted positive for an opioid. A CPS report was filed in 64.3% (56/87) of all cases, and in 80.5% (33/41) of cases where there was clinical response to naloxone. 42.9% (24/56) of patients who had a CPS report filed had a final diagnosis of an opioid ingestion. The positive predictive value of clinical response to naloxone for final diagnosis of an opioid ingestion was 52.63% (95% CI 41.93-63.09%), and negative predictive value was 88.89% (95% CI 78.19-94.70%). [5]

Conclusions:

In most pediatric cases presenting to the SCHC ED with AMS, a CPS report was filed when there was clinical response after administration of naloxone. Our findings suggest that clinical response to naloxone may not reliably predict final diagnosis of an opioid ingestion. Indeed, less than half of the children with CPS reports had a final diagnosis of opioid ingestion. Our study highlights the unique challenges that can arise when findings such as apparent response to an antidote medication may influence our degree of clinical concern for child maltreatment. It is prudent for medical providers to consider these complexities when filing a CPS report after a child has clinical response to naloxone.

References

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