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281. Predictors of severe outcome following opioid overdose in children: a case-control study of a prospective toxicity surveillance registry

Neta Cohen¹, Mathew Mathew², Adrienne Davis³, Jeffrey Brent⁴, Paul Wax⁵, Suzanne Schuh⁶, Stephen B. Freedman⁷, Blake A. Froberg⁸, Evan Schwarz⁹, Joshua Canning³, Laura Tortora³, Christopher Hoyte¹, Andrew Koons¹, Michele M. Burns¹, Joshua McFalls¹, Timothy J. Wiegand¹⁰, Robert G. Hendrickson¹, Bryan Judge¹, Lawrence S. Quang¹, Michael Hodgman¹, James A. Chenoweth¹, Douglas A. Algren¹, Jennifer Carey¹, E. Martin Caravati¹, Peter Akpunonu¹, Ann-Jeannette Geib¹, Steven A. Seifert¹, Ziad Kazzi¹, Rittirak Othong¹, Spencer C. Greene¹, Christopher Holstegeab, Marit S. Tweet¹, David Veerier¹, Anthony Pizon¹, Kim Aldy¹, Sharan L. Camplemana, Shao Li¹ and Yaron Finkelstein¹, On behalf of the ToxIC North American Snakebite Study Group

¹The Hospital for Sick Children; ²University of Toronto; ³Department of Internal Medicine, University of Colorado; ⁴University of Texas, Southwestern School of Medicine; ⁵Alberta Children’s Hospital; ⁶Indiana University School of Medicine; ⁷Washington University; ⁸Banner - University Medical Center; ⁹Rocky Mountain Poison and Drug Center; ¹⁰Lehigh Valley Health Network; ¹¹Boston Children’s Hospital; ¹²University of Texas Southwestern Medical Center; ¹³University of Rochester Medical Center; ¹⁴Oregon Health & Science University; ¹⁵Spectrum Health - Michigan State University; ¹⁶Arkansas Children’s Hospital; ¹⁷Upstate Medical University; ¹⁸University of California at Davis; ¹⁹University of Missouri- Kansas City School of Medicine; ²⁰University of Massachusetts Medical School; ²¹University of Utah School of Medicine; ²²University of Kentucky; ²³Atrium Health Carolinas Medical Center; ²⁴University of New Mexico; ²⁵Emory University School of Medicine; ²⁶Vajira Hospital, Navamindradhiraj University; ²⁷University of Houston College of Medicine; ²⁸University of Virginia; ²⁹Toxikon Consortium; ³⁰University of Mississippi Medical Center; ³¹University of Pittsburgh School of Medicine; ³²American College of Medical Toxicology

Objective: To explore predictors of severe outcomes (i.e., intensive care admission [ICU] or death) in children who present to hospital with an opioid overdose.

Methods: In this multi-center prospective cohort study of all pediatric patients (0–18 years) presenting to one of 38 sites affiliated with the American College of Medical Toxicology’s Toxicology Investigators Consortium (ToxIC), and who received a bedside consultation by the respective medical toxicology service, between August 2017 and June 2020. We collected relevant demographic, exposure, clinical course, disposition, management, and outcome data. Employing a multivariable logistic regression analysis, we conducted a case-control study to explore predictors of severe outcomes. Cases were children who had severe outcome; controls were those without a severe outcome.

Results: Of 165 (87 females, 52.7%) eligible children, 89 (53.9%; “cases”) were admitted to ICU or died during hospitalization from hypoxic-ischemic brain injury secondary to respiratory depression (i.e., severe outcomes); 77 (46.1%; “controls”) did not experience a severe outcome. Seventy-five children (45.5%) were intoxicated by opioids prescribed to family members. Exposure to fentanyl (adjusted OR = 3.7, 95% CI 1.1 to 11.9; P = 0.02) and age ≥ 10 years (adjusted OR 2.0, 95% CI 1.0 to 3.7, P = 0.03) were independent predictors of severe outcomes. Infants up to 12 months of age were more likely than older children to present to the emergency department with severe respiratory depression- bradypnea (86.4% vs. 46.2%, P < 0.01), documented hypoxia (59.1% vs. 23.1%, P < 0.01), and tended to present with lower Glasgow Coma Scale (GCS) score (GCS ≤ 8; 51.4% vs. 32.8%, P = 0.057); Infants were more likely to receive naloxone (72.7% vs. 49.7%, P = 0.03).
**Conclusions:** In children who present to hospital with an opioid overdose, exposure to fentanyl compared with other opioids is associated with an almost four-fold increased risk of ICU admission or death, and age $\geq 10$ years with more than double the risk compared with younger children. Intoxicated infants present sicker and are more likely to receive antidotal therapy. Prevention efforts should target those risk factors to mitigate poor outcomes of opioid overdose in children.