

Presented at the North American Congress of Clinical Toxicology 2023 – Montreal, Canada

Published in *Clinical Toxicology* 2023;61:44-45.

## **90. Differences in naloxone dosing by gender in emergency department opioid overdose: results of a multicenter study**

Jennifer Love<sup>1</sup>, Rachel Culbreth<sup>2</sup>, Kim Aldy<sup>2</sup>, Sabrina Kaplan<sup>3</sup>, Paul Wax<sup>2</sup>, Sharan Campleman<sup>2</sup>, Jeffrey Brent<sup>4</sup>, Alex Krotulski<sup>5</sup>, Shao Li<sup>2</sup>, Barry Logan, Alex Manini<sup>1</sup>, and on behalf of the ToxIC Fentalog Study Group

<sup>1</sup>*Icahn School of Medicine at Mount Sinai*; <sup>2</sup>*American College of Medical Toxicology*; <sup>3</sup>*Rocky Mountain Poison Center*; <sup>4</sup>*University of Colorado School of Medicine*; <sup>5</sup>*Center for Forensic Science Research and Education at the Fredric Rieders Family Foundation*

**Background:** Research suggests that opioid overdose and opioid overdose deaths have increased rapidly among women in the United States. Few studies have examined differences in overdose treatment for men and women in the emergency department. We hypothesized that there would be no difference in the total amount of naloxone administered to men and women with opioid overdose.

**Methods:** *The Toxicology Investigators Consortium (ToxIC) Fentalog Study is a multicenter, prospective cohort study screened adult (> 18) patients with suspected opioid OD who presented to one of ten participating EDs in the US between September 2020 and December 2022. Waste serum from each patient was analyzed via liquid chromatography quadrupole time-of-flight mass spectroscopy to detect all current opioids, fentanyl analogues, and adulterants. Patients without available waste serum were excluded. Medical record data was abstracted, de-identified, and entered into a REDCap database. The study was approved by a central institutional review board with waiver of informed consent. Chi-square analysis and t-tests were performed using SAS.*

**Results:** Out of 4,294 patients screened, 1,256 were enrolled and 755 had blood toxicology results at the time of the data extraction (12 April 2023). Two transgender patients were excluded from the analysis (n = 753). Median age in years was 39 for males and 38 for females. Regional distribution (65.8 vs. 57.1% Northeast/MidAtlantic region), and race (48.1 vs. 53.3% White) were similar across males and females, respectively. Among those with a suspected opioid overdose, the mean total naloxone dose was 3.39mg for females and 2.62mg for males (P = 0.012). Among patients who were administered naloxone, the mean total naloxone dose was 4.58mg for females and 3.66mg for males (P = 0.012). Among patients with at least one confirmed opioid analyte detected (n = 687), the mean total naloxone dose was 3.51mg for females and 2.70mg for males (P = 0.011). Among patients who had at least one confirmed opioid analyte detected and received naloxone, the mean total naloxone dose was 4.72mg for females and 3.68mg for males (P = 0.006).

**Conclusion:** Among ED patients with suspected opioid overdose and those with a confirmed opioid analyte, female patients received nearly 1mg higher average total dose of naloxone compared to male patients. Differences in naloxone dosing may be attributed to differences in physiology, hormones, or substance use patterns. Future studies should evaluate sex as a biological variable for naloxone dose and response.

