2-2021

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**Recommended Citation**

Toron, Andrew; Hutchinson, MD, Morgan; and Gaieski, David, "Cardiac Arrest Clinical Outcomes in Patients Presenting with Opioid Overdose" (2021). *Phase 1*. Paper 104.  
[https://jdc.jefferson.edu/si_ctr_2023_phase1/104](https://jdc.jefferson.edu/si_ctr_2023_phase1/104)

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Cardiac Arrest Clinical Outcomes in Patients Presenting with Opioid Overdose

Andrew Toron, Dr. David Gaieski, Dr. Morgan Hutchinson*
Introduction

- Opioid overdoses are a risk factor for adverse cardiac events and lengthy hospital visits\(^1\), \(^2\)
- Impacts anybody who takes opioids, such as patients on treatment regimens involving opioids, including prescriptions
• From the Drug Enforcement Administration from 2019\textsuperscript{6}
• Gaps in data about how opioid treatments affect public health\textsuperscript{3}

• Survival rates, neurological function, and treatment strategies for out-of-hospital cardiac arrest patients are well described, but few studies have specifically examined the association of these cardiac arrests with opioid overdoses\textsuperscript{4, 5}

• This study fills in some gaps about how opioid-induced cardiac arrests compare to ones of other etiologies
Objectives & Hypothesis

• Research Question
  – How much more severe are out-of-hospital cardiac arrests related to opioid overdose in comparison to ones of cardiac etiology? Specifically, does opioid overdose correlate to longer hospital stays and worse outcomes for these patients?

• Hypothesis
  – Cardiac arrests caused by opioid overdoses will likely lead to higher mortality rate and longer hospital stays than other cardiac arrests.
Approach & Results

• Study design: secondary data analysis
• Population/study sample: patients presenting to Jefferson/Methodist hospitals with an out-of-hospital cardiac arrest due to opioid overdose since 2017
• Intervention: not applicable
• Comparison group: patients presenting to the same hospitals with an out-of-hospital cardiac arrest due to cardiac etiologies since 2017
• Outcome: mortality rate and length of hospital stay
Approach & Results

- Data source: Cardiac Arrest Registry to Enhance Survival (CARES)
- Collection: gathered patient data from this registry and separated the patients based on etiology
• Rationale for approach:
  – CARES has data on cardiac arrest patients, including clinical outcomes
  – Indicates drug/opioid overdose when relevant
  – Has TJUH data, Pennsylvania data, and national data → potential for future comparisons
  – This study only included TJUH/Methodist data so we could verify and expand upon the data in CARES if needed
• Chi-square used for mortality outcome
• Unpaired t-test used for length of hospital stay
Findings

• The mortality rate of the patients in the opioid overdose group (94.29%) was not significantly different than that of patients in the cardiac etiology group (93.02%) (p=0.820886).

• The length of hospital stay for the opioid group (mean = 1.71 days) was likewise not significantly different than that of the cardiac etiology group (mean = 2.74 days) (p = 0.2556).
Findings – Mortality

The chi-square statistic is 0.0513. The p-value 0.820886. Not significant at p < 0.05.

The chi-square statistic with Yates correction is 0.0568. The p-value is 0.811632. Not significant at p < 0.05.
The mean of opioid etiology minus cardiac etiology was -1.03 days. 95% confidence interval of this difference is -2.82 to 0.76.

T = 1.1455, and the two-tailed p-value was 0.2556. These results are not statistically significant.
Conclusions

• Opioid-induced cardiac arrests have similar outcomes when compared to other cardiac arrests.

• This study compared outcomes of cardiac arrests of different etiologies, which may have implications on prognosis for these patients.

• This will help to fill in gaps in data about how the opioid epidemic affects public health.
Conclusions

• The results do not support the hypothesis.
• This does not discount the severity of the opioid crisis, but instead suggests that opioid-induced cardiac arrests are not necessarily more severe than other cardiac arrests.
Future Directions

• Larger sample size
• A next step may be to expand the data to other hospitals, or perhaps to all of Pennsylvania
Acknowledgements

• We thank the PA CARES coordinator Kimbra Shoop and Benjamin Slovis for helping us obtain access to the data we needed.


