A Comparison of Opioid Overdose Surveillance in Two Rhode Island Emergency Departments: National vs. State Surveillance Systems

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Overview

This retrospective chart review aimed to describe and compare suspected opioid overdoses identified by the statewide Opioid Overdose Reporting (OOR) System and the national Drug Overdose and Surveillance (DOSE) System in two emergency departments in Rhode Island.

Background

- Opioid overdose remains the leading cause of unintentional death in the United States.
- Surveillance of opioid overdose is a critical component of combating the opioid epidemic. Accurate and comprehensive case identification is necessary to monitor rates of opioid overdose and inform where to focus response efforts.
- Emergency departments (EDs) are frontline sites of care for patients experiencing opioid overdoses.
- We conducted an evaluation of two surveillance systems, the OOR System and the DOSE System, to ensure that suspected cases of opioid overdose are being accurately identified in Rhode Island EDs.

Surveillance Systems

OOR System:
- The Rhode Island Department of Health (RIDOH) mandates that Rhode Island EDs report cases of suspected opioid overdose within 48 hours of occurrence.
- Suspected opioid overdoses are manually reported by ED staff, usually quality assurance nurses or unit secretaries, using an online data collection form.

DOSE System:
- The Center for Disease Control and Prevention (CDC) identifies cases of opioid overdose by using standardized definitions for suspected opioid overdose to scan through electronic health record (EHR) data.
- These standardized definitions include the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnostic codes for opioid overdose and opioid-overdose related entries in the EHR free-text field "chief complaint".

Methods

Study population, setting, and time:
- Cases are patient visits for suspected opioid overdose reported to the OOR System and/or the DOSE system at Rhode Island Hospital and The Miriam Hospital between January 1st, 2021 and May 31st, 2021
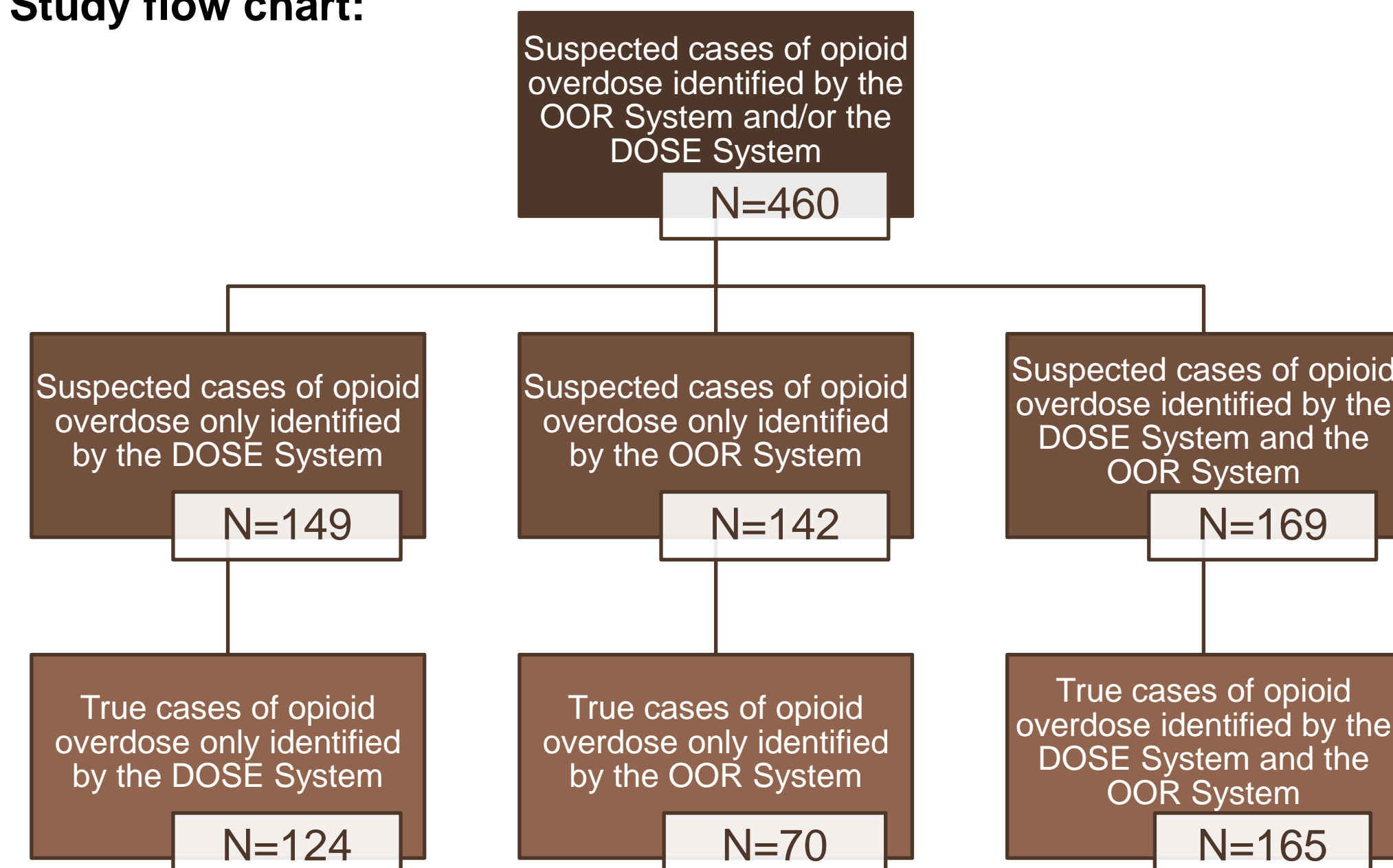
Design:
- Manual chart review determined whether each reported case of opioid overdose was a true opioid overdose.
- Additional data collected included patient demographics and characteristics of the patient's ED visit.

Gold standard definition for true opioid overdose:
1. The ingestion of an opioid resulted in respiratory depression
2. The patient stopped or nearly stopped breathing
3. The patient was given naloxone to regain consciousness

Study flow chart:

Suspected cases of opioid overdose identified by the OOR System and/or the DOSE System — N=460

- Suspected cases of opioid overdose only identified by the DOSE System — N=149
  - True cases of opioid overdose only identified by the DOSE System — N=124
- Suspected cases of opioid overdose only identified by the OOR System — N=142
  - True cases of opioid overdose only identified by the OOR System — N=70
- Suspected cases of opioid overdose identified by the DOSE System and the OOR System — N=169
  - True cases of opioid overdose identified by the DOSE System and the OOR System — N=165

Results

- **78%** of suspected cases of opioid overdose identified by either or both the OOR System and the DOSE System were true opioid overdoses.

- There was a **36.7%** agreement between suspected opioid overdoses identified by the OOR System and the DOSE System

Predictive Value	DOSE System	OOR System
PPV	90.9%	75.6%
NPV	50.7%	13.4%

Results

Positive Predictive Values of the DOSE System and the OOR System

DOSE System — 90.9%
OOR System — 75.6%

■ True opioid overdoses ■ False opioid overdoses
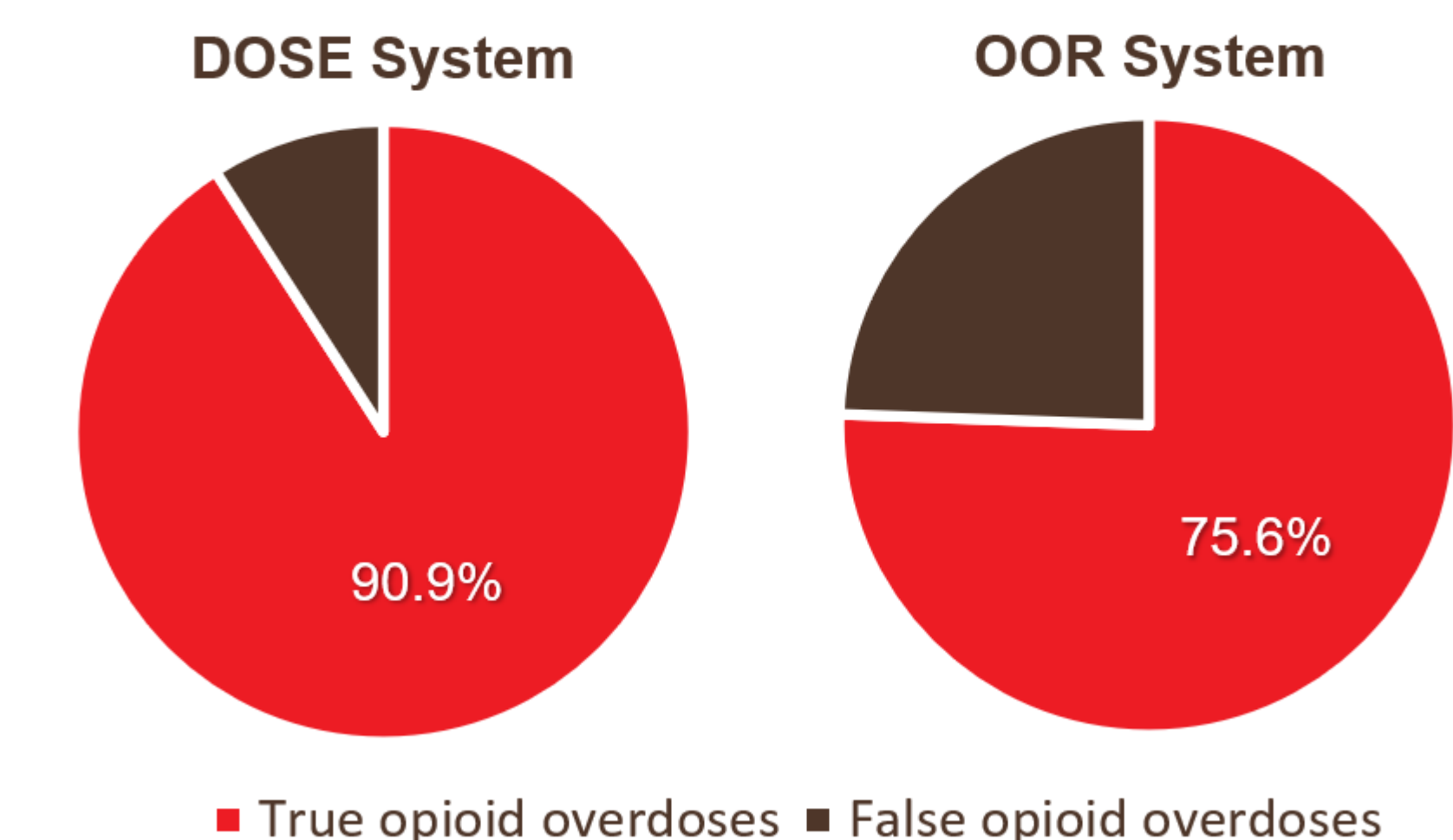
True Cases of Opioid Overdose Stratified by Reporting System

Cases only identified by the DOSE System; Cases only identified by the OOR System; Cases identified by the DOSE System and the OOR System
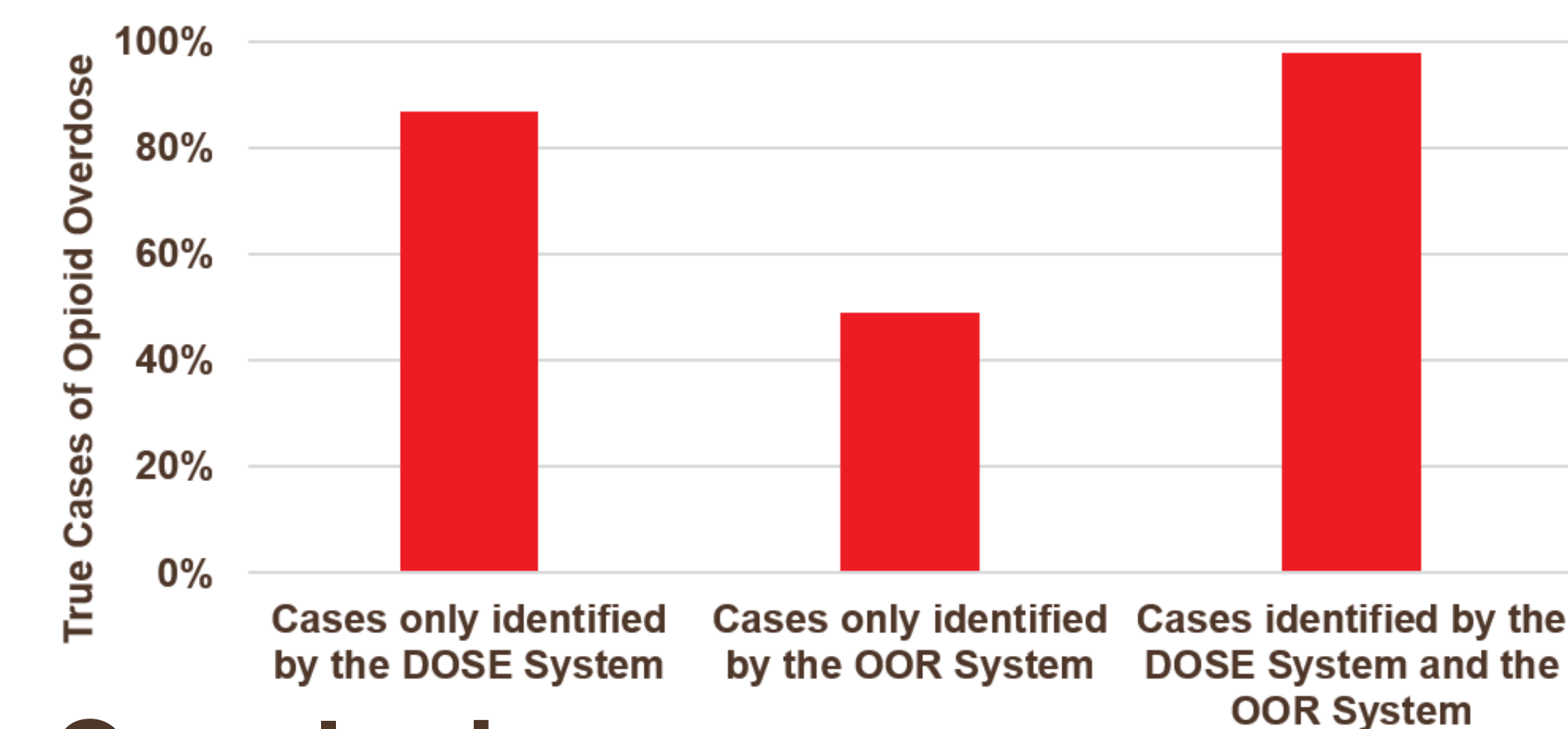
Conclusion

- More efforts are needed to increase the accuracy of opioid overdose surveillance in Rhode Island EDs.
- The automated DOSE System is more accurate than the manual OOR System.
- Suggestions to improve surveillance of opioid overdose in Rhode Island EDs:
  - Use clear definitions for opioid overdose to standardize manual reporting to the OOR System.
  - Use cases identified by the OOR System in conjunction with those identified by the DOSE System.
  - Automate the current labor-intensive manual OOR System.
- Further research is necessary to identify true cases of opioid overdose in Rhode Island EDs missed by the OOR System and the DOSE System.