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Using Hospital Electronic Health Records to Monitor Drug Use Trends in Emergency Department Patients at the University of Maryland Prince George's Hospital Center

Collaborators

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Background

Our prior report described the analysis of electronic health record (EHR) data from four hospitals in Baltimore to monitor drug use trends in patients presenting to the emergency department (ED) with a chief complaint and/or diagnosis of overdose or drug-related health problems[1]. The current study uses similar methodology to analyze EHR data from patients presenting to the ED at the University of Maryland Prince George's Hospital Center (UM PGHC) for whom the hospital urinalyses were positive for at least one drug, regardless of diagnosis.

Method

UM PGHC uses the Cerner EHR software to track clinical information. Cerner exports of de-identified urine toxicology test results were sent to CESAR from UM PGHC each quarter. The hospital tests patients for the following 8 drugs: amphetamines, barbiturates, benzodiazepines, cocaine, marijuana, methadone, PCP, and opiates. Toxicology screens are typically ordered for suspected drug users, persons with psychiatric illnesses, or persons with an altered mental state.

Sample

Test results were obtained for 13,773 ED patients who tested positive for at least one drug from July 2013 through December 2018.

Results

Figure 1 shows the percentage of specimens that tested positive for specific drugs each quarter and the two quarter moving average. In October-December 2018, marijuana was detected at the highest rate (62%) of any quarter. In contrast, the percentage of specimens testing positive for opiates declined from 29% in July-September 2013 to a low of 19% in October-December 2018. This decline must be interpreted in the context of the tests used by the hospital (see Implications).

Implications

It is noteworthy that in October-December 2018, marijuana was detected at the highest rate (62%) of any quarter studied. This trend may reflect greater use of marijuana in the context of legalization of marijuana use in Washington, DC and medical marijuana in Maryland. A future study is planned that will review charts of marijuana positive patients and will examine whether marijuana was directly involved in the patient's chief complaint at the ED.

The decline in the percentage of specimens testing positive for opiates was unexpected. The opiate screen used by this hospital primarily detects codeine and the heroin metabolite morphine, but not fentanyl or other synthetic opioids. The decline in opiate positives therefore does not likely reflect trends in the use of other opioids[2].

Analysis of toxicology results in hospital EHR systems could provide the country with a new rapid system for tracking emerging drug problems.

Figure 1: Drugs[a] Detected in Specimens from ED Patients, By Quarter

(N=13,773 positive specimens collected from UM PGHC patients from July 2013 through December 2018)
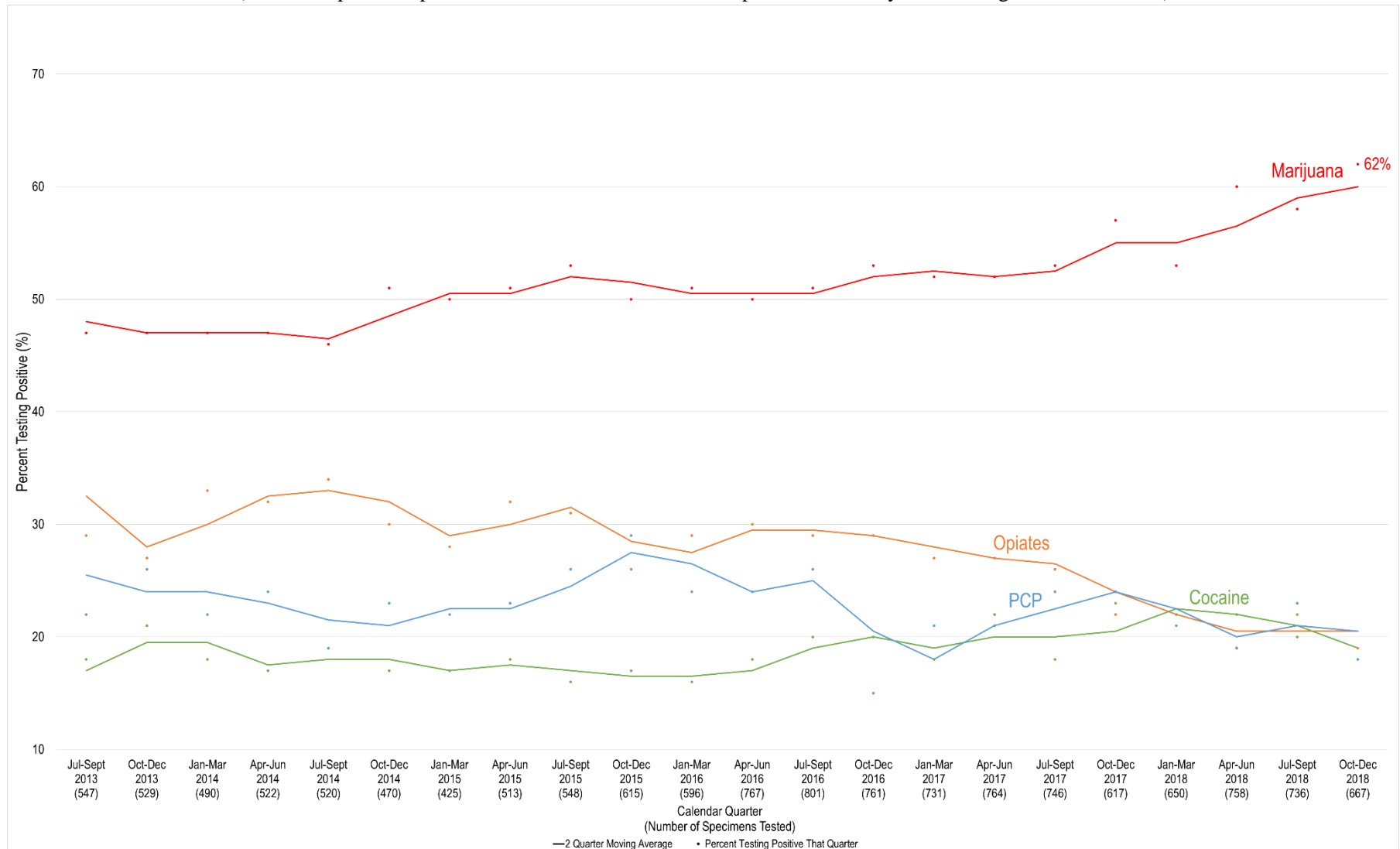
Notes: [a]Amphetamines, Barbiturates, Benzodiazepines, and Methadone results not shown because less than 20% testing positive each quarter.

References

[1]Center for Substance Abuse Research. (2019). Using Hospital Electronic Health Records to Monitor Drug Use Trends in Overdose Patients. University of Maryland, College Park. Retrieved from https://ndews.umd.edu/feature/using-hospital-electronic-health-records-monitor-drug-use-trends-overdose-patients.

[2]Dezman, Z.D.W., Felemban, W., Bontempo, L.J., & Wish, E.D. (2019). Evidence of fentanyl use is common and frequently missed in a cross-sectional study of emergency department patients in Baltimore, Maryland. *Journal of Clinical Toxicology*. https://doi.org/10.1080/15563650.2019.1605078.

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