

Drugs Detected in Emergency Department Patients with Suspected Opioid Overdose Who Did Not Respond to Typical Doses of Naloxone

Submitting Site: Oregon Health and Science University (OHSU) Hospital and Health System, Emergency Department (Portland, Oregon)

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Background

The aim of this investigation was to identify novel opioids being used by patients visiting the emergency department at OHSU for an opioid overdose, particularly among cases with an atypical opioid overdose presentation requiring high doses of naloxone. Multiple sources, including law enforcement, prehospital agencies, and the Oregon Poison Center noted atypical opioid overdoses, including those requiring higher doses of the antidote, naloxone, in the Portland Metro Area prior to initiating the study. The goal of this study was to define what opioids currently make up the opioid market in the local area and which novel opioids were potentially involved with the reported unusual cases of opioid toxicity.

Methods

Urine specimens are collected as part of the patient's regular care, and screened for eight drugs: amphetamine, barbiturates, benzodiazepines, cannabinoids, cocaine, methadone, opiates, and oxycodone. OHSU submitted 17 urine specimens collected between October 2018 and March 2019 from patients brought to the emergency department with a suspected opioid overdose. See *DOTS Bulletin*, Issue 1, for a detailed description of the DOTS pilot study methodology and limitations (<https://go.umd.edu/ndews-dots>).

Sample Characteristics

The 17 specimens came from patients between the ages of 17 and 67 years old, with one-half younger than 31 years. More than half (76%) came from males. The majority of patients identified as White (88%) while 12% identified as Black/African American.

DOTS Drug Test Results

The most common drugs detected were nonfentanyl opioids (see Table on page 2). Morphine was detected in 11 specimens and noscapine was detected in 6 specimens. THC (marijuana) was also found in 11 specimens and benzoylcegonine (cocaine) in 8 specimens. Only 3 specimens contained any fentanyl. Naloxone was detected in 8 specimens and alprazolam was found in 7 specimens.

Implications

The results were surprising as few novel opioids were identified in the submitted specimens. Mostly traditional opioids, including heroin and prescription opioids, were detected. Naloxone administration and alprazolam use had been reported in many of these cases. Instead of the novel opioids that were expected on testing, the large doses of naloxone given in this series are likely due to the prevalence of the co-ingestion of a typical opioid with "pressed Xanax" or "pressed Xanie bars" that were reported in 7 of the 17 patients. This also explains the frequency of benzodiazepines (10/17), including alprazolam (7/17), in this study. This information will be used to develop treatment guidelines that can be circulated via the Oregon Poison Center to area emergency departments, police, and prehospital agencies to better inform their care of patients visiting the emergency department for an opioid overdose. We hope this data will lead to better and more efficient care for these patients. In addition, we plan to share this information with our partners (e.g., local public health agencies, needle exchange programs, emergency departments) to better inform their use.

THE DRUG OUTBREAK TESTING SERVICE (DOTS) PILOT STUDY

DOTS tests up to 20 urine specimens for 240 drugs, without cost to the submitting site, to help identify emerging drugs for epidemiologic purposes.

For more information:

ndewsdots@umd.edu

DOTS Bulletins are available at: <https://go.umd.edu/ndews-dots>

Drugs or Drug Metabolites Detected by DOTS Laboratory Urinalyses

(N = 17 urine specimens submitted to DOTS by Oregon Health and Science University Hospital and Health System, Portland, Oregon)

Specimen	Common Drugs				Fentanyl		Nonfentanyl Opioids								Pharmaceutical Nonopioid Drugs															
	THC (marijuana)	Benzoyllecgonine (cocaine)	Methamphetamine	MDMA	Fentanyl/Norfentanyl	4-ANPP	Morphine	Codeine	6-Acetyl/morphine (heroin)	Noscapine	Hydrocodone	Oxycodone	Oxycodone	Tramadol	Buprenorphine/Norbuprenorphine	Methadone/EDDP	Anti-hist.†	Benzodiazepines					Antidepressants							
																		Diphenhydramine	Alprazolam/α-Hydroxyalprazolam	Lorazepam	Nordiazepam	Oxazepam	Temazepam	Desvenlafaxine/Desmethyvenlafaxine	Venlafaxine	Amitriptyline	Naloxone	Gabapentin	Haloperidol	Dextromethorphan
1	*		✓				*	✓	✓	✓	✓					✓		✓								✓	✓	✓		
2	*	✓	✓				*	✓	✓			✓	✓														✓	✓		✓
3	*	✓		✓		✓	*	✓	✓	✓									✓								✓			
4	*						*	✓	✓	✓	✓								✓								✓	✓		
5	*				✓		*	✓	✓					✓										✓	✓			✓		
6	*	✓			✓		*	✓	✓	✓																				
7	*	✓					*	✓	✓	✓																		✓		
8	*	✓					*													✓							✓		✓	
9	*	✓					*														✓	✓	✓							
10	*						*	✓	✓	✓									✓											
11	*	✓		✓			*										✓	✓									✓			
12	*	✓	✓				*											✓									✓			
13	*						*								✓				✓											
14	QNS		QNS	QNS	QNS	QNS	*			QNS					QNS			✓									QNS			QNS
15	*	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS
16	*	QNS					QNS	QNS	QNS		QNS	QNS	QNS	QNS		QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS	QNS		QNS	QNS	
17	*						*																							
Total Positive:	11	8	3	2	2	1	11	8	8	6	2	1	1	1	1	1	1	7	2	1	1	1	1	1	1	1	8	4	1	1

†Anti-hist.: Antihistamine

*To protect the identity of persons who submitted specimens, results are not provided for drugs where a high percentage of specimens tested positive.

QNS: Specimen could not be tested for this drug/drug category because of insufficient urine quantity.

Note: Specimens were collected between October 2018 and March 2019 from patients in the emergency department with a suspected opioid overdose.

Source: Drug Outbreak Testing Service (DOTS), National Drug Early Warning System (NDEWS) Coordinating Center, Center for Substance Abuse Research, University of Maryland, College Park, December 2019.