# 

PUBLIC ALERT MAY 2024

## MEDETOMIDINE RAPIDLY PROLIFERATING ACROSS USA — IMPLICATED IN RECREATIONAL OPIOID DRUG SUPPLY & CAUSING OVERDOSE OUTBREAKS

**PURPOSE:** The objective of this announcement is to notify public health, harm reduction, first responders, clinicians, medical examiners and coroners, forensic and clinical laboratories, and all other related communities about new information surrounding the emergent adulterant **medetomidine** (also referred to as dexmedetomidine).

**BACKGROUND:** Medetomidine is an alpha-2 agonist, belonging to the same family of drugs as xylazine and clonidine. Medetomidine is synthetically manufactured and exists in two enantiomeric forms: **dexmedetomidine** and levomedetomidine, the former being active and potent. Dexmedetomidine is approved for use in humans and is administered in hospital, while differing forms of medetomidine are available for use in veterinary medicine. The effects of **medetomidine** can include sedation, analgesia, muscle relaxation, anxiolysis, bradycardia, hypotension, hyperglycemia, and hallucinations. Duration of action is noted to be longer for medetomidine relative to xylazine.

**SUMMARY:** Medetomidine is the latest CNS depressant to appear as an adulterant alongside fentanyl in the recreational drug supply. Recent mass overdose outbreaks in Philadelphia, Pittsburgh, and Chicago have all been associated with fentanyl or heroin drug products containing medetomidine, as well xylazine and/or other substances. In cases where medetomidine ingestion is suspected or confirmed, severe adverse effects have been noted, including **heightened sedation and profound bradycardia**.

TIMEFRAME	DESCRIPTION OF MEDETOMIDINE IDENTIFICATIONS AND OVERDOSE EVENTS
Late 2022	Medetomidine begins appearing more regularly in the <b>Maryland</b> drug supply, following its first detection in July 2022. Medetomidine is commonly identified alongside fentanyl, xylazine, and other substances.
Mid-to-Late 2023	Medetomidine is sporadically identified in toxicology specimens collected from patients presenting to emergency departments after suspected opioid overdose (confirmed to not be administered). Overdose events originated from <b>Missouri, Colorado, Pennsylvania, California, and Maryland</b> . Medetomidine is commonly detected with fentanyl.
January 2024	An <b>alert</b> is issued out of <b>Toronto, ON</b> , about the emergence of medetomidine in the drug supply. This is followed by increased positivity in subsequent weeks and months, as medetomidine is found alongside fentanyl in suspected opioid products and commonly in combination with xylazine and other substances.
Early 2024	Medetomidine detections increase in drug materials and toxicology specimens originating from western Canada, including <b>Vancouver, BC</b> , commonly alongside fentanyl and other opioids.
Late April 2024	Medetomidine first appears in drug products in <b>Philadelphia, PA</b> , causing a large scale outbreak of overdoses and adverse events. Medetomidine is identified alongside fentanyl and xylazine.
Early May 2024	Medetomidine first appears in drug products in <b>Pittsburgh, PA</b> , causing a large scale outbreak of overdoses and adverse events. Medetomidine is identified alongside fentanyl and xylazine.
Early May 2024	Medetomidine first appears in drug products in <b>Chicago, IL</b> , causing a large scale outbreak of overdoses and adverse events. Medetomidine is identified alongside fentanyl and xylazine, or alongside heroin without xylazine.



# GEOGRAPHICAL DISTRIBUTION OF MEDETOMIDINE EMERGENCE

Medetomidine has been identified across several states in the U.S. and Canada, and is recently being observed in severe overdose outbreaks in major metropolitan areas (as marked).

$\square$	
	Forterul
	Xylazine
	Medetomidine
	Other Substances





SUGGESTED CITATION: Krotulski, AJ; Shinefeld, J; Moraff, C; Wood, T; Walton Denn, MT; Quinter, AD; Logan, BK. (2024) Medetomidine Rapidly Proliferation Implicated In Recreational Opioid Drug Supply & Causing Overdose Outbr

### MEDETOMIDINE RAPIDLY PROLIFERATING ACROSS USA — IMPLICATED IN RECREATIONAL OPIOID DRUG SUPPLY & CAUSING OVERDOSE OUTBREAKS

#### EXAMPLE CHROMATOGRAM OF A DRUG MATERIAL CONTAINING MEDETOMIDINE COLLECTED FROM PHILADELPHIA IN EARLY MAY 2024



#### DRUG MATERIALS CONTAINING MEDETOMIDINE AND OTHER SUBSTANCES

SUMMARY OF RESULTS:

 To date, medetomidine has been commonly identified alongside fentanyl and xylazine, and the proportion of medetomidine in the drug material varies by sample.

 Medetomidine has been identified alongside heroin, in the absence of xylazine.

► Tetracaine has been identified alongside fentanyl, xylazine, and medetomidine in drug products, but not uniformly or consistently.

 Real-time drug material and toxicological testing are on-going to track the emergence and proliferation of medetomidine.

#### PITTSBURGH, PA

DRUG	RELATIVE PARTS		
Fentanyl	Ιр		
Xylazine	1.5p		
Medetomidine	0.1p		
Tetracaine	0.5p		
Other Substances?	pFF. Caffeine		

PHILADELPHIA, PA							
DRUG	RELATIVE PARTS	DRUG	RELATIVE PARTS				
Fentanyl	lp	Fentanyl	٦р				
Xylazine	1.9p	Xylazine	0.4p				
Medetomidine	0.8p	Medetomidine	1.9p				
Tetracaine	3.9p	para-Fluorofentanyl	0.1p				
Other Substances?	Caffeine	Other Substances?	No				

CHICAGO, IL							
DRUG	RELATIVE PARTS	DRUG	RELATIVE PARTS				
Fentanyl	٦p	Heroin	lp				
Xylazine	2р	Fentanyl	Trace				
Medetomidine	0.6p	Medetomidine	6.3p				
Diphenhydramine	0.5p	Diphenhydramine	2.6p				
Other Substances?	pFF, Nitazenes, etc.	Other Substances?	No				



CNOWLEDGEMENTS: This report was prepared by Alex Krotulski, Jen Shinefel aff. Taylor Wood, Sara Waton, Josh DeBord, Max Denn, Alexis Quinter, and Barry I

() (SPNI)-22-CG-04434-WIMU). The Denn, MT; Quinter, AD; Logan, BK (2024) Medeton expressed in this publication are Implicated In Recreational Opioid Drug Supply &