

PUBLIC HEALTH ALERTS | IN PARTNERSHIP WITH CIDRAP

Emergence of Medetomidine in New York's Illicit Drug Supply

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Abstract

New York State and New York City health departments have closely monitored the emergence of medetomidine, a sedative that can cause prolonged sedation and a complex withdrawal syndrome, in the illicit drug supply. Drug checking and toxicology data first detected medetomidine in New York in mid-2024, and through 2025 it was identified in 25.1% of opioid samples analyzed. This Public Health Alerts report highlights state and local collaboration to detect emerging substances of concern in the illicit drug supply and to implement data-guided programmatic responses, including enhanced surveillance, public alerts, and medetomidine test strip distribution.

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Introduction

From 2021 through May 2024, at least 18 U.S. jurisdictions confirmed medetomidine in their illicit drug supplies.¹ Medetomidine, a synthetic alpha-2 adreno-receptor agonist, can cause prolonged sedation and a complex withdrawal syndrome, complicating community and clinical responses to overdose and substance use care.²

Drug checking is a service in which trained technicians use point-of-care testing to analyze participant-provided drug samples, providing results in real time.³ Drug-checking services may connect to other harm reduction and prevention services, including linkages to treatment. Drug-checking program data have enabled the development of a near-real-time surveillance system of the ever-evolving illicit drug supply.

New York State Department of Health (NYSDOH) and New York City Department of Health and Mental Hygiene (NYCDOHMH) operate community-based drug-checking programs.^{4,5} They coordinate with partner organizations for data sharing and responses, resulting in synergistic monitoring of the supply. Here, we describe the results of a retrospective cross-sectional analysis of drug-checking data conducted by NYSDOH and NYCDOHMH to characterize the emergence and prevalence of medetomidine in the state and their programmatic responses to these data.

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Findings

NYSDOH and NYCDOHMH drug-checking programs offer services at 21 sites across New York state. In addition to point-of-care checking with Fourier-transform infrared spectroscopy (FTIR) and immunoassay test strips, the programs offer secondary laboratory analysis. Deidentified surveys and drug-checking data are

collected by drug-checking technicians and linked to secondary laboratory results through data systems managed by NYSDOH and NYCDOHMH. This report describes all samples with secondary laboratory results available from May 2024 to December 2025. To monitor downstream effects of medetomidine, postmortem toxicology data from the New York City (NYC) Office of Chief Medical Examiner (OCME) were reviewed to identify medetomidine in fatal overdoses.

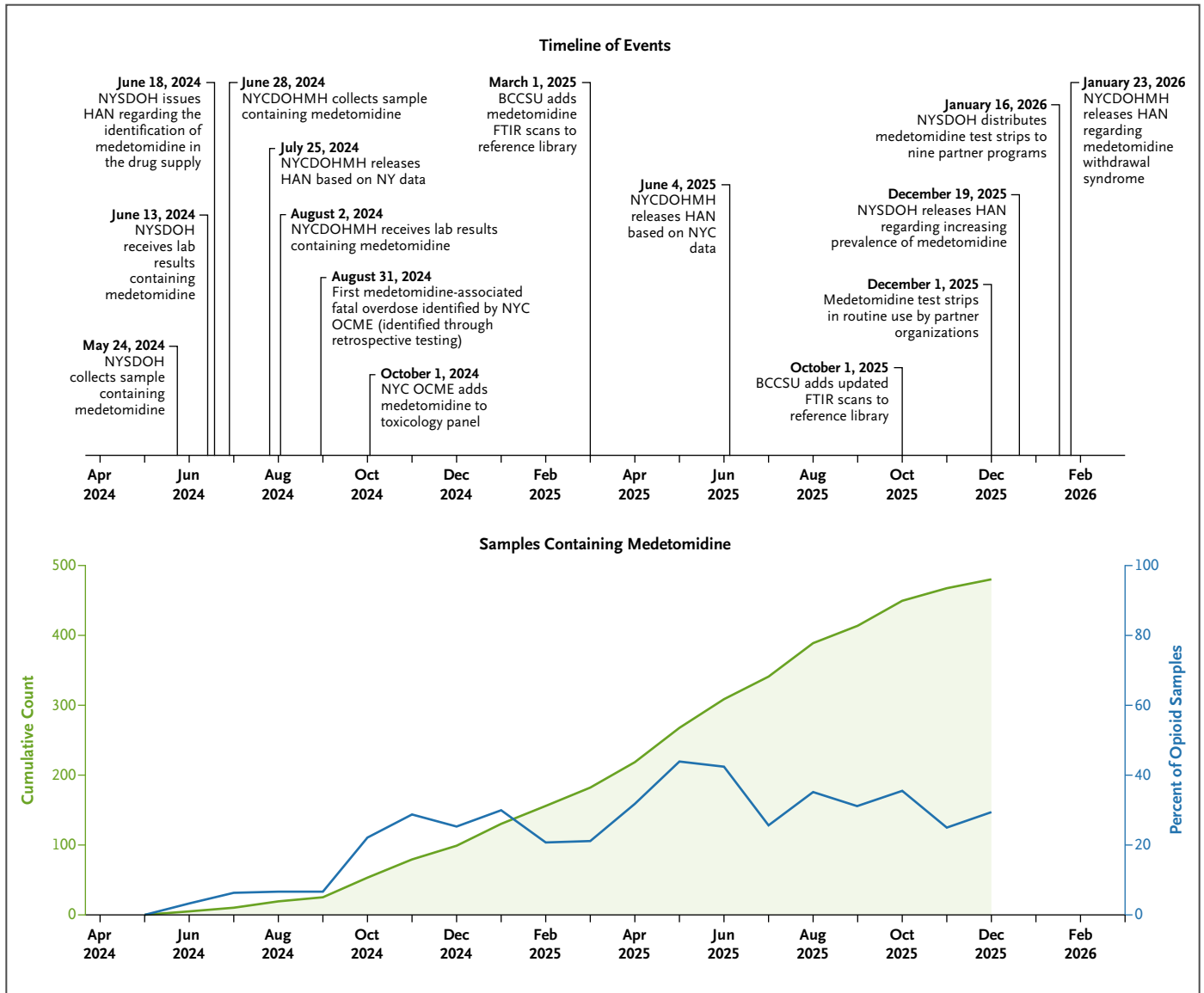


Figure 1. Timeline of Key Events and Drug-Monitoring Metrics Related to the Emergence of Medetomidine in the Illicit Drug Supply of New York State from May 2024 through January 2026.

This figure summarizes medetomidine-related events and responses in New York; medetomidine was detected earlier in other jurisdictions. BCCSU denotes British Columbia Centre on Substance Use; FTIR, Fourier-transform infrared spectroscopy; HAN, Health Alert Network; NY, New York; NYSDOH, New York State Department of Health; NYCDOHMH, New York City Department of Health and Mental Hygiene; and OCME, Office of Chief Medical Examiner.

Point-of-care testing results are available to participants in real time, and laboratory results are provided to participants when feasible. On May 24, 2024, medetomidine was first detected in New York via laboratory testing of a sample expected to be heroin collected in an upstate county, which produced unexpected sedative effects (Fig. 1). In June 2024, additional samples containing medetomidine were collected by NYSDOH, which, based on information provided by the participant, were involved in two non-fatal overdoses. National and law enforcement entities alerted medical examiners about the presence of medetomidine in the illicit drug supply, motivating the sourcing of a drug standard and development of a postmortem toxicology test. Systematic postmortem toxicology testing for medetomidine began in October 2024 in NYC. Limited retrospective medetomidine screening by NYC OCME identified the first overdose death in which medetomidine was recognized as a contributing factor in August 2024.

Drug-checking technicians routinely used medetomidine test strips during point-of-care services by December 2024 and FTIR reference scans by March 2025. After months of laboratory detection in less than 10% of opioid samples, medetomidine proliferated in the illicit drug supply, with an abrupt and sustained increase to over 20% of collected opioid samples by October of 2024 and into 2025. From May 2024 through December 2025, 25.1% of total included opioid samples contained medetomidine, with a monthly peak of 44.1% of samples in May 2025 (Table 1). Death certificate data identified 134 overdose deaths in NYC in which medetomidine was a contributing cause in 2025, an increase from 18 in 2024.⁶ Cause and manner of death for all cases in 2024 and 2025 are not finalized; additional cases may be identified as investigations continue.

Although medetomidine was primarily identified in opioid samples, usually in combination with fentanyl and

Table 1. Description of Laboratory-Tested Samples Submitted to New York State Department of Health and New York City Department of Health and Mental Hygiene Drug-Checking Programs from May 2024 through December 2025.*

Month and Year	New York City		New York State		Total	
	Opioid Samples Containing Medetomidine, N (%)	Total Number of Opioid and Nonopioid Samples Tested, N	Opioid Samples Containing Medetomidine, N (%)	Total Number of Opioid and Nonopioid Samples Tested, N	Opioid Samples Containing Medetomidine N (%)	Total Number of Opioid and Nonopioid Samples Tested, N
May 2024	0 (0.0)	72	1 (3.6)	143	1 (1.3)	215
Jun 2024	1 (2.0)	93	3 (7.5)	130	4 (4.4)	223
Jul 2024	2 (6.9)	64	3 (7.9)	116	5 (7.5)	180
Aug 2024	2 (4.7)	77	7 (9.7)	190	9 (7.8)	267
Sep 2024	4 (9.8)	81	2 (5.7)	108	6 (7.9)	189
Oct 2024	13 (23.2)	106	15 (23.4)	149	28 (23.3)	255
Nov 2024	6 (31.6)	62	20 (29.0)	155	26 (29.5)	217
Dec 2024	6 (28.6)	59	14 (25.0)	145	20 (26.0)	204
Jan 2025	14 (42.4)	67	18 (25.0)	142	32 (30.5)	209
Feb 2025	7 (17.1)	106	18 (24.0)	121	25 (21.6)	227
Mar 2025	3 (8.6)	93	22 (27.8)	144	25 (21.9)	237
Apr 2025	19 (45.2)	122	18 (25.0)	162	37 (32.5)	284
May 2025	25 (44.6)	123	24 (43.6)	146	49 (44.1)	269
Jun 2025	18 (40.0)	115	23 (45.1)	163	41 (42.7)	278
Jul 2025	17 (32.1)	130	15 (21.7)	145	32 (26.2)	275
Aug 2025	28 (40.0)	151	22 (31.4)	147	50 (35.7)	298
Sep 2025	6 (23.1)	54	17 (36.2)	121	23 (31.5)	175
Oct 2025	13 (36.1)	90	23 (35.9)	168	36 (36.0)	258
Nov 2025	8 (44.4)	47	10 (19.2)	100	18 (25.7)	147
Dec 2025	4 (40.0)	34	8 (26.7)	72	12 (30.0)	106
Total	196 (25.4)	1746	283 (24.9)	2767	479 (25.1)	4513

*A total of 66.2% of point-of-care samples collected by New York State Department of Health programs and 97% of samples collected by New York City Department of Health and Mental Hygiene programs were submitted for secondary laboratory testing. New York State and New York City data are mutually exclusive. A total of 1908 opioid samples were tested.

xylozine, NYSDOH and NYCDOHMH identified medetomidine in 19 and 6 nonopioid samples, respectively. Nonopioid samples are those in which no opioids were identified by secondary laboratory testing. This classification may not reflect how these samples were marketed or sold nor how a sample may be intentionally or unintentionally modified.

Responses and Conclusions

Starting in June 2024, NYSDOH and NYCDOHMH issued public alerts and information regarding the prevalence of medetomidine in community-acquired samples, co-occurring substances, and best practices for organizations and for people who use drugs. Public alerts issued in December 2025 and January 2026 provided information on trends in the drug supply and emerging clinical guidance for medetomidine withdrawal, including guidance to always administer naloxone in the event of a suspected overdose.^{7,8} In January 2026, NYSDOH provided partner organizations with 15,000 medetomidine test strips.

Medetomidine has altered the illicit drug supply in the nation.⁹ It is associated with prolonged sedation and a severe withdrawal syndrome that may require intensive medical care and has been detected in an increasing number of overdose fatalities.^{8,10} Collaborative efforts in New York led to timely identification of this emergent substance and enabled overdose prevention responses, prioritizing harm reduction services and rapid dissemination of information to public and clinical audiences.

Disclosures

Author disclosures are available at evidence.nejm.org.

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