Medetomidine in the Unregulated Opioid Supply: A Clinical Brief for Ontario Health Care Providers

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Medetomidine, a veterinary sedative and potent α2-adrenergic receptor agonist not approved for human use, has recently been identified as an emerging adulterant in the unregulated opioid supply, including in Ontario. Drug-checking data from Toronto first detected medetomidine in expected fentanyl samples in early 2024, and it has since been found with increasing frequency in opioid samples across the province.[1]

Like the related veterinary sedative xylazine, medetomidine is added to illicit opioids such as fentanyl and can prolong sedation; however, medetomidine has substantially greater α2-receptor selectivity than xylazine and can produce marked sedation, bradycardia, and hypotension. Miosis is also commonly reported. Clinicians should be aware that the sedative effects of medetomidine persist after naloxone administration.[2] While naloxone should still be given to reverse the opioid component of toxicity, full arousal may not occur, and residual deep sedation may reflect ongoing α2-agonist effect. Some patients may require airway support and monitoring for at least 3–6 hours following acute intoxication.

Clinicians should also be alert to medetomidine withdrawal, which can be severe and is distinct from typical opioid withdrawal in both onset and character. Withdrawal symptoms can begin within 4–6 hours of last use (or later) and may include anxiety, tremor, diaphoresis, nausea and vomiting, tachycardia, and hypertension, potentially progressing to agitated delirium and autonomic crisis. Heart rates exceeding 170 bpm and systolic blood pressures over 240 mmHg have been reported.[3] Laboratory abnormalities may include hypokalemia, lactic acidosis, and QTc prolongation. This presentation can overlap with severe opioid withdrawal, benzodiazepine withdrawal, and stimulant intoxication. Management can be complicated, requiring opioid agonist therapy, alpha-2 agonist therapy, and antiemetics[4]. Routine or extended toxicology testing may not reliably detect medetomidine, so recognition is often clinical.

Clinicians should consider possible medetomidine co-exposure or withdrawal in patients with known or suspected fentanyl exposure whose clinical course (particularly persistent sedation, or disproportionate agitation and autonomic instability) does not follow typical patterns. Early consultation with the Ontario Poison Centre (1-800-268-9017) is encouraged when medetomidine toxicity or withdrawal is suspected.

Additional clinical guidance, including management strategies, is available through META:PHI (metaphi.ca/resources).

- Combined Fentanyl/Medetomidine Withdrawal in the ED/Acute Care Setting
- Combined Fentanyl/Medetomidine Withdrawal in the Ambulatory Setting
- Comibined Fentanyl/Medetomidine Withdrawal in Withdrawal Management Units

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[1] Toronto Drug Checking Service. https://drugchecking.community/
[2] Nham A, Le JN, Thomas SA, et al. Overdoses Involving Medetomidine Mixed with Opioids- Chicago, Illinois, May 2024. MMWR Morb Mortal Wkly Rep 2025; 74: 258-65.
[3] London KS, Huo S, Murphy L, et al. Severe Fentanyl Withdrawal Associated with Medetomidine Adulteration: A Multicentre Study from Philadelphia, PA. J Addict Med 2025.
[4] Lynch MJ, Pizon AF, Yealy DM. Emergence of Medetomidine in the Illicit Drug Supply: Implications for Emergency Care and Withdrawal Management. Ann Emerg Med; 2025: 1-8.