

Medetomidine/dexmedetomidine:

“New” veterinary tranquilizer circulating in Toronto’s unregulated fentanyl supply

For the first time, [Toronto’s Drug Checking Service](#) has identified medetomidine/dexmedetomidine in Toronto’s unregulated drug supply. These anaesthetic drugs are considered to be more potent than xylazine (longer acting and produce greater sedation). Like xylazine, medetomidine is a tranquilizer approved only for use on animals. Dexmedetomidine is approved for use on humans, as well as animals, for sedation and pain relief. Medetomidine and dexmedetomidine have a very similar chemical structure and it is not currently possible for Toronto’s Drug Checking Service to differentiate between them. For this reason, we report these substances together.

Medetomidine/dexmedetomidine was first identified by Toronto’s Drug Checking Service on December 29, 2023, by our analysis site member at the [Centre for Addiction and Mental Health \(Clinical Laboratory and Diagnostic Services\)](#) using liquid chromatography–Orbitrap high resolution mass spectrometry. Between December 29, 2023, and January 23, 2024, medetomidine/dexmedetomidine was found in 11% of the expected fentanyl samples checked by Toronto’s Drug Checking Service (15 of 140 samples). We are working with our analysis site member at [St. Michael’s Hospital \(Department of Laboratory Medicine\)](#) to ensure medetomidine/dexmedetomidine is identified using gas chromatography-mass spectrometry as well.

Medetomidine/dexmedetomidine was found in samples expected to be (i.e., got or bought as) fentanyl, alongside high-potency opioids, like fentanyl, fluorofentanyl, and/or a methylfentanyl-related drug, as well as other central nervous system depressants, like benzodiazepine-related drugs and/or xylazine. The presence of medetomidine/dexmedetomidine was not reported as being expected by those who submitted these samples to be checked. Much like xylazine and benzodiazepine-related drugs, we suspect medetomidine/dexmedetomidine is being added to unregulated fentanyl to mimic or enhance the sedative and euphoric effects of the opioid a person is choosing to use.

These samples were collected in Toronto’s west end and downtown core. The colour of these samples varied, and included blue, green, grey, orange, purple, and white. About half of these samples were

reported as being strong and/or associated with drowsiness and sedation and/or dizziness/nausea/vomiting.

Drug checking services operating out of Victoria, British Columbia ([Substance](#)), have identified medetomidine/dexmedetomidine, as has [Health Canada's Drug Analysis Service](#) in controlled substances seized by Canadian law enforcement agencies and samples submitted by public health partners. Our [colleagues in the United States](#) have also reported the presence of medetomidine/dexmedetomidine in their unregulated opioid supply.

Drug checking services provide critical information on the composition of the unregulated drug supply in real time, informing and educating people who use drugs, people who care for people who use drugs, advocacy, policy, and research. Incredibly sophisticated and sensitive technologies are required to effectively check highly contaminated opioids that are most likely to contribute to overdose. Without technologies like gas and liquid chromatography-mass spectrometry, paper spray-mass spectrometry, and nuclear magnetic resonance spectroscopy, it is very likely that drugs like medetomidine/dexmedetomidine would go undetected.

What are the potential effects of using medetomidine/dexmedetomidine?

Medetomidine/dexmedetomidine may put those who use it in a deep state of unconsciousness, much like xylazine and benzodiazepine-related drugs. The risk of extreme drowsiness and sedation is increased when medetomidine/dexmedetomidine is used in combination with high-potency opioids, benzodiazepine-related drugs, and xylazine. This is noteworthy because 100% of the samples checked by Toronto's Drug Checking Service that contained medetomidine/dexmedetomidine contained at least one high-potency opioid. Many of these samples also contained a benzodiazepine-related drug or xylazine.

Medetomidine/dexmedetomidine may produce other harmful and unexpected effects, such as [cardiac and circulatory system depression](#) (e.g., decrease in blood pressure and heart rate) and [respiratory depression](#) (i.e., slowing down of breathing).

Medetomidine and dexmedetomidine are not opioids, meaning naloxone will not reverse their effects in an overdose situation. However, naloxone will work on any opioids that are very likely present alongside medetomidine/dexmedetomidine and contributing to the overdose. [Oxygen is often also provided in community health settings as a comprehensive overdose response](#), specifically when benzodiazepine-related drugs and/or xylazine are present and overdoses are therefore only partially reversed with naloxone.

Advice to reduce potential harms:

1. **Carry and be trained to use naloxone.** Naloxone, also known by the brand name Narcan, is a drug that can temporarily reverse an opioid overdose. Naloxone can be picked up for free from your [local harm reduction agency or pharmacy](#) and [free training](#) is available online. Consider carrying multiple doses of naloxone.
2. **Get your drugs checked before using.** In Toronto, [drug checking services](#) are offered at [Moss Park Consumption and Treatment Service](#), Parkdale Queen West Community Health Centre ([Queen West](#) and [Parkdale](#) sites), [South Riverdale Community Health Centre](#), and [The Works at Toronto Public Health](#). You can also check your drugs after you have used them by submitting drug equipment, like a cooker or a filter. Other drug checking services in Canada include the [British Columbia Centre on Substance Use Drug Checking Project](#), [Get Your Drugs Tested](#), and the University of Victoria [Substance](#) project.
3. **Use at a supervised consumption site or overdose prevention site.** Here is a [list of sites that offer supervised consumption in Toronto](#) and an [interactive map of sites that offer supervised consumption across Canada](#).
4. **Use with someone else and take turns spotting for each other.** A buddy system is safer than using alone.
5. **If you must use alone, let someone know before you use.** Call someone you know and have them stay on the phone with you while you use. [The National Overdose Response Service](#) is available to anyone in Canada and can be reached at 1-888-688-NORS (6677). [The Brave App](#) is an app that can be downloaded on your phone and provides another way to let someone know before you use.
6. **Do a small test dose** first.
7. **Call 911 in an overdose situation.** The [Good Samaritan Drug Overdose Act](#) provides legal protection from drug-related charges for carrying drugs for personal use and other simple possession offences.
8. If your drugs did not contain what you were expecting, **consider talking to the person you got your drugs from**, or get your drugs from another source if possible.
9. **If you use opioids, learn more about safer supply programs.** Safer supply programs provide people who use drugs with prescribed alternatives to opioids obtained from the unregulated supply. Here is an [interactive map of sites that operate safer supply projects across Canada](#) and a [toolkit to advocate for safer opioid supply programs](#). Alternatively, you could **speak to a health care provider about options** like methadone or suboxone. Your [local harm reduction agency](#) could likely refer you to methadone or suboxone providers. Or you could try contacting [ConnexOntario](#).
10. **Visit your local harm reduction agency for free supplies**, including safer injection and smoking equipment. Here is a list of [harm reduction agencies in Ontario](#).

11. **If you are a youth who uses drugs, connect with organizations like the Trip! Project.** The [Trip! Project](#) is a Toronto-based youth-led harm reduction health information service for the dance music scene and youth who use drugs.
12. **Stay informed** by [signing up](#) to receive alerts, reports, and other information on Toronto's unregulated drug supply from Toronto's Drug Checking Service. Results from samples checked by Toronto's Drug Checking Service are combined and [shared online](#) every other week. You can also sign up for [Toronto Public Health's mailing list](#) to receive alerts and other drug-related information.
13. **Act to advance the health, human rights, and dignity of people who use drugs** by connecting with and supporting advocacy organizations such as [Toronto Harm Reduction Alliance](#), [Canadian Association of People who Use Drugs](#), [Canadian Students for Sensible Drug Policy](#), and [Canadian Drug Policy Coalition](#).

[Toronto's Drug Checking Service](#) is a free and anonymous public health service that aims to reduce the harms associated with substance use and, specifically, to prevent overdose by offering people who use drugs timely and detailed information on the contents of their drugs. Beyond educating individual service users, results for all samples are collated and analyzed to perform unregulated drug market monitoring, then translated and [publicly disseminated every other week](#) to communicate unregulated drug market trends to those who cannot directly access the service, as well as to inform care for people who use drugs, advocacy, policy, and research. [Sign up](#) to receive reports, alerts, and other information on Toronto's unregulated drug supply.

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