ISAM 2026 • ROTTERDAM

Emerging Fentanyl Analogues & Veterinary Tranquillisers

Urine Drug Screening: Clinical Gaps and Preventative Strategies in Alberta, Canada

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Presented on behalf of City Centre Medical Clinic & Addiction Healing and Recovery Centre



The evolving drug supply

Four forces are converging

MORE SYNTHETIC OPIOIDS

Analogues • nitazenes • orphines

VETERINARY SEDATIVES

Xylazine • medetomidine

MIXED TOXICITY

ADULTERANTS

Levamisole • caffeine • other agents

LIMITED UDS

Many novel compounds outside routine panels

SIGNAL ≠ SCREEN

Emerging fentanyl analogues

Examples relevant to Canadian surveillance

p-FLUOROFENTANYL

Novel analogue; detection is method dependent

ACETYLFENTANYL

Analogue; assay-dependent detection

CYCLOPROPYLFENTANYL

Analogue; targeted testing may be needed

MEoAc-FENTANYL

Analogue / emerging signal

BROMOFENTANYL

Analogue; laboratory coverage varies

A fentanyl-specific screen is NOT a universal fentanyl-analogue screen.

Beyond fentanyl: nitazenes & emerging orphines

New opioid families can sit outside legacy UDS panels

NITAZENES

Metonitazene • protonitazene • isotonitazene
High overdose potential

ORPHINES

Emerging synthetic-opioid family
Limited clinical data

Targeted analytical testing may be required when clinical suspicion is high.

Veterinary tranquilliser signal: xylazine → medetomidine

Non-opioid α2-adrenergic agonists

NON-OPIOID • NALOXONE DOES NOT REVERSE IT



XYLAZINE

Established signal

MEDETOMIDINE

Emerging signal

BRADYCARDIA

HYPOTENSION

PROLONGED SEDATION

Levamisole: a cutting agent with a major clinical consequence

Cocaine + levamisole → severe neutropenia / agranulocytosis

COCAINE

Commonly encountered stimulant

LEVAMISOLE

Adulterant associated with neutropenia / agranulocytosis

ANC ↓

Potential severe neutropenia

INFECTION RISK

Febrile neutropenia requires urgent assessment

Clinical clue: unexplained febrile neutropenia in a cocaine user → consider levamisole exposure.

Adulterants: not all 'fillers' are clinically neutral

Interpret toxicology with the clinical picture



LEVAMISOLE

Severe neutropenia / agranulocytosis



CAFFEINE

Stimulant load / cardiovascular effects



DMSO

Reported adulterant / bulking agent



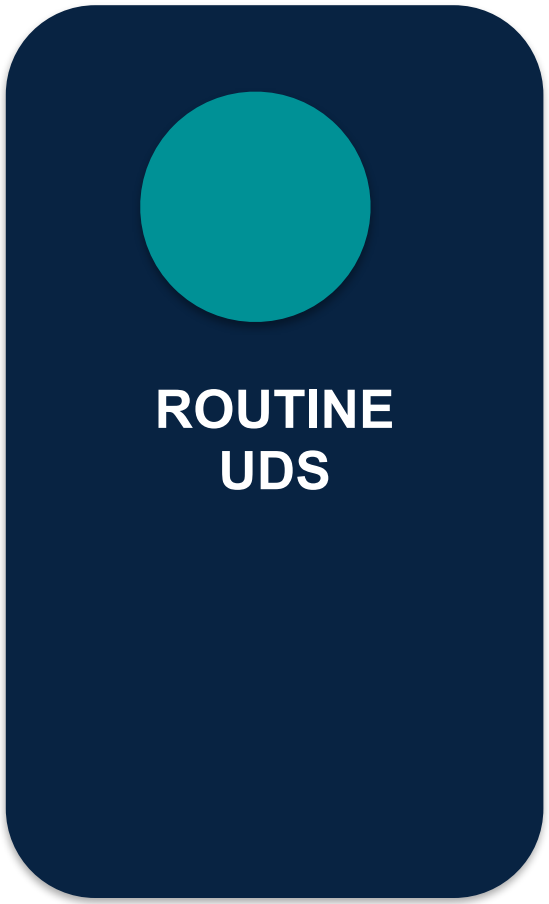
PHENACETIN

Analgesic adulterant

IDENTIFIED ≠ CAUSAL • history + toxidrome + targeted testing

Routine UDS: useful—but not comprehensive

Think of the screen as a flashlight, not a floodlight



Fentanyl / parent	✓	assay / panel dependent
Fentanyl analogues	×	assay / panel dependent
Nitazenes	×	assay / panel dependent
Orphines	×	assay / panel dependent
Medetomidine	×	assay / panel dependent
Xylazine	×	assay / panel dependent
Levamisole	×	assay / panel dependent
Other adulterants	×	assay / panel dependent

NEGATIVE ≠ NO EXPOSURE

Unexplained sedation / overdose: a 4-step pathway

Treat first; investigate intelligently



ASSESS

ABCs • SpO_2 • glucose

NALOXONE

Suspected opioid toxicity

THINK MIXED

Bradycardia • hypotension
• prolonged sedation

TEST

Targeted LC-MS/MS or
HRMS when useful

Naloxone reverses the opioid component—not medetomidine or xylazine.

Prevention: connect the dots

The clinic can become an early-warning node



CLINIC OBSERVATION

LAB CONFIRMATION

DRUG CHECKING

PUBLIC HEALTH

Update assay menu	Create escalation pathway	Share unusual signals	Pair testing with harm reduction

TAKE-HOME MESSAGES

1. The drug supply is evolving faster than routine UDS panels.
2. Many emerging substances are NOT detected on routine UDS.
3. Medetomidine and xylazine can cause profound sedation not reversed by naloxone.
4. Levamisole can cause severe neutropenia / agranulocytosis.
5. Prevention = clinical vigilance + targeted testing + surveillance.

Thank you • Questions & Discussion

Acknowledgements & selected references

Research Team

Jonathan Chue BSc
Pierre Chue MD
Sidharth Arora Pharm D
Gaurav Sharma Pharm D

Special thanks to all the staff at City Centre Medical Clinic & Addiction Healing Recovery Centre, Edmonton, Alberta, Canada

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