

Agents with Potential to Cause False Positives in Illicit Urine Drug Screens*

AMP/MET	BAR	BNZO	COC	LSD	MTD	OPI	PCP	TCA	THC
Amantadine Aripiprazole Atomoxetine Bupropion Chlorpromazine Desipramine	Ibuprofen Naproxen	Efavirenz NSAIDs (such as ibuprofen) Oxaprozin Sertraline	Heavily contaminated environment (cocaine)	Ambroxol Amitriptyline Benzphetamine Bromphiramine Bupropion Buspirone	Diphenhydramine Doxylamine Quetiapine Tapentadol** Verapamil	Amisulpride Creatnine Codeine Dextromethorphan Diphenhydramine Doxylamine	Dextromethorphan Diphenhydramine Doxylamine Ibuprofen Imipramine Ketamine	Carbamezepine Cyclobenzaprine Quetiapine	Efavirenz Dronabinol Ibuprofen Hemp foods Naproxen Niflumic Acid Soap based substances Tolemetin
DMAA Doxepin Ephedrine Fluoxetine Labetalol Metformin				Cephradine Chlorpromazine Despiramine Diltiazem Doxepine Ergonovine		Methadone Naloxone Pentazocine Poppy seeds Quetiapine Quinolones	Lamotrigine Meperidine Thioridazine Tramadol Venlafaxine		
Methylphenidate Nefazodone Ofloxacin Phentermine Phenylephrine Phenylpropanolamine				Fentanyl Fluoxetine Haloperidol Imipramine Labetalol Lysergol		Rifampin Sulpride Tapentadol Tramadol Verapamil			
Promethazine Pseudoephedrine Ranitidine Ritodrine Selegiline Trazodone Trimethylbenzamide				Metoclopramide Methylphenidate Prochlorpromazine Risperidone Sertraline Thioridazine Trazodone Verapamil					
Note: > 30 substances can cross react in people			Note: Cocaine drug screens tend to be very accurate. Common adulterants include levamisole, lidocaine, benzocaine, diltiazem		Note: Methadone is frequently tested separately from other opioids as much of it is excreted unchanged.				Note: Poor reliability in dogs (different urine metabolites compared to humans)

AMP/MET: Amphetamine/Methamphetamine; BAR: Barbiturates; BNZO: Benzodiazepines; COC: Cocaine; LSD: Lysergic acid diethylamide; MTD: Methadone; PCP: Phencyclidine; THC: Tetrahydrocannabinol; TCA: Tri-cyclic Antidepressants; OPI: Opioids

References: *Mahajan G. Role of Urine Drug Testing in the Current Opioid Epidemic. *AnesthAnalg*. 2017 Dec;125(6):2094-2104 and **Collins, A. A., Merritt, A. P., & Bourland, J. A. (2012). Cross-reactivity of tapentadol specimens with DRI methadone enzyme immunoassay. *Journal of analytical toxicology*, 36(8), 582-587.

Treat the Patient and Not the Poison: Illicit Drug Treatment Pearls

- **Urine Drug Screens**

- Urine illicit drug screens are useful tools, however, false positives and false negatives can occur
- Tapentadol is a synthetic opioid structurally related to amphetamines. It does not cause a false positive urine amphetamines, but can with methadone
- Some drugs screens test directly for MDMA, but MDMA may also cross react with amphetamines/methamphetamines
- Buprenorphine, loperamide, kratom, GHB, K2 or Spice, salvia, and bath salts are not commonly found on urine drug screens

- **Decontamination**

- Do not induce emesis or administer activated charcoal in symptomatic patients.
- Apomorphine can worsen the CNS depression of many illicit drugs. Reverse the sedation from apomorphine with naloxone (see below).

- **Cyproheptadine**

- It can be an effective adjunctive treatment but it is rarely adequate as a sole treatment for drugs that cause serotonin syndrome (e.g. amphetamines, methamphetamine, cocaine)
- Repeated administration can serotonin deplete patients so administer only when signs are present. Most patients with amphetamine exposures will only need two to three total doses.
 - Dosing in dogs: 1.1 mg/kg PO or PR, may repeat in 6 to 8h; Cats: 2 to 4 mg per cat (not per kg) PO or PR, may repeat in 8 to 12h.

- **Opioid Reversal**

- Naloxone is the specific antagonist for opioids
 - Dose: 0.01 to 0.04 mg/kg; Fentanyl, buprenorphine and tramadol may potentially need up to 0.1 mg/kg
 - Routes: intravenous, intramuscular, subcutaneous, intraosseous, intratracheal, and intranasal. Narcan nasal mist delivers a 4 mg dose. In large dogs, may need more than one.
 - Onset is within 2 to 5 minutes (IV/IM) and duration is 45 min to 3 hours. Dose again if symptoms recur. It has a wide margin of safety.
- Butorphanol is a mu antagonist and can partially reverse drugs like morphine, oxymorphone, methadone, and fentanyl. It will not completely reverse sedation, but has been successful at improving cardiac and respiratory depression
 - Dose: 0.05 to 0.2 mg/kg IV

- **Intralipid Emulsion Therapy (Lipids or ILE)**

- ILE is not a specific antagonist and is not indicated in most illicit drug exposures. When considering the use of ILE for refractory clinical signs, the potential for side effects, the variable response rate and the impact on other therapies must be carefully weighed.

Lipid Soluble Illicit Drugs	Commonly Used Rescue Therapies Significantly Impacted by ILE	Adverse Effects of ILE	Commonly Used Rescue Therapies Minimally Impacted by ILE
Amphetamines, barbiturates, benzodiazepines, cocaine, LSD, methadone, PCP, THC, some tricyclic antidepressants, and some opioids	Acepromazine, atropine, barbiturates, benzodiazepines, cyproheptadine, diphenhydramine, esmolol, lidocaine, naloxone, propofol, propranolol	Anaphylaxis, hemolysis, artifact interfering with blood chemistries, pancreatitis, fat thromboembolism, fluid overload, hypertension	Methocarbamol and levetiracetam