

Urine Drug Testing for Abuse of Illicit and Prescription Drugs

The value of Urine Drug testing depends on personal knowledge and interaction with the lab to determine appropriate ordering and familiarity with limitations of the testing.

KEY CONCEPTS

Urine Drug Testing

Initial testing done by class-specific immunoassay panels

- Does not identify individual drugs in the class
- Confirmation testing is required for individual drug determination

Sensitivity/Specificity

Sensitivity

- ability to detect class of drug (few false negatives) - Amphetamines

Specificity

- Ability to identify a particular drug (few false positives) – Opiates

General Detection Guidelines in Urine

| | Cutoff (ng/mL) | Days |
|--|----------------|------|
| Amphetamine | 1000 | ≤ 5 |
| Cannabinoids | | |
| Moderate smoker (4x/week) | 50 | 5 |
| Heavy smoker (daily) | 50 | 10 |
| Chronic smoker | 50 | ≤ 28 |
| Benzylecgonine after street doses of cocaine | 300 | 2-3 |
| Opiate (eg, morphine, heroin) | 2000 | 1-2 |
| Phencyclidine | 25 | 8 |
| Chronic users | 25 | ≤ 30 |

Positive Urine Drug Testing CANNOT Provide enough information to:

- Determine exposure time
- Dosage
- Frequency of use

Inpatient Urine Drug Testing Caveats

- Presumptive positive testing will only be confirmed at physician request
 - 7 day time limit
- Amphetamine testing notorious for many cross-reacting substances (FALSE POSITIVES)
 - Diet agents, decongestants, herbal meds
- Benzodiazepines and Barbiturates have many metabolites, with differential detection
- Opiate metabolite testing notorious for lack of reactivity with semi-synthetic and synthetic opioids (FALSE NEGATIVES)
 - Does not detect methadone or oxycodone at therapeutic levels

Opioid Categories

Natural (from opium)

- Codeine
- Morphine
- Thebaine

Semi-synthetic (derived from opium)

- Hydrocodone
- Oxycodone
- Hydromorphone
- Oxymorphone
- Buprenorphine

Synthetic (man-made)

- Meperidine
- Fentanyl
- Propoxyphene
- Methadone

Synthetic and semi-synthetic opioid testing will require specific immunoassay screening or confirmation testing

Example: Oxycodone testing

Screening test

- Highly specific for oxycodone and oxymorphone
- Cut-off = 100 ng/mL – will be appropriate for most compliant testing
- Advantage – cost effective and fast
- However, only sure way is by GC/MS testing

There have been NEGATIVES on screen that were subsequently detected at 60-80 ng/mL by GC/MS

Caution with Compliance Testing

If patient result is NEGATIVE there could be several explanations

- Did not use meds
- Did not recently use meds
- Excretes/metabolizes meds at a different rate than normal (rapid metabolizer, pH effects on the urine)
- Drug test was not sensitive enough to detect med at concentration present
- Clerical errors cause positive to be reported as negative