

FAST FACT AND CONCEPTS # 110
URINE DRUG TESTING FOR OPIOID PRESCRIBING
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Background Urine drug testing (UDT) is frequently utilized to evaluate for illicit substance use and misuse of prescription medications. This is especially relevant for patients being prescribed opioids and is a component of screening for non-medical opioid use (NMOU), substance use disorders (SUD), potentially harmful drug interactions (e.g., opioids and benzodiazepines), diversion, or opioid misuse. There is minimal empirical data suggesting UDT improves patient outcomes. However, for non-cancer patients on long-term opioid therapy, the CDC recommends it when initiating opioids and at least annually. Other organizations endorse UDT for patients with cancer receiving opioids, although there is no consensus on the frequency of testing. More frequent testing should be based on patient-specific factors, including history of SUD, reported misuse, unexpected refill requests, and concern for diversion.

Types of Urine Drug Testing There are two types of UDT: an immunoassay test and gas chromatography/mass spectrometry (GCMS) or high-performance liquid chromatography (HPLC) tests. The immunoassay tests are inexpensive and test for the parent drug and/or metabolite. Most immunoassays test for marijuana, cocaine, natural opiates (e.g., morphine, codeine) and heroin, PCP, benzodiazepines, and amphetamines. These tests are usually not as sensitive for most semi-synthetic or synthetic opioids (e.g., oxycodone, fentanyl, methadone) or buprenorphine and cannot differentiate between specific natural opiates or heroin. The GCMS/HPLC tests are costly and often take much longer to result (particularly if they are sent out to a different lab), but they are more specific, can identify specific compounds, and can confirm specific substances identified on an immunoassay.

UDT Interpretation For questions about unexpected positive or negative results, contact the lab that processed the test as they can usually help with interpretation. Below are additional pearls.

- A UDT cannot identify the amount, route of administration, nor when a substance was used.
- The detection time of a substance in urine varies based on half-life, quantity, and frequency that a substance is used, as well as patient metabolism. For most substances, it is 2-5 days; however, results should be interpreted in the context of a detailed substance use history (including last use of prescribed or non-prescribed substances).
- The accuracy of a UDT is in part dependent on the integrity of the urine sample. A urine sample should be 90-100°F and have a pH between 4.5 – 8.0.
- If concerned for tampering, urinary creatinine should be assessed. Diluted urine will have a creatinine between 5-20 mg/dL and creatinine less than 5 mg/dL is not consistent with human urine.
- Immunoassay tests are susceptible to false negatives since they detect drug presence above a predetermined concentration. If the concentration of the drug is below the cut-off, the result will be negative. If you suspect substance use and have a negative result, obtain a GCMS or HPLC.
- False-positive immunoassays are common from many compounds. For example, quinolones and rifampin are known to cross-react with the immunoassays, leading to false-positive results for opiates.

Opioid metabolites Knowledge of opioids and their respective metabolites is crucial when interpreting UDTs (see table below). For example, in a patient prescribed oxycodone, oxymorphone is an expected metabolite on a GCMS/HPLC test. However, hydrocodone is not a metabolite of oxycodone and if this is present on the UDT, this may indicate the use of another, non-prescribed, opioid.

Codeine	Morphine, Hydromorphone, Hydrocodone
Heroin	Morphine, Hydromorphone
Hydrocodone	Hydromorphone
Morphine	Hydromorphone
Oxycodone	Oxymorphone

Unexpected negative results for a prescribed opioid may be as clinically significant as an unexpected positive result. Negative results may reflect improving pain leading to decreasing use or diversion

(involuntary or voluntary). In a patient who endorses using opioid medications regularly and is receiving ongoing prescriptions, a negative confirmatory test for that substance or its metabolites is concerning for diversion and requires further assessment. Prior to making therapeutic decisions based on a negative result, discuss the result with someone who is familiar with the assay (such as a toxicologist supervising the lab) since the assays may change frequently.

How to discuss urine drug test results The expectation for random UDTs should be established at the outset of opioid prescribing along with the implications of unprescribed substance use or medication misuse. If a UDT result is unexpected (and confirmed), it is critical to use non-stigmatizing language to discuss this with the patient (see *Fast Fact* #429). Avoid pejorative terms such as narcotic, addict, and dirty urine. Explain that the UDT showed an unexpected result and ask directly about unprescribed substance use, NMOU, or prescription misuse. Express concern regarding the harms to the patient from non-medical substance use. Determining whether to continue to prescribe opioids is a harm: benefit analysis based upon the patient's substance use history, prognosis, and the specifics of the non-medical substance use. Regardless, set clear limits moving forward (e.g., one-week prescriptions contingent on UDTs showing expected results) and express a commitment to care for the patient and their symptoms.

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