Test Definition: BUPS

Buprenorphine Screen, Random, Urine

Overview

Useful For
Screening for drug abuse or use of buprenorphine

Method Name
Immunoassay

NY State Available
Yes

Specimen

Specimen Type
Urine

Ordering Guidance
For screening with reflex confirmation of positive screening results, order BUPR / Buprenorphine Screen with Reflex, Random, Urine.

For comprehensive opioid screening, order TOSU / Targeted Opioid Screen, Random, Urine.

For situations where chain of custody is required, a Chain of Custody Kit (T282) is available. For chain-of-custody testing, order BUPMX / Buprenorphine and Norbuprenorphine, Chain of Custody, Random, Urine.

Additional Testing Requirements
If urine creatinine is required or adulteration of the sample is suspected, the following test should also be ordered, ADULT / Adulterants Survey, Random, Urine.

Specimen Required
Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Plastic urine container
Submission Container/Tube: Plastic vial
Specimen Volume: 5 mL
Collection Instructions:
1. Collect a random urine specimen.
2. Submit 5 mL in 1 plastic vial.
3. No preservative.

Additional Information:
1. **No specimen substitutions.**
2. STAT requests are **not accepted** for this test.

3. Submitting less than 5 mL will compromise the ability to perform all necessary testing.

Forms

If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

2.5 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	72 hours	
	Frozen	14 days	

Clinical & Interpretive

Clinical Information

Clinically, buprenorphine is utilized as a substitution therapy for opioid dependence and as an analgesic. Buprenorphine is a partial agonist of the mu-opioid receptor. These mu binding sites are discretely distributed in the human brain, spinal cord, and other tissue. The clinical effects of mu receptor agonists are sedation, euphoria, respiratory depression, and analgesia. As a partial mu receptor agonist, buprenorphine's clinical effects are decreased, giving buprenorphine a wider safety margin.(1) Buprenorphine has a prolonged duration of activity. The combination of decreased clinical effects and prolonged activity gives buprenorphine the added advantage of a delayed and decreased withdrawal syndrome, compared to other opioids.(1) Compared to morphine, buprenorphine is 25 to 40 times more potent.(1) As with any opioid, abuse is always a concern. To reduce illicit use of buprenorphine, it is available mixed with naloxone in a ratio of 4:1. When the combination is taken as prescribed, only small amounts of naloxone will be absorbed. However, if the combination is transformed into the injectable form, naloxone then acts as an opioid receptor antagonist.

Buprenorphine is metabolized through N-dealkylation to norbuprenorphine through cytochrome P450 3A4 (CYP 3A4). Both parent and metabolite then undergo glucuronidation. Norbuprenorphine is an active metabolite possessing one fifth of the potency of its parent. The glucuronide metabolites are inactive.(1)

This procedure uses immunoassay reagents that are designed to produce a negative result when no drugs are present in a natural (ie, unadulterated) specimen of urine; the assay is designed to have a high true-negative rate. Like all immunoassays, it can produce a false-positive result due to cross-reactivity with natural chemicals and drugs other than those they were designed to detect. The immunoassay also can produce a false-negative result due to the antibody's ability to cross-react with different drugs in the target class.

Reference Values

Negative

Screening cutoff concentration:
Buprenorphine: 5 ng/mL

Interpretation
This assay only provides a preliminary analytical test result. A more specific alternative method (ie, liquid chromatography tandem mass spectrometry) must be used to obtain a confirmed analytical result.

Cautions
Care should be taken when interpreting results since there are many factors (eg, fluid intake and other biologic factors) that may influence a urine test result. It is possible that substances other than those investigated in the specificity study may interfere with the test and cause false-positive or false-negative results.

Clinical Reference
1. Elkader A, Spuroule B. Buprenorphine clinical pharmacokinetics in the treatment of opioid dependence. Clin Pharmacokinet 2005;44(7):661-680
2. Jannetto PJ, Bratanow NC, Clark WA, et al. Executive summary: American association of clinical chemistry laboratory medicine practice guideline-using clinical laboratory tests to monitor drug therapy in pain management patients. J Appl Lab Med. 2018;2(4):489-526. doi:10.1373/jalm.2017.023341
3. Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 43

Performance

Method Description
This assay is a homogeneous enzyme immunoassay technique and is performed semi- quantitatively. The assay is based on competition between free drug in the urine sample and a drug labeled with the enzyme glucose-6-phosphate dehydrogenase for a fixed amount of specific antibody binding sites. Active enzyme reduces nicotinamide adenine dinucleotide (NAD[+]) to NADH, which results in an absorbance change that can be measured spectrophotometrically at 340nm.(Package insert: Buprenorphine Urine Enzyme Immunoassay. Roche [LIN-ZHI]; V 3.0, 09/2023)

PDF Report
No

Day(s) Performed
Monday through Saturday

Report Available
Same day/1 to 2 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

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Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

80307

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
BUPS	Buprenorphine Screen, U	93494-3

Result ID	Test Result Name	Result LOINC® Value
63119	Buprenorphine Screen, U	93494-3