

## 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, Sproule 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. Similar testing is being performed on the Olympus AU680 analyzer and this test would be an addition to the current testing.(Package insert: Buprenorphine Urine Enzyme Immunoassay. Immunalysis Corporation; 04/2021)

### **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

## 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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

### 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