



# Test Definition: HYDCU

Hydrocodone with Metabolite Confirmation,  
Random, Urine

## Overview

### Useful For

Detection and quantification of hydrocodone, norhydrocodone, and hydromorphone in urine

### Method Name

Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

### NY State Available

Yes

## Specimen

### Specimen Type

Urine

### Ordering Guidance

For situations where chain of custody is required, a Chain of Custody Kit (T282) is available. For chain-of-custody testing, order OPATX / Opiates Confirmation, Chain of Custody, Random, Urine.

Additional drug panels and specific requests are available; call 800-533-1710.

### Additional Testing Requirements

If urine creatinine is required or adulteration of the specimen is suspected, order ADULT / Adulterants Survey, Random, Urine.

### Specimen Required

**Supplies:** Sarstedt Aliquot Tube, 5 mL (T914)

**Collection Container/Tube:** Plastic urine container

**Submission Container/Tube:** Plastic, 5-mL tube

**Specimen Volume:** 3 mL

#### Collection Instructions:

1. Collect a random urine specimen.
2. No preservative.

#### Additional Information:

1. No specimen substitutions.
2. STATS are **not** accepted for this test.
3. Submitting less than 1 mL will compromise our 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**

Gross hemolysis	OK
Gross icterus	OK

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	28 days	
	Ambient	14 days	
	Frozen	28 days	

**Clinical & Interpretive****Clinical Information**

Hydrocodone exhibits a complex pattern of metabolism including O-demethylation, N-demethylation, and 6-keto reduction to the 6-beta hydroxymetabolites. Hydromorphone and norhydrocodone are both metabolites of hydrocodone. Dihydrocodeine is also a minor metabolite. Trace amounts of hydrocodone can also be found in the presence of approximately 100-fold higher concentrations of oxycodone or hydromorphone since it can be a pharmaceutical impurity in these medications. The presence of hydrocodone indicates exposure within 2 to 3 days prior to specimen collection.

Hydromorphone is metabolized primarily in the liver and is excreted primarily as the glucuronidated conjugate, with small amounts of parent drug and minor amounts of 6-hydroxy reduction metabolites. The presence of hydromorphone indicates exposure within 2 to 3 days prior to specimen collection. Hydromorphone is also a metabolite of hydrocodone; therefore, the presence of hydromorphone could also indicate exposure to hydrocodone.

The detection interval for the opiates is generally 2 to 3 days after last ingestion.

**Reference Values**

Negative

Positive results are reported with a quantitative result.

Cutoff concentrations by-liquid chromatography tandem mass spectrometry:

Hydrocodone: 25 ng/mL

Norhydrocodone: 25 ng/mL

Hydromorphone: 25 ng/mL

**Interpretation**

This procedure reports the total urine concentration; this is the sum of the unconjugated and conjugated forms of the parent drug.

**Cautions**

Other drugs in the opioid class, such as fentanyl, meperidine, methadone, and opiate antagonists such as naloxone, are not detected

**Clinical Reference**

1. Gutstein HB, Akil H. Opioid analgesics. In: Brunton LL, Lazo JS, Parker KL, eds. The Pharmacological Basis of Therapeutics. 11th ed. Goodman and Gilman's: McGraw-Hill Companies, Inc. 2006 Available at [www.accessmedicine.com/content.aspx?aID=940653](http://www.accessmedicine.com/content.aspx?aID=940653)
2. Baselt RC, ed: Disposition of Toxic Drugs and Chemical in Man. 9th ed. Biomedical Publications; 2011
3. Hackett LP, Dusci LJ, Ilett KF, Chiswell GM. Optimizing the hydrolysis of codeine and morphine glucuronides in urine. Ther Drug Monit. 2002;24(5):652-657. doi:10.1097/00007691-200210000-00012
4. 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**

Confirmation with quantification by liquid chromatography/mass spectrometry (LC-MS/MS).(Unpublished Mayo method)

**PDF Report**

No

**Day(s) Performed**

Monday through Friday

**Report Available**

2 to 5 days

**Specimen Retention Time**

14 days

**Performing Laboratory Location**

Mayo Clinic Laboratories - Rochester Superior Drive

**Fees & Codes**

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**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**

G0480

80361 (if appropriate for select payers)

[Clinical Toxicology CPT Code Client Guidance](#)**LOINC® Information**

Test ID	Test Order Name	Order LOINC® Value
HYDCU	Hydrocodone w/metabolite Conf, U	74760-0

Result ID	Test Result Name	Result LOINC® Value
62614	Hydrocodone-by LC-MS/MS	16252-9
35966	Hydromorphone-by LC-MS/MS	16998-7
36026	Hydrocodone Interpretation	69050-3
41999	Norhydrocodone-by LC-MS/MS	61422-2