MAYO CLINIC LABORATORIES

Test Definition: OXYCX

Oxycodone w/metabolite Conf, CoC, U

Overview

Useful For

Detection and quantification of oxycodone, oxymorphone, noroxycodone, and noroxymorphone in urine

Chain of custody is required whenever the results of testing could be used in a court of law. Its purpose is to protect the rights of the individual contributing the specimen by demonstrating that it was under the control of personnel involved with testing the specimen at all times; this control implies that the opportunity for specimen tampering would be limited.

Additional Tests

Test Id	Reporting Name	Available Separately	Always Performed
COCH	Chain of Custody Processing	No	Yes
ADLTX	Adulterants Survey, CoC, U	Yes	Yes

Testing Algorithm

Adulterants testing will be performed on all chain of custody urine samples as per regulatory requirements.

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Supplies: Chain-of-Custody Kit (T282)

Container/Tube: Chain-of-custody kit containing the specimen containers, seals, and documentation required.

Specimen Volume: 5 mL

Collection Instructions: Collect urine specimen in the container provided, seal, and submit with the associated documentation to satisfy the legal requirements for chain-of-custody testing.

Forms

1. Chain-of-Custody Request is included in the Chain-of-Custody Kit (T282).
2. If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Reject Due To

Gross hemolysis	OK
Gross icterus	OK

Specimen Minimum Volume

2 mL

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

Oxycodone is metabolized to noroxycodone, oxymorphone, and their glucuronides and is excreted primarily via the kidney. The presence of oxycodone greater than 100 ng/mL indicates exposure to oxycodone within 2 to 3 days prior to specimen collection.

Oxymorphone is metabolized in the liver to noroxymorphone and excreted via the kidney primarily as the glucuronide conjugates. Oxymorphone is also a metabolite of oxycodone and, therefore, the presence of oxymorphone could also indicate exposure to oxycodone.

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

Chain of custody is a record of the disposition of a specimen to document each individual who collected, handled, and performed the analysis. When a specimen is submitted in this manner, analysis will be performed in such a way that it will withstand regular court scrutiny.

Reference Values

Negative

Cutoff concentrations:

Oxycodone Immunoassay screen: 100 ng/mL

By liquid chromatography-tandem mass spectroscopy:

Oxycodone: 25 ng/mL

Noroxycodone: 25 ng/mL

Oxymorphone: 25 ng/mL

Noroxymorphone: 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. Goodman and Gilman's: The Pharmacological Basis of Therapeutics. 11th ed. McGraw-Hill Companies, Inc; 2006:chap 21

2. Baselt, RC: 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
4. Langman LJ, Bechtel L, Meier BM, Holstege CP: Clinical Toxicology. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier, 2018, pp 832-887

Performance

Method Description

Oxycodone and its metabolite, oxymorphone, are analyzed via immunoassay. The assay uses specific antibodies that can detect oxycodone and oxymorphone without any significant cross-reactivity to other opiate compounds. The assay is based on the competition between a drug labeled with glucose-6-phosphate dehydrogenase (G6PD), and free drug from the urine sample for a fixed amount of specific antibody binding sites. In the absence of free drug from the sample, the specific antibody binds the drug labeled with G6PD and causes a decrease in enzyme activity. This phenomenon creates a direct relationship between the drug concentration in urine and enzyme activity. The enzyme activity is determined spectrophotometrically at 340 nm by measuring the conversion of nicotinamide adenine dinucleotide (NAD+) to NADH.(Package insert: Oxycodone. Roche Diagnostics; 12/2016)
Confirmation with quantification by liquid chromatography-tandem mass spectrometry (LC-MS/MS).(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

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

CPT Code Information

80365
G0480 (if appropriate)