MAYO CLINIC LABORATORIES

Test Definition: OPATS

Opiate Panel, Free (Unconjugated), Serum

Overview

Useful For

Monitoring therapeutic efficacy, compliance, misuse and/or abuse in serum specimens of patients who have been prescribed any of the following: codeine, hydrocodone, oxycodone, morphine, hydromorphone, oxymorphone, and dihydrocodeine,

Detection and quantification of codeine, hydrocodone, oxycodone, morphine, hydromorphone, oxymorphone, noroxycodone, noroxymorphone, norhydrocodone, dihydrocodeine, and 6-monoacetylmorphine

Special Instructions

- Clinical Toxicology CPT Code Client Guidance

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Ordering Guidance

This test should only be ordered by healthcare professionals to monitor patients who have been prescribed any of the following opiates/opiates antagonists: codeine, oxycodone, noroxycodone, oxymorphone, hydrocodone, norhydrocodone, dihydrocodeine, morphine, 6-monoacetylmorphine, hydromorphone, and noroxymorphone.

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Red top (Serum gel/SST are **not acceptable**)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL serum
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

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

Specimen Minimum Volume

Serum: 0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	14 days	
	Ambient	24 hours	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Opiates are the natural or synthetic drugs that have a morphine-like pharmacological action. They are used primarily for relief of pain and often produce physical and psychological dependence. This test is for use by healthcare professionals to determine if patients prescribed any of the following opiates/opioids are receiving the right dose for therapeutic efficacy and/or are compliant: codeine, oxycodone, noroxycodone, oxymorphone, hydrocodone, norhydrocodone, dihydrocodeine, morphine, 6-monoacetylmorphine, hydromorphone, and noroxymorphone.

Reference Values

Therapeutic range/Metabolite information (as applicable):
6-monoacetylmorphine: Metabolite of heroin
Codeine: 10-100 ng/mL
Morphine: 10-80 ng/mL when used as sole therapy; Minor metabolite of codeine
Hydromorphone: 1.0-30 ng/mL when used as sole therapy; Metabolite of hydrocodone and minor metabolite of morphine
Hydrocodone: 10-100 ng/mL
Dihydrocodeine: 72-150 ng/mL when used as sole therapy; Minor metabolite of hydrocodone
Norhydrocodone: Metabolite of hydrocodone
Oxycodone: 10-100 ng/mL
Noroxycodone: Metabolite of oxycodone
Oxymorphone: 1.0-8.0 ng/mL when used as sole therapy; Metabolite of oxycodone
Noroxymorphone: Metabolite of oxymorphone

Cutoff concentrations:
6-Monoacetylmorphine: 1.0 ng/mL
Codeine: 1.0 ng/mL
Morphine: 1.0 ng/mL
Hydromorphone: 1.0 ng/mL

Hydrocodone: 1.0 ng/mL
Dihydrocodeine: 1.0 ng/mL
Norhydrocodone: 1.0 ng/mL
Oxycodone: 1.0 ng/mL
Noroxycodone: 1.0 ng/mL
Oxymorphone: 1.0 ng/mL
Noroxymorphone: 1.0 ng/mL

Interpretation

Clinically, the presence of oxycodone, noroxycodone, oxymorphone, noroxymorphone, morphine, hydrocodone, norhydrocodone, hydromorphone, dihydrocodeine, codeine, and/or 6-monoacetylmorphine in serum can be used to verify adherence or compliance to prescribed opioids, and discourage drug misuse, abuse, and diversion.

The following adult therapeutic ranges are suggested by literature but must be interpreted alongside other clinical features/test results, symptoms, collection time since last dosage was taken, and signs of abuse/misuse.
6-monoacetylmorphine: Not established, it is a metabolite of heroin
Codeine: 10-100 ng/mL
Morphine: 10-80 ng/mL when used as sole therapy; it is also a minor metabolite of codeine
Hydromorphone: 1.0-30 ng/mL when used as sole therapy; it is also a metabolite of hydrocodone and minor metabolite of morphine.
Hydrocodone: 10-100 ng/mL
Dihydrocodeine: 72-150 ng/mL when used as sole therapy; it is also a minor metabolite of hydrocodone.
Norhydrocodone: Not established; it is a metabolite of hydrocodone.
Oxycodone: 10-100 ng/mL
Noroxycodone: Not established; it is a metabolite of oxycodone.
Oxymorphone: 1.0-8.0 ng/mL when used as sole therapy; it is a metabolite of oxycodone.
Noroxymorphone: Not established; it is a metabolite of oxymorphone.

Cautions

Any aberrant result should be discussed with the patient and could be confirmed by re-testing or using an alternative matrix (eg, urine).

Clinical Reference

1. Jannetto PJ, Bratanow NC, Clark WA, et al. 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
2. Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham C-AD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 43

Performance

Method Description

The opiates are extracted from serum using a solvent to precipitate proteins. The supernatant is removed and analyzed by liquid chromatography tandem mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Tuesday

Report Available
2 to 9 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
G0480
80361 (if appropriate for select payers)
80365 (if appropriate for select payers)
80356 (if appropriate for select payers)
Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
OPATS	Opiate Panel, Free (Unconjugated),S	In Process

Result ID	Test Result Name	Result LOINC® Value
623436	6-monoacetylmorphine - Free	49749-5
623437	Codeine - Free	12784-5
623438	Morphine - Free	11244-1
623439	Hydromorphone - Free	12787-8
623440	Hydrocodone - Free	12786-0

623441	Dihydrocodeine - Free	12785-2
623442	Norhydrocodone - Free	In Process
623443	Oxycodone - Free	12789-4
623444	Noroxycodone - Free	In Process
623445	Oxymorphone - Free	46974-2
623446	Noroxymorphone - Free	In Process