MAYO CLINIC LABORATORIES

Test Definition: MORS

Morphine and Metabolite, Serum

Overview

Useful For

Monitoring therapeutic efficacy/compliance in serum specimens of patients who are prescribed morphine

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 morphine.

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.

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 morphine are receiving the right dose for therapeutic efficacy and/or are compliant.

Reference Values

Therapeutic range/Metabolite information (as applicable):
Morphine: 10-80 ng/mL
Hydromorphone: 1.0-30 ng/mL when used as sole therapy; Minor metabolite of morphine

Cutoff concentrations:
Morphine: 1.0 ng/mL
Hydromorphone: 1.0 ng/mL

Interpretation

Clinically, the presence of morphine and/or hydromorphone 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.
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.

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. 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
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)
Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MORS	Morphine and metabolite, S	In Process

Result ID	Test Result Name	Result LOINC® Value
623447	Morphine - Free	11244-1
623448	Hydromorphone - Free	12787-8