MAYO CLINIC LABORATORIES

Test Definition: MEX

Mexiletine, Serum

Overview

Useful For

Assessing achievement of optimal therapeutic mexiletine concentrations

Assessing potential mexiletine toxicity

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Specimen Required

Patient Preparation: Specimens should only be collected after patient has been receiving mexiletine for at least 3 days. Trough concentrations should be collected just before administration of the next dose.
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: 1.5 mL
Collection Instructions:
1. Draw blood immediately before next scheduled dose.
2. Within 2 hours of collection centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Cardiovascular Test Request (T724)
-Therapeutics Test Request (T831)

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Gross icterus	OK

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

Mexiletine is a class I B antiarrhythmic with electrophysiologic properties similar to lidocaine and is useful in suppression of ventricular arrhythmias.

The drug exhibits a high degree of oral bioavailability, is approximately 60% protein bound, and undergoes renal clearance. Mexiletine has a volume of distribution of approximately 6 L/kg and a half-life of approximately 11 hours. Myocardial infarction and uremia reduce the rate of clearance and increase the half-life of mexiletine, requiring dosage adjustment guided by drug monitoring.

Mexiletine toxicity can occur at concentrations above 2.0 mcg/mL (trough value) and is characterized by symptoms of nausea, hypotension, sinus bradycardia, paresthesia, seizures, intermittent left bundle branch block, and temporary asystole.

Reference Values

Trough Value
0.5-2.0 mcg/mL: Therapeutic concentration
>2.0 mcg/mL: Toxic concentration

Interpretation

Optimal response to mexiletine occurs when the serum concentration is within the range of 0.5 to 2.0 mcg/mL (trough value).

Cautions

Specimens that are obtained from gel tubes or anticoagulate collections can cause assay interference.

Clinical Reference

1. Milone MC, Shaw LM. Therapeutic drugs and their management. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:420-453
2. Josephson ME, Buxton AE, Marchlinski FE. The tachyarrhythmias: tachycardias. In: Wilson JD, Braunwald E, Isselbacher KJ, et al, eds. Harrison's Principles of Internal Medicine. 12th ed. McGraw-Hill Book Company; 1991:915
3. Valdes R Jr, Jortani SA, Gheorghiade M. Standards of laboratory practice: cardiac drug monitoring. National Academy of Clinical Biochemistry. Clin Chem. 1998;44(5):1096-1099
4. Joseph SP, Holt DW. Electrophysiological properties of mexiletine assessed with respect to plasma concentrations. Eur

J Cardiol. 1980;11(2):115-121
5. Antman EM, Beamer AD, Cantillon C, et al. Long-term oral propafenone therapy for suppression of refractory symptomatic atrial fibrillation and atrial flutter. J Am Coll Cardiol. 1988;12:1005-1011
6. Goldschlager N, Epstein AE, Naccarelli GV, et al. A practical guide for clinicians who treat patients with amiodarone. Heart Rhythm. 2007;4:1250-1259
7. Klotz U. Antiarrhythmics: elimination and dosage considerations in hepatic impairment. Clin Pharmacokinet. 2007;46(12):985-996
8. Campbell TJ, Williams KM. Therapeutic drug monitoring: antiarrhythmic drugs. Br J Clin Pharmacol. 2001;52 Suppl1:21S-34S

Performance

Method Description
Protein is precipitated from serum using an organic solvent based internal standard. Following centrifugation, the supernatant is diluted with clinical laboratory reagent water and analyzed by liquid chromatography tandem mass spectrometry.(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

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.

Test Definition: MEX

Mexiletine, Serum

CPT Code Information

80299

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MEX	Mexiletine, S	40779-1

Result ID	Test Result Name	Result LOINC® Value
9245	Mexiletine, S	40779-1