MAYO CLINIC LABORATORIES

# Test Definition: MEX

Mexiletine, S

## Overview

### Useful For

Assessing achievement of optimal therapeutic concentrations

Assessing potential toxicity

### Method Name

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

### NY State Available

Yes

## Specimen

### Specimen Type

Serum Red

### Specimen Required

**Patient Preparation:** Samples 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.

**Collection Container/Tube:**Red top

**Submission Container/Tube:**Plastic vial

**Specimen Volume:**1.5 mL

**Collection Instructions:**

1. Samples should only be collected after patient has been receiving mexiletine for at least 3 days.
2. Draw blood immediately before next scheduled dose.
3. Centrifuge within 2 hours of draw and aliquot to remove serum from spun RBCs.

### Forms

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

### Reject Due To

| | |
|---|---|
| Gross hemolysis | OK |
| Gross lipemia | Reject |
| Gross icterus | OK |

### Specimen Minimum Volume

0.5 mL

### 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 at a rate of 10.3 mL/min/kg. Mexiletine has a volume of distribution of 9.5 L/kg at a half-life of 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 occurs 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 0.8 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. Nader R, Horwath AR, Wittwer CT: In Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Sixth edition. St. Louis: Elsevier 2018

2. Burtis CA, Ashwood ER, Bruns DE, et al: In Tietz Textbook of Clinical Chemistry and Molecular Diagnosis. Fifth edition. St Louis: Elsevier. USA 2012

3. Josephson ME, Buxton AE, Marchlinski FE: The tachyarrhythmias: tachycardias. In Harrison's Principles of Internal Medicine. 12th edition. Edited by JD Wilson, E Braunwald, KJ Isselbacher, et al: New York, McGraw-Hill Book Company, 1991, p 915

4. Valdes R Jr, Jortani SA, Gheorghiade M, et al: Standards of Laboratory Practice: Cardiac Drug Monitoring. Clin Chem 1998;44(5):1096-1099

5. Joseph SP, Holt DW: Electrophysiological properties of mexiletine assessed with respect to plasma concentrations. Eur J Cardiol 1980 Feb;11(2):115-121

## Performance

### Method Description

Protein is precipitated from serum and following centrifugation the supernatant is diluted and analyzed by 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**

80299