

## 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. Centrifuge and aliquot serum into a plastic vial within 2 hours of collection.

### Forms

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

### 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**

- 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
- 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
- Valdes R Jr, Jortani SA, Gheorghide M. Standards of laboratory practice: cardiac drug monitoring. National Academy of Clinical Biochemistry. Clin Chem. 1998;44(5):1096-1099
- Joseph SP, Holt DW: Electrophysiological properties of mexiletine assessed with respect to plasma concentrations. Eur J Cardiol. 1980;11(2):115-121

**Performance****Method Description**

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

Rochester

**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**

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