**Overview**

**Useful For**
- Monitoring therapy
- Evaluating potential toxicity
- Evaluating patient compliance

**Method Name**
Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)

**NY State Available**
Yes

**Specimen**

**Specimen Type**
Serum Red

**Specimen Required**

**Container/Tube:** Red top

**Specimen Volume:** 1 mL

**Collection Instructions:**

1. Draw specimen immediately before next scheduled dose (or at a minimum 12 hours after last dose).

2. Serum must be separated from cells within 2 hours of draw.

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

**Specimen Minimum Volume**
0.25 mL

**Reject Due To**

<table>
<thead>
<tr>
<th>Gross hemolysis</th>
<th>Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross lipemia</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross icterus</td>
<td>Reject</td>
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</tbody>
</table>

**Specimen Stability Information**

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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</thead>
<tbody>
<tr>
<td>Serum Red</td>
<td>Refrigerated (preferred)</td>
<td>28 days</td>
<td></td>
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</tbody>
</table>

Document generated April 26, 2020 at 5:24pm CDT
Test Definition: DXPIN
Doxepin and Nordoxepin, S

<table>
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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Frozen</td>
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<td>28 days</td>
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</tr>
<tr>
<td>Ambient</td>
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<td>7 days</td>
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Clinical and Interpretive

Clinical Information
Doxepin is recommended for the treatment of psychoneurotic patients with depression or anxiety, and depression or anxiety associated with alcoholism or organic disease.

Nordoxepin (N-desmethyldoxepin) is the major metabolite and is usually present at concentrations equal to doxepin. Optimal efficacy occurs at combined serum concentrations between 50 and 150 ng/mL.

Like other tricyclic antidepressants, the major toxicity of doxepin is expressed as cardiac dysrhythmias, which occur at concentrations in excess of 500 ng/mL. Other side effects include nausea, hypotension, and dry mouth.

Reference Values
Therapeutic concentration (doxepin + nordoxepin): 50-150 ng/mL

Note: Therapeutic ranges are for specimens drawn at trough (ie, immediately before next scheduled dose). Levels may be elevated in non-trough specimens.

Interpretation
Most individuals display optimal response to doxepin when combined serum levels of doxepin and nordoxepin are between 50 and 150 ng/mL. Some individuals may respond well outside of this range, or may display toxicity within the therapeutic range; thus, interpretation should include clinical evaluation. Risk of toxicity is increased with combined levels are above 500 ng/mL.

Therapeutic ranges are based on specimens drawn at trough (ie, immediately before the next dose).

Cautions
This test cannot be performed on whole blood. Serum must be separated from cells within 2 hours of drawing; if serum is not removed within this time, tricyclic antidepressant levels may be falsely elevated due to drug release from RBCs. Specimens that are obtained from gel tubes are also not acceptable, as the drug can absorb on the gel and lead to falsely decreased concentrations.

Clinical Reference
Performance

Method Description
The tricyclic antidepressants are extracted from serum using a solvent crash to precipitate proteins. The supernatant is removed and analysis is by liquid chromatography-tandem mass spectrometry (LC-MS/MS). (Unpublished Mayo method)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday, Wednesday, Friday; Varies

Analytic Time
2 days

Maximum Laboratory Time
4 days

Specimen Retention Time
14 days

Performing Laboratory Location
Rochester

Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information
80335
G0480 (if appropriate)

LOINC® Information

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<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<td>Doxepin and Nodoxepin, S</td>
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