### Overview

**Useful For**
Monitoring adequacy of serum concentration during tobramycin therapy

This unit code is used whenever a specimen is submitted or collected without collection timing information. The phlebotomist should use this unit code if she or he does not know if this is a peak or trough specimen.

**Method Name**
Immunoassay

**NY State Available**
Yes

### Specimen

**Specimen Type**
Serum

**Advisory Information**
Serum for a peak level should be drawn 30 to 60 minutes after last dose (order TOBPA / Tobramycin, Peak, Serum).

Serum for a trough level should be drawn no more than 30 minutes before next scheduled dose (order TOBTA / Tobramycin, Trough, Serum).

**Specimen Required**
- **Preferred:** Serum gel
- **Acceptable:** Red top

**Specimen Volume:** 0.5 mL

**Collection Instructions:**
1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged and aliquoted 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**
0.25 mL

**Reject Due To**
- Gross hemolysis | Reject

**Specimen Stability Information**
**Test Definition: TOBRA**

Tobramycin, Random, S

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>28 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>72 hours</td>
<td></td>
</tr>
</tbody>
</table>

**Clinical and Interpretive**

**Clinical Information**

Tobramycin is an antibiotic used to treat life-threatening blood infections by gram-negative bacilli, particularly *Citrobacter freundii*, *Enterobacter* (all species), *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Providencia stuartii*, *Pseudomonas aeruginosa*, and *Serratia*. It is often used in combination with beta-lactam therapy.

A tobramycin minimum inhibitory concentration (MIC) of less than 4.0 mcg/mL is considered susceptible for gram-negative bacilli, while a MIC of greater than 8.0 mcg/mL is considered resistant.

Toxicities include ototoxicity and nephrotoxicity. This risk is enhanced in presence of other ototoxic or nephrotoxic drugs. Monitoring of serum levels, renal function, and symptoms consistent with ototoxicity is important. For longer durations of use, audiology and vestibular testing should be considered at baseline and periodically during therapy.

**Reference Values**

**TOBRAMYCIN, PEAK**

Therapeutic: 3.0-12.0 mcg/mL

Toxic: >12.0 mcg/mL

**TOBRAMYCIN, TROUGH**

Therapeutic: <2.0 mcg/mL

Toxic: >2.0 mcg/mL

**Interpretation**

Target peak concentrations depend on the type of infection being treated. Goal trough levels should be below 2.0 mcg/mL. Concentrations refer to conventional (non-pulse) dosing. Prolonged exposure to either peak levels exceeding 12.0 mcg/mL or trough levels exceeding 2.0 mcg/mL may lead to toxicity.

**Cautions**

No significant cautionary statements

**Clinical Reference**


Document generated April 26, 2020 at 3:31am CDT
Performance

Method Description
The assay is based on a homogeneous enzyme immunoassay technique used for the quantitative analysis of tobramycin in human serum or plasma. The assay is based on competition between drug in the sample and drug labeled with the enzyme glucose-6-phosphate dehydrogenase (G6PDH) for antibody binding sites. Enzyme activity decreases upon binding to the antibody, so the drug concentration in the sample can be measured in terms of enzyme activity. Active enzyme converts oxidized nicotinamide adenine dinucleotide (NAD) to NADH, resulting in an absorbance change that is measured spectrophotometrically. Endogenous serum G6PDH does not interfere because the coenzyme functions only with the bacterial (Leuconostoc mesenteroides) enzyme employed in the assay. (Package insert: Roche Tobramycin reagent, Roche Diagnostic Corp, Indianapolis, IN)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Sunday; Continuously

Analytic Time
Same day/1 day

Maximum Laboratory Time
1 day

Specimen Retention Time
1 week

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 has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
80200

LOINC® Information
## Test Definition: TOBRA
Tobramycin, Random, S

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOBRA</td>
<td>Tobramycin, Random, S</td>
<td>35670-9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOBRA</td>
<td>Tobramycin, Random, S</td>
<td>35670-9</td>
</tr>
</tbody>
</table>