

## Overview

### Useful For

Monitoring adequate clearance of tobramycin near the end of a dosing cycle

### Method Name

Immunoassay

### NY State Available

Yes

## Specimen

### Specimen Type

Serum

### Specimen Required

#### Collection Container/Tube:

**Preferred:** Serum gel

**Acceptable:** Red top

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 0.5 mL

#### Collection Instructions:

1. Draw blood no more than 30 minutes before next scheduled dose.
2. Serum gel tubes should be centrifuged within 2 hours of collection.
3. Red-top tubes should be centrifuged, and the serum aliquoted 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

0.25 mL

### Reject Due To

Gross hemolysis	Reject
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### Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
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Serum	Refrigerated (preferred)	7 days	
	Ambient	72 hours	
	Frozen	28 days	

## Clinical & 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* species. 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

Therapeutic: <2.0 mcg/mL

Toxic: >2.0 mcg/mL

### Interpretation

Goal levels depend on the type of infection being treated. Goal trough levels should be below 2.0 mcg/mL for conventional (nonpulse) dosing. Prolonged exposure to trough levels exceeding 2.0 mcg/mL may lead to toxicity.

### Cautions

No significant cautionary statements

### Clinical Reference

1. Hammett-Stabler CA, Johns T: Laboratory guidelines for monitoring of antimicrobial drugs. *Clin Chem* 1998;44(5):1129-1140
2. Moyer TP: Therapeutic drug monitoring. In *Tietz Textbook of Clinical Chemistry*. Fourth edition. Edited by CA Burtis, ER Ashwood, Philadelphia, WB Saunders Company, 2006
3. Wilson JW, Estes LL: Mayo Clinic Antimicrobial Therapy Quick Guide. Mayo Clinic Scientific Press and Informa Healthcare USA, 2008

## 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) Performed**

Monday through Sunday

**Report Available**

Same day/1 to 2 days

**Specimen Retention Time**

1 week

**Performing Laboratory Location**

Mayo Clinic Laboratories - Rochester Main Campus

**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 has been cleared, approved, or is exempt by the US 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 ID	Test Order Name	Order LOINC® Value
TOBTA	Tobramycin, Trough, S	4059-2

Result ID	Test Result Name	Result LOINC® Value
TOBTA	Tobramycin, Trough, S	4059-2