Overview

Useful For
Determining the resistance of species of Nocardia and other aerobic actinomycetes to antimicrobial agents

Highlights
Antimicrobials tested for Nocardia species susceptibility include: amikacin, amoxicillin/clavulanic acid, ceftriaxone, ciprofloxacin, clarithromycin, doxycycline, imipenem, linezolid, minocycline, moxifloxacin, trimethoprim/sulfamethoxazole, and tobramycin.

Reflex Tests

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC</td>
<td>Sensitivity, MIC</td>
<td>No, (Bill Only)</td>
<td>No</td>
</tr>
</tbody>
</table>

Additional Tests

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSNS</td>
<td>Susceptibility Nocardia species</td>
<td>No, (Bill Only)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Testing Algorithm
When this test is ordered, susceptibility for Nocardia species will be performed at an additional charge.

When the organism identification is Rhodococcus equi the additional reflex test will be performed at an additional charge for the additional antimicrobials vancomycin and rifampin.

Special Instructions
- Infectious Specimen Shipping Guidelines

Method Name
Minimum Inhibitory Concentration (MIC)

NY State Available
Yes

Specimen

Specimen Type
Varies

Shipping Instructions
1. See Infectious Specimen Shipping Guidelines in Special Instructions.
2. Place specimen in a large infectious container (T146) and label as an etiologic agent/infectious substance.

**Necessary Information**

**Specimen source** is required.

**Specimen Required**

**Specimen Type:** Organism in pure culture

**Supplies:** Infectious Container, Large (T146)

**Container/Tube:**

- **Preferred:** Middlebrook 7H10 agar slant without antimicrobials
- **Acceptable:** Sabouraud's dextrose agar slant or similar media without antimicrobials (eg, 7H11 agar slant, LJ, MGIT [7H9] broth media)

**Specimen Volume:** Isolate

**Collection Instructions:** Organism must be in pure culture, actively growing.

**Forms**

If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

**Reject Due To**

<table>
<thead>
<tr>
<th>Agar plate</th>
<th>Reject</th>
</tr>
</thead>
</table>

**Specimen Stability Information**

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varies</td>
<td>Ambient (preferred)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refrigerated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Clinical and Interpretive**

**Clinical Information**

*Nocardia* species and other aerobic actinomycetes can cause significant disease, often in immunocompromised patients. Clinical presentation can include pneumonia, skin abscess, bacteremia, brain abscess, eye infection, and joint infection.

Antimicrobial susceptibility testing may aid with selection of appropriate antimicrobial agents for patient care.

**Reference Values**

The following are interpretive values for susceptibility testing of *Nocardia* species using a broth microdilution method.
### Antimicrobial agent Concentration range mcg/mL Interpretations

<table>
<thead>
<tr>
<th>Antimicrobial agent</th>
<th>Concentration range mcg/mL</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amikacin</td>
<td>1-64</td>
<td>S: &lt; or =8, I: 16/8, R: &gt; or =16</td>
</tr>
<tr>
<td>Amoxicillin/clavulanate</td>
<td>2/1-64/32</td>
<td>S: &lt; or =8/4, I: 16/8, R: Â &gt; or =32/16</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>4-64</td>
<td>S: &lt; or =8, I: 16-32, R: &gt; or =64</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>0.12-4</td>
<td>S: &lt; or =1, I: 2-4, R: Â &gt; or =8</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>0.06-16</td>
<td>S: &lt; or =2, I: 4, R: Â &gt; or =8</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>0.12-16</td>
<td>S: &lt; or =1, I: 2-4, R: Â &gt; or =8</td>
</tr>
<tr>
<td>Imipenem</td>
<td>2-64</td>
<td>S: &lt; or =4, I: 8, R: &gt; or =16</td>
</tr>
<tr>
<td>Linezolid</td>
<td>1-32</td>
<td>S: &lt; or =8, I: -</td>
</tr>
<tr>
<td>Minocycline</td>
<td>1-8</td>
<td>S: &lt; or =1, I: 2-4, R: Â &gt; or =8</td>
</tr>
<tr>
<td>Moxifloxacin</td>
<td>0.25-8</td>
<td>S: &lt; or =1, I: 2, R: &gt; or =4</td>
</tr>
<tr>
<td>Tobramycin</td>
<td>1-16</td>
<td>S: &lt; or =4, I: 8, R: &gt; or =16</td>
</tr>
<tr>
<td>Trimethoprim/ Sulfamethoxazole</td>
<td>0.25/4.75-8/152</td>
<td>S: &lt; or =2/38, I: -, R: &gt; or =4/76</td>
</tr>
</tbody>
</table>

For *Rhodococcus equi*, the interpretive criteria indicated in CLSI document M100 for *Staphylococcus aureus* are used for vancomycin and rifampin. The interpretive categories should be considered tentative pending accumulation of further information.

### Interpretation

Interpretive values for susceptibility testing of *Nocardia* species using a broth microdilution method are included in the report, as appropriate.

For *Rhodococcus equi*, the interpretive values for vancomycin and rifampin will also be included. The interpretive categories for these antibiotics should be considered tentative pending accumulation of additional information.

See Reference Values for additional information.

### Cautions

No significant cautionary statements

### Clinical Reference


### Performance

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Test Definition: MMLNS
Susc, Aerobic Actinomycetes

Method Description
A standardized inoculum made from a pure culture of aerobic actinomycete is prepared and inoculated into wells of a microtiter plate containing different concentrations of antimicrobial agents.


PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Sunday; a.m.

Analytic Time
12 days

Maximum Laboratory Time
28 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
87186

LOINC® Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
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</thead>
<tbody>
<tr>
<td>MMLNS</td>
<td>Susc, Aerobic Actinomycetes</td>
<td>29577-4</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
</tr>
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<tbody>
<tr>
<td>MMLNS</td>
<td>Susc, Aerobic Actinomycetes</td>
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