MAYO CLINIC LABORATORIES

Test Definition: MMLNS

Antimicrobial Susceptibility, Nocardia species and other Aerobic Actinomycetes, Varies

Overview

Useful For

Determining the resistance of species of *Nocardia* and other aerobic actinomycetes to antimicrobial agents.

This test is **not useful for** determining resistance of aerobic actinomycetes species of the following genera: Actinoallomurus, Actinocatenispora, Actinoplanes, Aeromicrobium, Croceifilum, Hazenella, Intrasporangium, Kineosphaera, Kitasatospora, Kribella, Kutzneria, Laceyella, Marinactinospora, Microbispora, Micromonospora, Nocardioides (not *Nocardia*), Phycicoccus, Piscicoccus, Prauserella, Risungbinella, Saccharothrix, Sphaerimonospora, Spirillospora, Streptosporangium, Terracoccus, or Thermoactinomyces.

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
MIC	Susceptibility, MIC	No, (Bill Only)	No

Additional Tests

Test Id	Reporting Name	Available Separately	Always Performed
SSNS	Susceptibility Nocardia species	No, (Bill Only)	Yes

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

Highlights

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

For *Rhodococcus equi*, rifampin and vancomycin will also be tested.

Method Name

Minimum Inhibitory Concentration (MIC)

NY State Available

Yes

Specimen

Specimen Type
Varies

Ordering Guidance
This test is intended for assessing antimicrobial susceptibility of *Nocardia* species and other pathogenic aerobic actinomycetes which include the more commonly isolated genera of *Rhodococcus*, *Streptomyces*, *Gordonia*, *Dietzia*, *Tsukamurella*, and *Williamsia* species, as well as the lesser isolated genera which include *Actinomadura*, *Amycolatopsis*, *Dermatophilus*, *Kroppenstedtia*, *Nocardiopsis*, *Nonomuraea*, *Pseudonocardia*, *Saccharomonospora*, and *Saccharopolyspora* species.

Certain genera of aerobic actinomycetes will not be accepted for susceptibility testing. Aerobic actinomycetes genera that will not be tested include the following: *Actinoallomurus*, *Actinocatenispora*, *Actinoplanes*, *Aeromicrobium*, *Croceifilum*, *Hazenella*, *Intrasporangium*, *Kineosphaera*, *Kitasatospora*, *Kribella*, *Kutzneria*, *Laceyella*, *Marinactinospora*, *Microbispora*, *Micromonospora*, *Nocardioides* (not *Nocardia*), *Phycicoccus*, *Piscicoccus*, *Prauserella*, *Risungbinella*, *Saccharothrix*, *Sphaerimonospora*, *Spirillospora*, *Streptosporangium*, *Terracoccus*, and *Thermoactinomyces*.

Additional Testing Requirements
If organism identification is not provided, CTB / Mycobacteria and *Nocardia* Culture, Varies or CTBID / Culture Referred for Identification, *Mycobacterium* and *Nocardia*, Varies **must also** be ordered and will be charged separately.

Shipping Instructions
1. For shipping information see Infectious Specimen Shipping Guidelines.
2. Place specimen in a large infectious container and label as an etiologic agent/infectious substance.

Necessary Information
1. Specimen source is required.
2. Organism identification is required unless either CTB / Mycobacteria and *Nocardia* Culture, Varies or CTBID / Culture Referred for Identification, *Mycobacterium* and *Nocardia*, Varies is also ordered.

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.

Specimen Minimum Volume

See Specimen Required

Reject Due To

Agar plate	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Ambient (preferred)		
	Refrigerated		

Clinical & Interpretive

Clinical Information

Nocardia species and other aerobic actinomycetes can cause significant disease, often in immunocompromised patients. Clinical presentation can include, but is not limited to, 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

Interpretive criteria and reporting guidelines are followed using the Clinical Laboratory Standards Institute (CLSI) M24S document.

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.

See Reference Values for additional information.

Cautions

No significant cautionary statements

Clinical Reference

1. Duggal SD, Chugh TD. Nocardiosis: A neglected disease. Med Princ Pract. 2020;29(6):514-523. doi:10.1159/000508717
2. Conville PS, Brown-Elliott BA, Smith T, Zelazny AM. The complexities of Nocardia taxonomy and identification. J Clin Microbiol. 2017;56(1):e01419-17

Performance

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.

Growth at specified breakpoints is indicative of resistance.(Clinical and Laboratory Standards Institute (CLSI). Susceptibility Testing of Mycobacteria, Nocardia spp., and Other Aerobic Actinomycetes. CLSI standard M24. Clinical and Laboratory Standards Institute (CLSI). Performance Standards for Susceptibility Testing of Mycobacteria, Nocardia spp., and Other Aerobic Actinomycetes. CLSI supplement M24S)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
12 to 28 days

Specimen Retention Time
2 years

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 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
87186

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MMLNS	Susc, Aerobic Actinomycetes	29577-4

Result ID	Test Result Name	Result LOINC® Value
MMLNS	Susc, Aerobic Actinomycetes	29577-4