

Overview

Useful For

Aiding in the diagnosis of lower respiratory bacterial infections including pneumonia

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
COMM	Identification Commercial Kit	No, (Bill Only)	No
RMALD	Ident by MALDI-TOF mass spec	No, (Bill Only)	No
GID	Bacteria Identification	No, (Bill Only)	No
ISAE	Aerobe Ident by Sequencing	No, (Bill Only)	No
REFID	Additional Identification Procedure	No, (Bill Only)	No
SALS	Serologic Agglut Method 1 Ident	No, (Bill Only)	No
EC	Serologic Agglut Method 2 Ident	No, (Bill Only)	No
SHIG	Serologic Agglut Method 3 Ident	No, (Bill Only)	No
STAP	Identification Staphylococcus	No, (Bill Only)	No
STRP	Identification Streptococcus	No, (Bill Only)	No
SIDC	Ident Serologic Agglut Method 4	No, (Bill Only)	No
PCRID	Identification by PCR	No, (Bill Only)	No

Testing Algorithm

When this test is ordered, the reflex tests may be performed at an additional charge.

Method Name

Conventional Culture Technique

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

If susceptibilities are also desired, order SPITS / Bacterial Culture, Aerobic, Respiratory with Antimicrobial Susceptibilities, Varies.

Shipping Instructions

Specimen must arrive within 24 hours of collection.

Necessary Information

Specimen source is required.

Specimen Required

Patient Preparation: Have patient rinse his/her mouth with water immediately prior to specimen collection. This reduces the number of contaminating oropharyngeal bacteria.

Specimen Type: Respiratory

Sources: Sputum, bronchoalveolar lavage, trachea, endotracheal tube, etc.

Container/Tube: Sterile container

Specimen Volume: Entire specimen

Collection Instructions: An **early-morning** expectorated sputum is preferred.

Specimen Minimum Volume

2 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

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

Clinical & Interpretive**Clinical Information**

Common bacterial agents of acute pneumonia include: *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae*, *Pseudomonas aeruginosa*, and members of the *Enterobacteriaceae* (*Escherichia coli*, *Klebsiella* species, and *Enterobacter* species). Clinical history, physical examination, and chest X-ray are usually adequate for the diagnosis of pneumonia, and antimicrobial treatment is typically based on these findings.

Culture of expectorated sputum is used by some for the evaluation of pneumonia, although controversy exists regarding this practice; both sensitivity and specificity of sputum cultures are generally regarded as poor (<50%). Specificity is

improved by collecting expectorated purulent matter from the lower respiratory tract and avoiding mouth and oropharyngeal matter, thereby reducing contamination. Prior to culture, the specimen should be examined for the presence of white blood cells (evidence of purulent matter) and a paucity of squamous cells (evidence of minimal contamination by oral matter).

Blood cultures should be performed to establish the definitive etiology of an associated pneumonia. However, only 20% to 30% of patients with bacterial pneumonia are bacteremic.

Reference Values

No growth or usual flora

Identification of probable pathogens

Interpretation

A negative test result is no growth of bacteria or growth of only usual flora. A negative result does not rule out all causes of infectious lung disease (see Cautions).

Organisms associated with lower respiratory tract infections are reported.

For positive test results, pathogenic bacteria are identified. Cystic fibrosis (CF) patients may be colonized or chronically infected by some organisms over a long period of time, therefore, positive results must be interpreted in conjunction with previous findings and the clinical picture to appropriately evaluate results.

Cautions

When culture of sputum is delayed, successful isolation of bacterial pathogens is less likely due to the overgrowth of usual oropharyngeal flora.

Some bacterial agents that cause lower respiratory infections (eg, mycobacteria, *Legionella* species, *Mycoplasma pneumoniae*) are not detected by this assay and require special procedures. If the bacterial culture is negative, clinicians should consider additional testing to detect other bacterial, viral, or fungal agents.

Results must be interpreted in conjunction with clinical findings and previous culture results.

Clinical Reference

1. Miller JM, Binnicker MJ, Campbell S, et al: A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2018 Update by the Infectious Diseases Society of America and the American Society for Microbiology. *Clin Infect Dis*. 2018 Aug;31;67(6):e1-e94. doi: 10.1093/cid/ciy381
2. Procop GW, Church DL, Hall GS, et al: Introduction to Microbiology Part II: Guidelines for the collection, transport, processing, analysis, and reporting of cultures from specific specimen sources. In: Koneman's Color Atlas and Textbook of Diagnostic Microbiology. 7th ed. Wolters Kluwer Lippincott Williams and Wilkins; 2017:66-110

Performance**Method Description**

All sputum and induced sputum specimens are screened microscopically by Gram stain to avoid culturing specimens that

do not represent lower respiratory secretions; specimens with more than 25 squamous epithelial cells per low-power field will not be cultured.

Lower respiratory specimens are inoculated onto sheep blood agar, eosin methylene blue agar, and chocolate agar, and are incubated for 48 hours. Pathogens or possible pathogens are identified using 1 or a combination of the following techniques: commercial identification strips or panels, matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry, conventional biochemical tests, carbon source utilization, real-time polymerase chain reaction (RT-PCR), and nucleic acid sequencing of the 16S ribosomal RNA (rRNA) gene. The following organisms are identified and reported: *Streptococcus pneumoniae*; *Streptococcus pyogenes*; other beta-hemolytic *Streptococcus* species, groups B, C, and G; *Haemophilus* species; *Staphylococcus aureus*; *Moraxella catarrhalis*; *Neisseria meningitidis*; Gram-negative bacilli; and predominant yeast; or *Corynebacterium pseudodiphtheriticum/propinquum*. Other organisms are classified as usual oropharyngeal flora. (York MK, Gilligan P, Alby K: Lower respiratory tract cultures. In: Leber AL, ed. Clinical Microbiology Procedures Handbook. Vol 1. 4th ed. ASM Press; 2016:section 3.11.2)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

4 to 6 days

Specimen Retention Time

1 day

Performing Laboratory Location

Rochester

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 Regional Manager. 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

87070-Bacteria, Culture, Aerobic, Respiratory

87077-Identification Commercial Kit (if appropriate)

- 87077-Ident by MALDI-TOF mass spec (if appropriate)
- 87077-Bacteria Identification (if appropriate)
- 87077-Additional Identification Procedure (if appropriate)
- 87077-Identification Staphylococcus (if appropriate)
- 87077-Identification Streptococcus (if appropriate)
- 87147 x 1-3-Serologic Agglut Method 1 Ident (if appropriate)
- 87147-Serologic Agglut Method 2 Ident (if appropriate)
- 87147 x 4-Serologic Agglut Method 3 Ident (if appropriate)
- 87147 x 2-6 - Serologic Agglut Method 4 Ident (if appropriate)
- 87153-Aerobe Ident by Sequencing (if appropriate)
- 87150-Identification by PCR (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SPUT	Bacterial Culture, Aerobic, Resp	89643-1

Result ID	Test Result Name	Result LOINC® Value
SPUT	Bacterial Culture, Aerobic, Resp	89643-1