MAYO CLINIC LABORATORIES

Test Definition: CDIF

Clostridioides difficile Culture, Varies

Overview

Useful For

Providing an isolate suitable for antimicrobial susceptibility testing

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
ANAID	Anaerobe Ident	No, (Bill Only)	No
RMALA	Id MALDI-TOF Mass Spec Anaerobe	No, (Bill Only)	No
ISAN	Anaerobe Ident by Sequencing	No, (Bill Only)	No

Testing Algorithm

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

Highlights

Culture provides definitive evidence of the presence of the bacterium *Clostridioides difficile* in feces, providing an isolate for antimicrobial susceptibility testing.

Method Name

Conventional Culture Technique

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

If susceptibilities are also desired, order CDIFS / *Clostridioides difficile* Culture with Antimicrobial Susceptibilities, Varies.

This is **not the preferred diagnostic test** for *Clostridioides difficile*. For routine diagnostic testing, order CDPCR / *Clostridioides difficile* Toxin, PCR, Feces.

Additional Testing Requirements

If susceptibility testing is needed; also order MMLSA / Antimicrobial Susceptibility, Anaerobic Bacteria, Minimal Inhibitory Concentration, Varies. Susceptibility testing, when ordered, would routinely include metronidazole and

vancomycin. If susceptibilities are not appropriate and will not be performed, MMLSA will be canceled.

Necessary Information

Specimen source is required.

Specimen Required

Submit only 1 of the following specimens:

Patient Preparation: Patient should **not** use antacids, barium, bismuth, antidiarrheal medication, zinc oxide paste, Vagisil cream or oily laxatives prior to specimen collection.

Preferred:
Specimen Type: Preserved feces
Supplies: Culture and Sensitivity Stool Transport Vial (T058)
Container/Tube: Commercially available transport system specific for recovery of enteric pathogens from fecal specimens (15 mL of non-nutritive transport medium containing phenol red as a pH indicator, either Cary-Blair or Para-Pak C and S)
Specimen Volume: Representative portion of feces; 5 mL
Collection Instructions:
1. Collect fresh feces and submit 1 gram or 5 mL in container with transport medium.
2. Within 2 hours of collection, place feces in preservative.
Specimen Stability Information: Ambient (preferred) 96 hours/Refrigerated 96 hours/Frozen 7 days
Additional Information: Only diarrheal (ie, unformed) feces should be tested. Testing formed feces for *Clostridioides difficile* is generally not clinically indicated.

Acceptable:
Specimen Type: Unpreserved feces
Supplies:
-Stool container, Small (Random), 4 oz (T288)
-Stool Collection Kit, Random (T635)
Container/Tube: Stool container
Specimen Volume: Representative portion of feces
Collection Instructions: Collect fresh feces and submit representative sample in stool container.
Specimen Stability Information: Ambient (preferred) 72 hours/Frozen 7 days
Additional Information: Only diarrheal (ie, unformed) feces should be tested. Testing formed feces for *Clostridioides difficile* is generally not clinically indicated.

Specimen Type: Fresh tissue or biopsy
Sources: Colon
Supplies: Anaerobe Transport Tube (T588)
Specimen Volume: Entire collection, 1 to 2 cm(3)
Collection Instructions: Aseptically collect 1 to 2 cm(3) piece of tissue whenever possible. In general, a larger piece of tissue is preferred. Submit in an anaerobic transport tube.
Specimen Stability Information: Ambient 72 hours

Forms

If not ordering electronically, complete, print, and send a Gastroenterology and Hepatology Test Request (T728) with the specimen.

Specimen Minimum Volume

Stool: 1 gram or 5 mL; Tissue: 5 mm(3)

Reject Due To

Fecal swab	Reject
Specimen in Ecofix	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies		

Clinical & Interpretive

Clinical Information

Clostridioides difficile (previously *Clostridium difficile*) can cause diarrhea and may cause pseudomembranous colitis. Overgrowth of toxin-producing *C difficile* in the colon leads to the production of toxins A and/or B by the organism and consequent diarrhea. *C difficile* infection should be suspected in patients with symptoms of diarrhea with risk factors such as current or recent use of antibiotics, a history of *C difficile* infection, current or recent hospitalization or placement in a nursing home or long-term care facility, age older than 65 years, gastric acid suppression. *C difficile* infection is the most common cause of diarrhea in hospitalized patients and may lead to serious complications, including sepsis, bowel perforation, and increased overall mortality (especially in older patients). The incidence of *C difficile* infection has risen in the community and in healthcare settings. While culture is not the preferred means to diagnose *C difficile*-associated diarrhea, culture for *C difficile* provides an isolate suitable for antimicrobial susceptibility testing. Note that this test does not differentiate between toxin-producing and nontoxigenic strains of *C difficile*.

Reference Values

No growth of *Clostridioides difficile*.

Interpretation

A positive result indicates the presence of viable *Clostridioides difficile* in feces.

A positive culture may be found with asymptomatic *C difficile* colonization with a toxin-producing or non-toxin-producing strain or with *C difficile*-associated diarrhea.

A negative result indicates the absence of *C difficile* growth in culture.

Cautions

The assay must be performed on fresh feces, fresh-frozen feces, or feces in transport medium. Only diarrheal (ie, unformed) feces should be tested.

Submission of more than one specimen for testing is not recommended.

Repeated testing during a single episode of diarrhea is not recommended.

Testing of asymptomatic patients (ie, without diarrhea) or for test of cure is not recommended.

Isolation of *C difficile* does not differentiate between toxin-producing and non-toxin-producing strains.

Patients may asymptomatically carry *Clostridioides difficile*.

Testing of colostomy, ileostomy, or colonoscopically collected specimens has not been validated.

Supportive Data

Fifty fecal specimens in Cary Blair transport media previously determined as positive for *Clostridioides difficile* by toxin polymerase chain reaction were subcultured directly onto CHROMagar *C difficile* plates. Plates were incubated under anaerobic conditions at 37 degrees C for 24 hours in accordance with the manufacturer's recommendation. *C difficile* identification was performed by matrix assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) directly from bacterial colony growth on CHROMagar plates. Using this method, *C difficile* was identified from 47 of 50 fecal specimens, corresponding with a 94% recovery rate. Two specimens that did not yield *C difficile* on CHROMagar media also failed to produce growth on conventional *C difficile* selective media (taurochocolate, cycloserine, cefoxitin, fructose agar: TCCFA). One specimen was recovered by the TCCFA media, but not by the CHROMagar *C difficile* media. Organisms other than *C difficile* were not recovered on CHROMagar, corresponding to 100% analytical specificity.

Clinical Reference

1. Cohen SH, Gerding DN, Johnson S, et al. Clinical practice guidelines for Clostridium difficile infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). Infect Control Hosp Epidemiol. 2010;31(5):431-455
2. Lawson PA, Citron DM, Tyrrell KL, Finegold SM. Reclassification of Clostridium difficile as Clostridioides difficile (Hall and O'Toole 1935) Prevot 1938. Anaerobe. 2016;40:95-99. doi:10.1016/j.anaerobe.2016.06.008
3. Oren A, Garrity GM. List of new names and new combinations previously effectively, but not validly, published. Int J Syst Evol Microbiol. 2016;66(11):4299-4305. doi:10.1099/ijsem.0.001585

Performance

Method Description

Specimens are directly inoculated onto a CHROMagar *Clostridioides difficile* plate, which is incubated anaerobically at 35 to 37 degrees C for 24 hours. Plates are observed for characteristic fluorescence using ultraviolet light at 365 nm. Fluorescent colonies are identified by matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry or 16S ribosomal RNA gene sequencing.(Unpublished Mayo method

PDF Report

No

Day(s) Performed
Monday through Sunday

Report Available
2 to 6 days

Specimen Retention Time
7 days

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
87081-*C. difficile* Culture
87076-Anaerobe Ident (if appropriate)
87076-Id MALDI-TOF Mass Spec Anaerobe (if appropriate)
87153-Anaerobe Ident by Sequencing (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CDIF	C. difficile Culture	562-9

Result ID	Test Result Name	Result LOINC® Value
CDIF	C. difficile Culture	562-9