Overview

Useful For

Identifying carriers of vancomycin-resistant enterococci

Highlights

This test detects the presence of either *vanA* or *vanB*, which confer vancomycin resistance in *Enterococcus faecalis* and *Enterococcus faecium* (and occasionally other organisms).

Method Name

Real-Time Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Varies

Necessary Information

Specimen source is required.

Specimen Required

The high sensitivity of amplification by polymerase chain reaction requires the specimen to be processed in an environment in which contamination of the specimen by vancomycin-resistant *Enterococcus* DNA is unlikely.

Submit only 1 of the following specimens:

Preferred:

Specimen Type: Perianal, perirectal, rectal

Supplies: Culturette (BBL Culture Swab) (T092)

Container/Tube: Culture transport swab (Dacron or rayon swab with aluminum or plastic shaft with either Stuart or Amies liquid medium)

Specimen Volume: Swab

Acceptable:

Specimen Type: Preserved Feces

Supplies: C and S 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, Para-Pak C and S)

Specimen Volume: Representative portion of feces

Collection Instructions:

1. Collect fresh feces and submit 1 gram or 5 mL in container with transport medium.

2. Place feces in preservative within 2 hours of collection.

Specimen Type: Unpreserved Feces

Supplies:

-Stool container, Small (Random), 4 oz Random (T288)

-Stool Collection Kit, Random (T635)

Container/Tube: Fecal container

Specimen Volume: Representative portion of feces

Collection Instructions: Collect fresh fecal specimen and submit representative sample in fecal container.

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

E-swab, calcium alginate swab, cotton-tipped swab, swab sent in gel transport medium, swab sent in viral or universal transport medium, or dry swab; formalin or PVA fixative	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Refrigerated (preferred)	7 days	
	Ambient	7 days	
	Frozen	7 days	

Clinical and Interpretive

Clinical Information

Vancomycin-resistant enterococci (VRE) are major nosocomial pathogens. Patients who are particularly vulnerable to fatal disease from VRE include those with hematologic malignancies and liver transplants. Nosocomial spread of VRE occurs as the result of fecal carriage. Risks for both colonization and infection include prolonged hospitalization,

intensive care unit stay, transplantation, hematologic malignancies, and prolonged exposure to antibiotics.

The Centers for Disease Control and Prevention provides recommendations to prevent the spread of VRE in institutional settings. These recommendations include isolation of patients experiencing active VRE infection, screening of patients by perianal swab or fecal testing to identify carriers of VRE, and subsequent isolation or cohorting of VRE carriers. Identification and isolation of VRE carriers has been shown to be cost-effective.

In *Enterococcus faecalis* or *E faecium*, vancomycin resistance is usually associated with the presence of *vanA* or *vanB*. The presence of these genes is detected by a molecular method in this assay.

Reference Values

Not applicable

Interpretation

Positive test results indicate the presence of either *vanA* or *vanB* , which confer vancomycin resistance in *Enterococcus faecalis* and *Enterococcus faecium* (and occasionally other organisms). Patients with a positive test result should be placed in isolation or cohorted with other vancomycin-resistant enterococci (VRE) carriers according to the institution's infection control practices.

A negative result indicates the absence of detectable *vanA or vanB* DNA, but does not rule-out carrier status and may occur due toinhibition of polymerase chain reaction (PCR),sequence variability underlying primers or probes, or the presence of VRE DNA in quantities less than the limit of detection of the assay. In the rare event that PCR testing appears to be negative but there is evidence of PCR inhibition, the result will read "PCR inhibition present." In such cases, a new specimen should be submitted for repeat testing.

Cautions

A positive result does not imply the presence of vancomycin-resistant enterococci (VRE) disease; the presence of *vanA* or *vanB* correlates with colonization by VRE. Colonization with VRE is not associated with any signs or symptoms.

vanA or v*anB* may occasionally be found in organisms other than enterococci.

Supportive Data

Perianal swabs (894) were evaluated for the presence of *vanA* or *vanB* DNA by the vancomycin-resistant enterococci (VRE) polymerase chain reaction (PCR) assay and compared to culture using selective and differential media. Compared to culture the VRE PCR assay was 98% sensitive and 98% specific. The VRE PCR assay detected 35 more positive specimens than the culture method. No cross-reactivity was seen when tested on a panel of pathogenic and normal flora bacteria of the gastrointestinal tract. *Enterococcus* species containing the *vanC* gene were not detected with the VRE PCR assay.

Clinical Reference

1. Sloan LM, Uhl JR, Vetter EA, et al: Comparison of the Roche LightCycler *vanA/vanB* detection assay and culture for detection of vancomycin-resistant enterococci from perianal swabs. J Clin Microbiol. 2004;42:2636-2643

2. Mayo Medical Laboratories Communique: Vancomycin-resistant enterococci: Colonization, infection, detection, and treatment. Vol 32, No. 11, November 2007

3. Zirakzadeh A, Patel R: Epidemiology and mechanisms of glycopeptide resistance in enterococci. Curr Opin Infect Dis. 2005;18:507-512

4. Zirakzadeh A, Patel R: Vancomycin-resistant enterococci colonization, infection detection and treatment. Mayo Clinic Proc. 2006;81:529-536

5. Patel R: Enterococcal-type glycopeptide resistance genes in non-enterococcal organisms. FEMS Microbiol Lett. 2000 Apr 1;185(1):1-7

6. Hefazi M, Damlaj M, Alkhateeb HB, et al: Vancomycin-resistant *Enterococcus* colonization and bloodstream infection: prevalence, risk factors, and the impact on early outcomes after allogeneic hematopoietic cell transplantation in patients with acute myeloid leukemia. Transplant Infect Dis. 2016 Sept 19;18(6):913-920. doi.org/10.1111/tid.12612

Performance

Method Description

Bacterial DNA is extracted from the specimen. Using the LightCycler instrument and fluorescent energy transfer probes, *vanA* and *vanB* genes responsible for vancomycin resistance in enterococci are detected directly from perianal swabs or fecal specimens.(Sloan LM, Uhl JR, Vetter EA, et al: Comparison of the Roche LightCycler *vanA*/*vanB* detection assay and culture for detection of vancomycin-resistant enterococci from perianal swabs. J Clin Microbiol 2004;42:2636-2643; Hefazi M, Damlaj M, Alkhateeb HB, et al: Vancomycin-resistant Enterococcus colonization and bloodstream infection: prevalence, risk factors, and the impact on early outcomes after allogeneic hematopoietic cell transplantation in patients with acute myeloid leukemia. Transplant Infect Dis 2016 Sept 19;18(6):913-920 doi.org/10.1111/tid.12612)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday

Analytic Time

1 day

Maximum Laboratory Time

4 days

Specimen Retention Time

3 days if received in swab transport media; 7 days if received in C and S Vial

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 using an analyte specific reagent. Its performance characteristics were 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

87500

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
VRERP	VRE PCR	62261-3

Result ID	Test Result Name	Result LOINC Value
SRC60	Specimen source	31208-2
84406	VRE PCR	62261-3