



MIC Test Strip Technical Sheet **Enterococci VRE**

Enterococcus: Gram positive cocci, e.g. <i>E. faecalis</i> , <i>E. faecium</i> , <i>E. casseliflavus</i> , <i>E. gallinarum</i> , <i>E. flavescens</i> , <i>E. mundtii</i> .		
Infections	<ul style="list-style-type: none"> Nosocomial infections in immunocompromised and ICU patients, especially neonatal and burns units. Complicated UTIs, sepsis, intra-abdominal and wound infections. Surgical site infections 12% Mortality of 35-40% in nosocomial sepsis in ICUs. 	
Antibiotic Resistance	<ul style="list-style-type: none"> Vancomycin-resistant Enterococci (VRE) have vancomycin MIC > 4 µg/mL. Intrinsic high level resistance to cephalosporins, penicillins and low level resistance to clindamycin and aminoglycoside. Acquired resistance to chloramphenicol, tetracyclines, fluoroquinolones, erythromycin and high level resistance to clindamycin and aminoglycoside. VRE phenotypes (vanA, B, C, D, E) may have different treatment and infection control implications 	
Susceptibility Testing Needs	<ul style="list-style-type: none"> MIC testing is recommended for blood, wounds and sterile sites (tissues, peritoneal fluid). Glycopeptide resistance monitoring using MIC methods for ICU isolates. 	
Methods	<ul style="list-style-type: none"> Discs 	Not recommended for glycopeptides due to poorly resolved gradient and inaccurate results.
	<ul style="list-style-type: none"> Microdilution and automation 	Inability to detect resistance due to low inoculum and/or rapid reading.
	<ul style="list-style-type: none"> MIC Test Strip 	<ul style="list-style-type: none"> Preformed gradient overcomes problems of slow diffusion of large molecules e.g. vancomycin and teicoplanin. Recommended by reference groups (CDC, CPHL) for surveillance of VRE Vancomycin and teicoplanin used together can discriminate phenotypes Macro gradient test with heavier inoculum (2McF), optimal growth media (BHI) and extended incubation (48 hours) optimises detection of resistance

Macro gradient test for determining Vancomycin-resistant Enterococci (VRE)

Phenotype	M.I.C. (µg/mL)		Species
	VANCOMYCIN	TEICOPLANIN	
<i>VanA</i>	≥32 (R)	and ≥16 (I-R)	<i>E. faecalis</i> <i>E. faecium</i>
<i>VanB</i>	≥8-256 (I-R)	and ≤4 (S)	<i>E. faecalis</i> <i>E. faecium</i>
<i>VanC1</i>	4-16 (S-I)	and ≤4 (S)	<i>E. gallinarum</i>
<i>VanC2</i>	4-16 (S-I)	and ≤4 (S)	<i>E. casseliflavus</i> <i>E. flavescens</i>
<i>VanD</i>	64 (R)	and ≤4 (S)	<i>E. faecium</i>
<i>VanE</i>	16 (I)	and ≤4 (S)	<i>E. faecalis</i>

This test gives an indication of reduced vancomycin susceptibility but note that the readings are not MICs.

References

- CLSI M7-A9, 2012. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically.
- EUCAST guidelines for detection of resistance mechanisms and specific resistances of clinical and/or epidemiological importance. Version 1.0, 2013.

MIC Test Strip, Patent No. 1395483



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