Should Laboratories Test Methicillin-Resistant *Staphylococcus aureus* for Elevated Vancomycin Minimum Inhibitory Concentrations by Etest as a Driver of Treatment Changes?

To the Editor—In a recent review and meta-analysis published in *Clinical Infectious Diseases*, van Hal and colleagues evaluated vancomycin treatment outcomes for methicillin-resistant *Staphylococcus aureus* (MRSA) relative to vancomycin minimum inhibitory concentrations (MICs) [1]. The authors suggest that laboratories specifically consider performing vancomycin MICs by Etest when MRSA are isolated from blood, and that a MIC on the high end of the susceptible range (eg, 2.0 µg/mL) be used as indication for treatment with an alternative anti-MRSA agent, especially in patients with persistent disease. However, the interstudy variability in susceptibility test methods among the studies evaluated to reach this conclusion is significant, and thus we feel these data must be interpreted with caution before a single vancomycin MIC value be used alone to make treatment decisions.

It is well accepted that vancomycin MIC results are influenced by both test method [2] and media type and manufacturer [3, 4]. The majority of studies evaluated by van Hal (15 of 22) performed Etest, and authors all stated that Etest was performed per the manufacturer’s instructions. However, only 6 studies indicated what media was used for Etest and only 2 used BBL brand Mueller Hinton agar (MHA) [5, 6], as recommended by the manufacturer. Three studies used brain heart infusion (BHI) agar [7-9], an enriched medium that is associated with vancomycin MICs 1–1.5 dilutions higher than those obtained on MHA (R. M. H. and J. A. H., unpublished observations). A second concern is the widespread use of stocked clinical isolates for vancomycin testing among the studies evaluated. Only 1 study [10] explicitly stated that Etest MICs were evaluated at the time of MRSA isolation. Vancomycin MICs are known to decline by 0.25–0.5 µg/mL following 6 months storage at −80°C, even for isolates that test in the susceptible MIC range [11].

It is important to note that the differences in MICs obtained by the various test methods and between fresh and frozen isolates are generally within the accepted 1, 2-fold dilution variability of an in vitro MIC test. However, these differences become significant when a single MIC dilution is used as a predictor of clinical outcome for MRSA infection. Furthermore, the laboratory is faced with the dilemma of how to confirm and report an MRSA isolate with an Etest vancomycin MIC of 1.5 or 2.0 µg/mL because these elevated MICs will likely not repeat by an automated commercial test system [2], nor by the Clinical Laboratories Standards Institute reference broth microdilution method [2]. As 78%–98% of contemporary MRSA isolate vancomycin MICs are in the 1.5–2.0 µg/mL range by Etest [3, 12], the recommendations of van Hal and colleagues preclude vancomycin therapy for the majority of MRSA infections. Given that there are currently no data to support better survival rates with the use of alternative anti-MRSA agents, except perhaps daptomycin [13], removal of vancomycin as a treatment option on the basis of the results of a single MIC test with an inherent precision of ±1, 2-fold dilution is concerning. In contrast, we urge institutions to consider the recent practice guidelines from the Infectious Diseases Society of America (IDSA) for the treatment of MRSA bloodstream infections [14] that recommend using the patient’s clinical response to treatment by which to base treatment decisions rather than vancomycin MIC values, providing the vancomycin MIC is ≤2 µg/mL by any test method.

Note

*Potential conflicts of interest.* All authors: No reported conflicts.

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