Background

A limited number of diagnostic methods helps clinicians treat multidrug-resistant Acinetobacter spp. infections. Important considerations include effects on antibiogram-based susceptibility testing (ATS), resistance (RT), false resistance (FR), true susceptibility (TS), and the non-susceptibility (NS) resistance pattern, which is affected by the susceptibility rate. ATP-based phenotypic methods for Acinetobacter spp. are available. These methods are designed to detect a native resistance pattern that can cause pneumonia, skin and soft tissue and blood stream infections among immunocompromised patients.

Methods

We developed an ATP-based phenotypic method for Acinetobacter spp. (Class B: 3, S: 9). The key step was the IFA test for diacetate resistance (FR, 2013). Treatment options include carbapenems, beta-lactamase inhibitor combinations (IM/PA), and colistin and colistin as a “test-resist”. Resistance to these antimicrobials limits the use of ATP-based phenotypic methods (TRs) that detect resistant phenotypes do not exist.

Challenge

A standard evaluation of diagnostic cutoffs consists of specificity, sensitivity, positive predictive values, negative predictive values, and likelihood ratios. Although useful, these statistics do not comprehensively describe the clinical impact of diagnostic application, including clinical performance, diagnostic impact, and impact on patient management. Therefore, diagnostic performance metrics remain critical and are usually perceived within the context of a specific patient group.

The medical community is calling for more upon diagnostic accuracy in the setting of increased values for medical decision-making.

Results

We measured the diagnostic yield of both ATS and ATP-based phenotypic methods for diacetate resistance (TRs). The ATP-based phenotypic method assay is 100% accurate and 100% stable.

Conclusion

We develop our phenotypic method for diagnosing Acinetobacter spp. infections that can cause pneumonia, skin and soft tissue and blood stream infections among immunocompromised patients. The method is sensitive, specific, and accurate. It is easy to use and can be performed at any stage of infection, including early stages.

We recognize that the prevalence of susceptibility/ resistance to antibiotics of Acinetobacter spp. can vary over time and can depend upon location. As a result, we have developed the diagnostic yield of the ATP-based phenotypic method for diacetate resistance (TRs) that illustrate how the diagnostic yield varies as the susceptibility rate varies.

Figure 2: Side-Rule Profile Plots of Diagnostic Yield for Imperfect Susceptibility Testing in Acinetobacter spp.

the yield of the molecular method developed are positive.

Yield = 100% = 100% (true) = 100% (true).

Thus, the diagnostic yield for diacetate resistance (TRs) is shown to be 100% accurate and 100% stable.

Expected benefit:accuracy

• IMPACT: The diagnostic yield of the ATP-based phenotypic method for diacetate resistance (TRs) is 100% accurate and 100% stable.

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