INTRODUCTION

Automated instrumentation in the clinical microbiology laboratory for the identification and antibiogram generation of Gram-positive pathogenic bacteria has become an established practice in hospitals and the medical laboratory setting due to the high-throughput capacity and rapidity over which traditional methods. Development, database management and use of each automated system are common to most all systems and are periodically updated to expand identification abilities and to detect of newly emerging resistance profiles and mechanisms. Although no system is infallible, all should be validated, especially with traditional pathogens, and minimize the number of repeat and off-line tests which may greatly lengthen time to reporting of results.

Clinical laboratories have the expectation that automated systems should be able to readily differentiate most commonly occurring regional and non-regional pathogens in a cost-effective and rapid manner. Daily automation of Gram-positive bacterial pathogens included in our automated laboratories for the SEMI Smith and SEMI Gebauer methods. The methods were compared with the existing algorithm (Sensititre 2X panels incubated and read by the ARIS 2X System) and Vitek 2 (GP identification panels incubated and read by the Vitek 2 instrument according to the manufacturer's recommendations).

RESULTS

A total of 3,897 categorical interpretations were generated for up to 13 antimicrobial agents when testing 162 contemporary Gram-positive pathogens; only two organisms (corynebacterium and corynebacterium/linezolid) failed consensus (categorical agreement by ≥2 of the three test systems).

• Overall agreement between the three systems was ≥95.6%, only two organism-antimicrobial agent combinations (0.2%) failed consensus (categorical agreement by ≥2 of the three test systems).

• VME, ME and ME errors for Sensititre ARIS 2X were, respectively, 1.5%, 0.1% and 0.2% for Vitek 2, 0.3%, 0.4% and 1.3% and for the standard method, 0.2%, 1.5% and 1.5%, all within acceptable limits.

• Most errors occurred when testing the combinations of staphylococci with penicillin and ciprofloxacin with Group B streptococci with clindamycin; and enterococci with linezolid.

• Composite data using frozen-form broth dilution panels remains to be performed to adjust final error rate analyses.

• While Limitations with each system are apparent and require consideration with implementation due to the patient population being served and prevalence of common occurring pathogens, the automated systems provided a high level of concordance and very low total error rates.

SELECTED REFERENCES

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