Overview

Purpose: The manual read and automated read MIC results from the Thermo Scientific™ Sensititre™ susceptibility MIC EUCAST standard panel for enterococci (EUENCF panel) containing ampicillin, amoxicillin, amoxicillin/clavulanic acid, ciprofloxacin, gentamicin, imipenem, linezolid, levofloxacin, nitrofurantoin, norfloxacin, quinupristin/dalfopristin, streptomycin, tetracycline, trimethoprim, and vancomycin were evaluated at two study sites.

Methods: Reproducibility and clinical isolate testing of the EUENCF panel were conducted following ISO 20776-2:2007 guidelines. Testing was performed according to manufacturer’s instructions. Results were compared to the broth microdilution reference method stated in ISO 20776-1:2006.

Results: The EUENCF panel proved to be an accurate alternative to the broth microdilution reference method for MIC determination of the antimicrobial agents tested with vancomycin resistant Enterococcus spp. (VRE) and vancomycin sensitive Enterococcus spp. (VSE).

Clinical isolate testing

A total of 200 clinical isolates (including 57 vancomycin resistant Enterococcus faecalis and Enterococcus faecium, 92 vancomycin sensitive E. faecalis and E. faecium and 51 other Enterococcus spp.) were tested using the EUENCF panel; results were compared to the broth microdilution reference method. The EUENCF panel was inoculated and tested according to manufacturer’s instructions; panels were read using the Sensititre ARIS system (automated read); results were interpreted using the Sensititre SWIN Software system. The broth microdilution reference method was performed according to ISO 20776-1:2006.

Quality control

Recommended quality control (QC) organisms were tested daily. Purty checks and colony counts were performed daily on the broth microdilution reference method according to ISO 20776-1:2006. Purty checks were conducted daily on the EUENCF panel and colony counts performed periodically according to manufacturer’s instructions.

Data Analysis

Using EUCAST breakpoints, essential agreement (EA), categorical agreement (CA) and discrepancy rates of the EUENCF panel were calculated according to ISO 20776-2:2007. The ISO 20776-2:2007 acceptance criteria are ≥90% EA, ≥90% CA and a ≤3% major discrepancy (MD) rate. Minor discrepancies (mD) were also reported.

Results

Reproducibility

Intra-(daily) and inter-(between days) reproducibility of Enterococcus isolates for both manual read and auto read was within ±1 dilution of the mode for all antimicrobials tested for 99% of results from all study sites. Where the mode could not be calculated, the median was used.

Categorical agreement (CA)

Of the total 200 clinical isolates tested during the study, CA was ≥95% for all antimicrobials with the exception of imipenem (93%; study site 1), linezolid (91%; study site 1) and trimethoprim (91%; study site 1). All CA results for all antimicrobials were deemed acceptable according to ISO 20776-2:2007.

Discrepancy rates

There were exceptionally low VMD, MD and mD for all antimicrobials tested during the study. Where there were discrepancies, discrepancy rates were within acceptability criteria defined by ISO 20776-2:2007.

Conclusion

The EUENCF panel proved to be an accurate alternative to the broth microdilution reference method for MIC determination of ampicillin, amoxicillin, amoxicillin/clavulanic acid, ciprofloxacin, gentamicin, imipenem, linezolid, levofloxacin, nitrofurantoin, norfloxacin, quinupristin/dalfopristin, streptomycin, tetracycline, tigecycline, trimethoprim and vancomycin antimicrobial agents tested with Enterococcus spp.

References


FIGURE 1. Thermo Scientific SensititreSystem

Clinical isolate testing

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