

P2356 Evaluation of the novel BIOFIRE FILMARRAY Blood Culture Identification 2 Panel in the detection of pathogens and resistance markers in positive blood cultures

Sophia Vourli*¹, Alexandra Vasilakopoulou¹, Aikaterini Tarpatzi¹, Paraskevas Tsilikis¹, Joseph Hatch², Usha Spaulding², Kristen Holmberg², Spyros Pournaras¹

¹ Clinical Microbiology Laboratory, University Hospital "Attikon", Athens, Greece, ² BioFire Diagnostics LLC, Salt Lake City, UT, United States

Background: Bloodstream infections (BSIs) are a major cause of mortality in hospitalized patients. Rapid pathogen identification and antibacterial resistance determination in positive blood cultures (PBCs) is crucial. The BioFire® FilmArray® Blood Culture Identification (BCID) Panel (BioFire, Salt Lake City) simultaneously detects 27 targets from PBCs in one hour. Recently, the BioFire® FilmArray® Blood Culture Identification 2 (BCID2) Panel was developed including 33 pathogens and nine resistance genes. Our objective was the evaluation of the BioFire BCID2 Panel (Research Use Only) for testing positive blood cultures (PBCs) compared to Standard of Care (SoC) methods.

Materials/methods: Seventy-five aerobic and anaerobic PBCs (BacTec, BD) from 58 patients, collected for routine clinical care, were tested using the BioFire BCID2 Panel. SoC consisted of gram staining, culture and antimicrobial susceptibility testing (AST). Sensitivity/Positive Percent Agreement (PPA) and specificity/Negative Percent Agreement (NPA) were determined for each BioFire BCID2 Panel analyte as compared to SoC.

Results: According to SoC, 70 PBCs (93.3 %) contained one organism and 5 (6.6 %) yielded two organisms. Eighty microorganisms were identified by SoC and 85 by the BioFire BCID2 Panel. Sensitivity/PPA and specificity/NPA of the BioFire BCID2 Panel with SoC identification methods were 97.5% and 99.6%, respectively. In all carbapenem-resistant enterobacteria by SoC AST, the BioFire BCID2 Panel correctly detected carbapenemase genes. The *mecA/mecC* genes were also correctly identified by the BioFire BCID2 Panel. Notably, in one PBC containing *Staphylococcus aureus* and *Staphylococcus hominis*, *mecA/C* and MREJ were detected, suggesting that *mecA/C* gene was carried by the *S. aureus* isolate. The CTX-M gene was detected in six of seven 3rdGC-resistant *Klebsiella pneumoniae*. Two samples containing *Enterococcus faecium* tested vancomycin-susceptible by SoC AST; for both samples the BioFire BCID2 Panel detected a *vanA/B* gene and *vanB* was detected by an independent molecular method.

Conclusions: The BioFire BCID2 Panel showed high sensitivity/PPA and specificity/NPA in pathogen detection from PBCs. Additionally, the BioFire BCID2 Panel accurately detected resistance markers. The extended number of pathogens and resistance markers included in the BioFire BCID2 Panel, together with the short time-to-results, is expected to aid significantly in the prompt diagnosis and accurate management of patients with BSIs.

