The BioFire BCID2 Panel Antimicrobial Susceptibility (AMR) Gene Detections and Concordance to Standard of Care (SoC) Antimicrobial Susceptibility Test (AST) Results

- The Panel detected vanA/B gene in all 11 PBSs where vancomycin-resistant E. faecium and E. faecalis were reported by SoC; additional detections were verified by comp-PCR.
- The Panel detected MRSAs in all 31 cases with an AST MRSAs result; 4/14 additional detection remain unverified.
- In 54/55 (98%) of methicillin-susceptible cases, the Panel algorithm accurately identified absence of MRSA.
- AST was not performed in 17/41 (41.5%) detections of non-MRSA mecA/C gene (all from S. epidermidis).
- In 23/26 PBSs with extended spectrum beta lactamase (ESBL) producers identified by AST, the blaCTX-M gene was detected by the Panel; 8 confirmed negative by comp-PCR assay.
- The Panel detected 12 carbapenemases (5 blaKPC, 5 blal% and 2 blal% in) in 11 of 16 PBSs where SoC reported carbapenem resistant isolates; all were verified by comp-PCR.
- 6 were non-MRSA mecA/C gene targets; 4 in the remaining 5 samples, comp-PCR did not detect any carbapenemase genes.
- Mobile colistin resistance gene, mcr-1, was not detected in samples with colistin resistances.

Regional Differences in AMR Gene Prevalence as Detected by BioFire BCID2 Panel

- 15% of US PBSs had methicillin-resistant S. aureus (MRSA) in Greek PBSs.
- vanA/B prevalence ~3-4% in both regions.
- Relative prevalence for blal% & carbapenemases genes higher in Greece.
- blal% (11% Greece vs. 4% in US).
- Carbapenemases genes (15% Greece vs. 1.3% in US).

Comparison of Polymicrobial Bloodstream Infections Detected by The BioFire BCID2 Panel and SoC

- 92% (94/102) of SoC on-panel organism detections in PBSI cases were correctly identified by the BioFire BCID2 Panel.
- 6 on-panel SoC detections missed by the Panel were also not detected by comp-PCR assay.
- 18 of 21 Panel-only detections were confirmed by comp-PCR assays.
- 2 of 21 Panel-only detections were not confirmed by comp-PCR assays.
- For all combinations of on-panel cofactors, the BioFire BCID2 Panel detected equal or more PBSIs than SoC.
- Mixed Gram-/Gram- infections were the most commonly identified type of PBSI by both methods.
- 2-organism infections were the most frequent type of PBSI detected by both methods.
- Majority of SoC results with off-panel organisms were found to be mixed Gram- infections.

Conclusions

With robust overall performance as well as PBSIs and AMR gene detections comparable to SoC, the BioFire BCID2 Panel should expedite diagnoses and implementation of appropriate therapy; thus improving patient care and application of better antimicrobial stewardship practices.