2040. Analytical Performance Characteristics of the Accelerate Pheno System for Pathogen Identification and Susceptibility Testing for Gram-negative Bacteremia and Candidemia

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Background. The Accelerate Pheno system is a novel test diagnostic that significantly reduces the time to ID and AST for GNB and ID of Candida spp. bloodstream infections. This test has the potential to impact clinical outcomes. Prospective clinical trials are needed to evaluate the impact of this new system on clinical outcomes and antimicrobial stewardship.

Methods. From April 14, 2016 to March 3, 2017, blood cultures from unique patients in the emergency department and medical intensive care units at Barnes-Jewish Hospital that signaled positive and were Gram-stain positive for GNB or Candida spp. were eligible. AXXD testing using pre-FDA cleared software (v1.0) was performed directly from dried spots. Isolates were interpreted as non-susceptible if MALDI Biotyping (Bruker) provided successful species identification (score ≥1.7) and as susceptible if no identification (score <1.7) was achieved.

Results. From 108 isolates (96 GNB, 12 Candida spp.) were on-panel for ID with AXXD, 88 GNB (7 species) and 13 Candida spp. bloodstream isolates were counted at 0, 4, 12, 24, 36, 48, 60, and 72h in incubated bottles. TTD was measured in the detection instrument, and CFUs were counted at 0, 4, 12, 24, 36, 48, 60, and 72h in incubated bottles. TTD was measured in the detection instrument, and CFUs were counted at 0, 4, 12, 24, 36, 48, 60, and 72h in incubated bottles.

Conclusion. The Accelerate Pheno system is a novel test diagnostic with high sensitivity and specificity for the ID and AST of GNB and ID of Candida spp. blood-stream infections that are on-panel.

Disclosures. C. A. D. Burnham, Accelerate Diagnostics: Investigator, Research support; M. Kolle, Accelerate Diagnostics: Consultant, Research support

2041. The Effect of Clinical Concentrations of Meropenem (MEM), Ceftazidime/ tazobactam (CTZ), and Ceftriaxone/avibactam (CAR) on Time to Detection (TTD) and Growth of Pseudomonas aeruginosa (PSA) in bioMerieux BacT/ALERT FA Plus Blood Culture (BC) Bottles

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Background. Antimicrobial binding agents (ABA) are added to BC bottle media to reduce TTD and prevent false negatives that may result when BCs are obtained in patients receiving antibiotics. Sparse data are available on the effectiveness of ABA containing BacT/ALERT FA Plus BC bottles against MEM, CTZ, and PSA, which are often administered as high dose and/or prolonged infusion regimens for suspected PSA infections.

Methods. BC bottles were inoculated with 10ml of fresh whole blood collected from healthy volunteers. The blood was spiked to achieve mean peak, midpoint, and trough concentrations of MEM (40, 20, and 5 µg/mL), CTZ (150, 50, and 8 µg/mL), and PSA (90, 25, and 10 µg/mL), respectively. A control bottle containing no anti-biotic was included. BC bottles were then inoculated with 7–30 colony forming units (CFU)/bottle of either a MEM susceptible (MEM-S) [MIC = 0.5 µg/mL, C/T = 0.5 µg/mL], MEM resistant (MEM-R) [MIC = 8 µg/mL], PSA [MIC = 8 µg/mL, C/L = 8 µg/mL], matching Bottle were entered into a BacT/ALERT-3D detection instrument and a standard inoculator at 37°C for up to 72h. Each series was conducted in duplicate. TTD was measured in the detection instrument, and CFUs were counted at 0, 4, 12, 24, 36, 48, 60, and 72h in incubated bottles.

Results. Control PSA grew to 7.4 × 10^10 CFU/mL with a TTD of 15.5–19.5 hours. Both PSA grew in the presence of MEM trough concentrations with TTD of 21.3 ± 3.3 hours. However, midpoint and peak concentrations inhibited growth of the MEM-S PSA. The MEM-R PSA grew in the presence of all MEM concentrations, with a TTD of 18.6 ± 1.5 hours. Both PSA grew in the presence of MEM trough concentrations with TTD of 23.0 ± 2.6 hours, but were inhibited by midpoint and peak C/T concentrations. For PSA, both PSA grew in the presence of trough concentrations with TTD of 20.1 ± 1.9 hours. Peak PSA concentrations inhibited growth of both PSA, while midpoint concentrations inhibited growth of the MEM-S isolate.

Conclusion. These are the first data to show that BacT/ALERT BC bottles containing ABA may not sufficiently inactivate achievable concentrations of MEM, CTZ or PSA, which could result in false negatives. In patients already receiving one of these antibiotics, BCs should be collected just prior to the next dose to increase the probability of PSA detection.

Disclosures. All authors: No reported disclosures

2042. Molecular Epidemiology of β-lactamase Production in Penicillin-susceptible Staphylococcus aureus under High-susceptibility Conditions

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Session: 234. Diagnostics - Bacterial Identification and Resistance
Saturday, October 7, 2017: 12:30 PM

Background. At the National Center for Global Health and Medicine (NCGM; Tokyo, Japan), prevalence of penicillin-susceptible Staphylococcus aureus isolates with penicillin G minimum inhibitory concentration (MIC) ≤ 0.12 µg/mL comprised 31% of isolates (733/2383) collected between 2013 and 2015; this is higher than those reported in previous studies. However, little is known about the prevalence of β-lactama- seme production in penicillin-susceptible S. aureus isolates under high-susceptibility conditions.

Methods. We analyzed S. aureus isolates with penicillin G MIC ≤ 0.12 µg/mL that were recovered from in- and outpatients between 2016 and 2017. β-Lactamase production was detected by nitrocefin-based and Clinical and Laboratory Standards Institute penicillin susceptibility disc and β-lactamase testing (using Mueller-Hinton broth with 100 mg/ml penicillin; CZA) in bioMerieux BacT/ALERT FA Plus Blood Culture (BC) Bottles

Results. A total of 108 isolates were analyzed, predominantly originating from the lower respiratory tract (56%), abscesses (9%), upper respiratory tract (8%), and...