O204
Oral Session
Bacterial pediatric infections

RAPID PATHOGEN IDENTIFICATION FROM PAEDIATRIC BLOOD CULTURE BOTTLES USING AUTOMATED MULTIPLEX REAL TIME PCR PANEL

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Objectives: FilmArray® BCID is a newly FDA cleared automated multiplex PCR assay that allows direct identification of many bacteria (and some resistance determinants) and yeasts in positive blood culture bottles 1 hour after Gram stain results are read. The assay requires only two minutes of hands on processing time. There is no published literature documenting performance of this assay on paediatric blood culture systems. Here we report our evaluation data.

Methods: Each blood culture included a BACTEC Peds Plus™/F bottle and a BACTEC Standard Anaerobic/F bottle. Prospectively, FilmArray® BCID assay was performed on whichever bottle first signaled positive growth by the blood culture instrument after routine Gram stain examination. Results of BCID were compared to those of standard bacterial identification and antibiotic susceptibility. Only cultures growing at least one unique organism from a patient were included. PNA FISH and Verigene BCGP assays were also performed on most specimens.

Results: Among 166 positive blood cultures from 138 children, 18 cultures (11%) were polymicrobial. Overall, FilmArray BCID identified 167 (89%) of 188 organisms recovered by culture. Eleven of the 20 organisms that BCID failed to detect were organisms not included in the panel by design: *Peptostreptococcus* spp., *Rothia mucilaginosa*, Corynebacterium, Bacillus spp., *S. maltophilia* (×2), *Capnocytophaga spp., Prevotella melaninogenica, H. parainfluenzae, Hafnia alvei*, and *Candida lusitanae*. For pathogens included in the FilmArray® BCID panel by design, the assay correctly identified 112 (95%) of 118 Gram positive bacteria. The assay also identified *mec*A results correctly for all 86 *Staphylococci* and *Van* A/B results correctly for all 12 *Enterococci*. The six Gram positive bacteria missed by the assay included *Staphylococcus hominis*, *S. saccharolyticus*, *S. pettenkoferi* , a non-viable Gram positive coccus in clusters, *E. faecium, and a viridans streptococcus* (one each). For Gram negative bacteria, the FilmArray® BCID assay correctly identified 50 of 52 organisms (96%) including 14 *E. coli*, 13 *K. pneumoniae*, 9 *E. cloacae*, 4 *P. aeruginosa*, and another 10 organisms at family, genus, or species level consistent with the design. In two cultures growing *Enerobacter agglomerans*, the assay was negative for 1 and reported *S. marcescens* in the other one. The BCID assay correctly identified 6 out of 7 positive blood cultures positive for candida species, and missed detecting *C. glabrata* present in a mixed blood culture with Enterococcus, which was identified correctly.

Conclusion: The FilmArray® BCID assay performed very well for rapidly identifying pathogens in positive blood culture bottles that contained paediatric medium and blood samples from children. Compared to standard phenotypic methods, the assay reduced time for organism identification by 1-2 days. The ease of use of the assay will likely help laboratories to adapt and offer it 24/7, thus improving patient care.