

00327 Evaluation of the Biofire FilmArray Meningitis/Encephalitis (ME) Panel for Detection of Pathogens in Cerebrospinal Fluid

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Aims: Children are susceptible to infections, which can be life-threatening when it involves the central nervous system (CNS). Early diagnosis and proper treatment can alter the course of the illness. The Biofire FilmArray Meningitis/Encephalitis (ME) Panel tests for 14 common pathogens found in the cerebrospinal fluid (CSF), and is designed for use with the integrated FilmArray multiplex PCR system. This evaluation focuses on the comparisons between FilmArray ME Panel and current in-house developed laboratory tests, in terms of turnaround time, effort, and accuracy.

Methodology: Of 18 specimens examined, 13 were clinical specimens and 5 were from an external quality assurance (EQA) program. Evaluation of the ME Panel was done alongside concurrent positive CSF cases, which were analyzed with in-house developed laboratory tests, namely, monoplex polymerase chain reaction (PCR), CSF latex-based antigen testing, and CSF culture.

Result: The turnaround time for the ME Panel was the shortest, followed by CSF antigen testing and PCR, with CSF culture being the longest. PCR requires manual extraction of nucleic acids, preparation of the PCR master mix, and analyzing of real-time PCR results. CSF antigen testing was performed using Wellcogen Bacterial Antigen Kit. CSF culture involves plating of specimens onto agar plate(s), Gram staining, incubation, reading of colonies (if any), followed by identification and antibiotic susceptibility testing. The FilmArray system is able to perform automated nucleic acid extraction, multiplex PCR, and detection. In terms of accuracy, 83% of the FilmArray ME Panel test results were in agreement with the in-house developed laboratory tests.

Conclusion: Overall, the FilmArray ME Panel has an advantage in turnaround time and technologist's effort required, which is critical for the management of critically ill patients. However, due to the relatively small number of positive cases evaluated, further evaluation is necessary.