346 | Impact of a novel host-response diagnostic on emergency department antibiotic decision making

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Background and Objectives: In emergency departments (ED), determining the need for antibiotics can be challenging due to overlap between viral and bacterial presentations. We evaluated the diagnostic performance and clinician-reported impact of an FDA cleared host response assay, in aiding ED clinician antibiotic decision-making for patients with acute febrile illness.

Methods: Over 15 weeks in an academic urban adult ED, we collected patient complaints, lab results, imaging, final diagnosis, and return visit <2 weeks for infectious concerns. The results are categorized as bacterial (includes bacterial/viral co-infection), equivocal, or viral/other etiology. Two ED clinicians (and 3rd tie-breaker) independently adjudicated cases based on gold standard testing. Final adjudication of bacterial diagnosis required a consistent clinical picture with positive cultures or imaging confirmation (e.g., empyema, abscess); adjudication of viral diagnosis required PCR viral detection and/or consistent clinical or imaging findings and no bacterial pathogen unless co-infected. The host response assay performance was assessed against gold standard (equivocal cases removed); the impact on antibiotic decisions was based on clinician feedback.

Results: Thirty patients had complete data: Of 13 cases adjudicated as bacterial (including 2 co-infections), 12 resulted bacterial (true positives), and 1 resulted viral (false negative). Of 17 cases adjudicated as viral/other, 11 resulted viral (true negatives), 3 bacterial (false positives), and 3 as equivocal. The test sensitivity and specificity for bacterial infection were 92.3% [95%CI: 77.8%-100%] and 78.6% [95%CI: 57.1% - 100%], respectively. For discordant cases, 3 false positives were treated inpatient for fever of unknown origin with antibiotics, and 1 false negative was diagnosed as an infected inclusion cyst, with negative wound cultures. In 77% of cases (23/30), the results impacted ED clinical decisions by supporting antibiotic continuation (8/30), discontinuation (5/30), withholding (6/30), and initiation (4/30). 8 patients were discharged, 21 admitted. One patient returned < 2 weeks for noninfectious concerns.

Conclusion: In the ED, the diagnostic performance of MMBV proved effective in aiding antibiotic decision-making. the real-world use requires ongoing evaluation to establish best practices and clinical effectiveness.

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