Real-World Clinical Utility of Host –Response Testing in Emergency Care.

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Background: Infections remain a leading cause of emergency department (ED) visits, and distinguishing bacterial from viral etiologies continues to be a significant clinical challenge. LIAISON® MeMed BV (LMMBV) is an FDA-cleared host-protein test that generates a bacterial likelihood score ranging from 0 to 100, with higher scores indicative of bacterial infection (including bacterial-viral coinfection). This study evaluated the real-world integration of LMMBV into routine ED workflows.

Method: We conducted a real-world study of adult patients presenting to the ED at Columbia Memorial Health between September 30, 2025, and January 7, 2026. Consecutive patients for whom LMMBV was ordered as part of the ED sepsis order set were included. Clinical staff received training on interpretation of LMMBV results prior to implementation. Patient characteristics, management decision, and outcomes were compared between patients with bacterial (score > 65) versus viral (score < 35) LMMBV results.

Results: Among the included patients, 136 (48.7%) had bacterial LMMBV results, 98 (35.1%) had viral results, and 45 (16.1%) had equivocal results (Figure 1). The median age was 72 years, and 49.6% of patients were male. Significant differences were observed between bacterial and viral LMMBV groups in rates of blood (p<0.001) and urine (p=0.031) culture ordering, antibiotic prescribing (p<0.001), and hospital admission (p<0.001), suggesting that LMMBV results were used to stratify patient management (Table 1). The safety of this stratification was supported by low and comparable rates of ED revisits and rehospitalizations. Antibiotic prescribing increased across LMMBV score bins, with a marked difference between higher score bins consistent with the test's reported rule-in performance (Table 2). In multivariable analysis, a viral LMMBV result was the strongest predictor of antibiotic avoidance (Figure 2).

Table 1: Patient characteristics (n=279)

		all (N=279)	Bacterial (N=136)	Viral (N=98)	pval	EQV (N=45)
Section	Variable					
Demographics	Age median (IQR)	72.0 (60.0, 81.0)	74.0 (63.0, 82.0)	67.5 (54.0, 77.8)	0.003	73.0 (62.0, 82.0)
	Male n (%)	138 (49.6%)	73 (54.1%)	44 (44.9%)	0.168	21 (46.7%)
Tests Ordered n (%)	Blood Culture	165 (59.1%)	94 (69.1%)	40 (40.8%)	<0.001	31 (68.9%)
	Urine Culture	66 (23.7%)	37 (27.2%)	15 (15.3%)	0.031	14 (31.1%)
Biomarkers median (IQR)	WBC (×10³/µL)	9.9 (7.6, 14.4)	11.8 (8.6, 15.8)	8.6 (6.9, 11.3)	<0.001	8.2 (6.4, 12.8)
	Lactate (mmol/L)	1.9 (1.3, 2.9)	2.0 (1.4, 3.2)	1.6 (1.2, 2.3)	0.086	2.0 (1.0, 2.8)
MeMed BV median (IQR)	BV Score	61.0 (17.0, 96.0)	96.5 (87.0, 100.0)	8.5 (4.0, 18.0)	<0.001	51.0 (44.0, 55.0)
Microbiology n (%)	Bacterial Pathogen Detected	57 (20.4%)	32 (23.5%)	12 (12.2%)	0.030	13 (28.9%)
	Viral Pathogen Detected	46 (16.5%)	18 (13.2%)	18 (18.4%)	0.284	10 (22.2%)
Management n (%)	Antibiotics Prescribed	182 (65.2%)	109 (80.1%)	44 (44.9%)	<0.001	29 (64.4%)
	Hospital Admission	199 (72.1%)	117 (86.7%)	46 (47.4%)	<0.001	36 (81.8%)
Follow-up n (%)	ED Revisit	6 (2.2%)	4 (2.9%)	1 (1.0%)	0.317	1 (2.2%)
	Re-hospitalization	3 (1.1%)	3 (2.2%)	0 (0.0%)	0.140	0 (0.0%)
	Death	12 (4.3%)	10 (7.4%)	1 (1.0%)	0.024	1 (2.2%)

Figure 1: LMMBV scores in study cohort

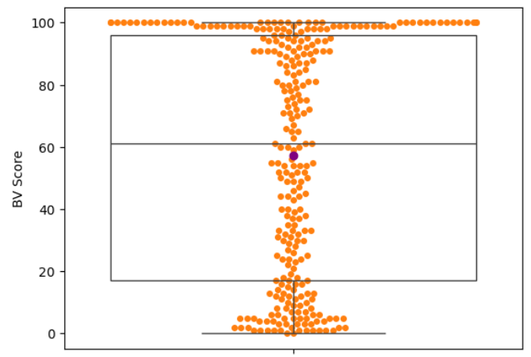
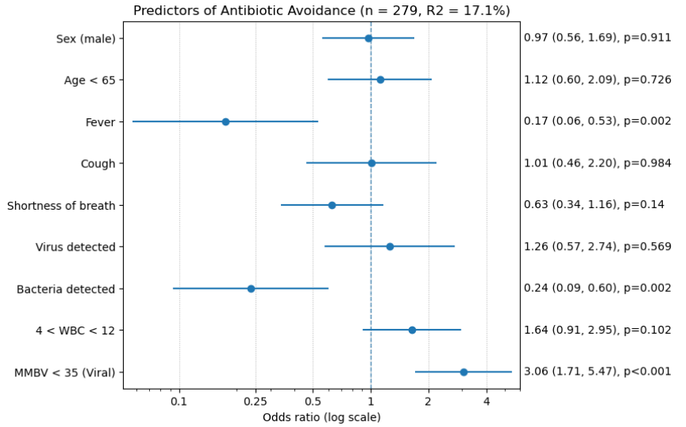


Table 2: Antibiotic prescription rates

Variable	Antibiotics
BV Score Bin	
Bin 1 [0, 10] (N=53)	23 (43.4%)
Bin 2 (10, 35) (N=45)	21 (46.7%)
Bin 3 [35, 65] (N=45)	29 (64.4%)
Bin 4 (65, 90) (N=39)	26 (66.7%)
Bin 5 [90, 100] (N=97)	83 (85.6%)

Figure 2: Logistic regression model of predictors for antibiotic avoidance



Conclusion: Integration of LMMBV into the ED sepsis order set is associated with safe patient stratification, supporting its use to guide management decisions in real-world emergency care.