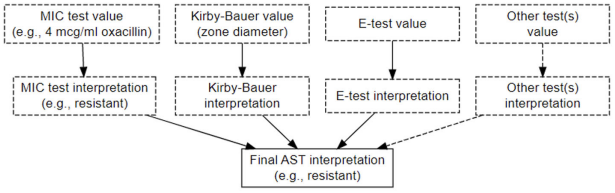

FIGURE 1. Schematic of testing cascade for antimicrobial susceptibility testing (AST) data reported per clinical isolate to the National Healthcare Safety Network (NHSN) Antimicrobial Resistance (AR) Option. Example of oxacillin minimum inhibitory concentration (MIC) testing for *Staphylococcus aureus* denoted in parentheses. Dashed boxes represent optionally reportable results; dashed arrows represent uncaptured results.

E. coli–fluoroquinolones (ciprofloxacin or levofloxacin)		Per 2021 CLSI breakpoints on MIC values			
		Resistant	Not resistant	Unclassifiable[a]	
Per lab's MIC interpretation	Resistant	45,911	29	92	46,032
	Not resistant	777	111,185	14,018	125,980
		45,988	112,214	15,010	172,012

S. aureus–methicillin (oxacillin or cefoxitin)		Per 2021 CLSI breakpoints on MIC values			
		Resistant	Not resistant	Unclassifiable[a]	
Per lab's MIC interpretation	Resistant	8,354	344	7,808	16,506
	Not resistant	41	21,972	0	22,013
		8,395	22,316	7,808	38,519

[a] MIC values could not be classified if they were reported as intervals spanning the breakpoint (e.g., ≤1 µg/ml ciprofloxacin for *E. coli* or >2 µg/ml oxacillin for *S. aureus*).

FIGURE 2. Consistency between the laboratory minimum inhibitory concentration (MIC) interpretation (classified as resistant or not resistant) compared to the interpretation derived by applying the reported MIC values to the 2021 Clinical and Laboratory Standards (CLSI) breakpoints for two antibiotic-resistance phenotypes among isolates reported in 2022: (1) fluoroquinolone-resistant *Escherichia coli* and (2) methicillin-resistant *Staphylococcus aureus*.

clinical laboratory interpretations, can improve surveillance data accuracy and overcome misclassification due to delayed uptake of revised breakpoints. We evaluated the completeness and consistency of MIC data submitted to the AR Option for fluoroquinolone-resistant Escherichia coli and methicillin-resistant Staphylococcus aureus (MRSA). **Methods:** We included data on (1) E. coli isolates tested for ciprofloxacin or levofloxacin susceptibility and (2) S. aureus isolates tested for oxacillin or cefoxitin susceptibility in 2022 and reported by October 1, 2023. We evaluated completeness among isolates reporting a final AST interpretation as the proportion of isolates reporting both an MIC value and interpretation. We evaluated consistency using percent agreement comparing the laboratory's MIC interpretation (classified as resistant or not resistant) with the interpretation derived by applying 2021 CLSI M100 breakpoints to the MIC values reported for the same isolate. **Results:** Across 974 hospitals, fluoroquinolone MICs and interpretations were reported for 172,012/393,359 E. coli isolates (43.7%), and oxacillin or cefoxitin MICs and interpretations were reported for 38,519/79,372 S. aureus isolates (48.5%). Of isolates with both MIC values and interpretations, 157,902 (91.8%) E. coli and 7,808(79.7%) S. aureus isolates had MICs that could be classified as resistant or non-resistant (i.e., intermediate or susceptible) per CLSI breakpoints (Figure 2). The remaining MICs were unclassifiable (reported as intervals spanning CLSI breakpoints, e.g., ≤1 µg/ml ciprofloxacin for E. coli). Among isolates with classifiable MICs, the agreement between the clinical laboratory and CLSI-based interpretation was 99.5% for E. coli and 99.7% for S. aureus. **Conclusion:** MIC values and interpretations were available for

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Resistance

Extended-Spectrum Beta-Lactamase Producing Enterobacterales Infections in the United States, 2012-2021

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Background: The 2022 Special Report: COVID-19 U.S. Impact on Antimicrobial Resistance identified continued increases in the rate of extended- spectrum beta-lactamase producing (ESBL) infections in the United States from 2017 through 2020. Using similar data sources and methodology, we examined the trends of species-specific ESBL infections from 2012-2021. **Methods:** We identified a cohort of patients from the PINC AI and BD Research Insights databases with a clinical culture yielding a Klebsiella pneumoniae or Escherichia coli isolate with accompanying susceptibility testing. E. coli or K. pneumoniae isolates non-susceptible to ceftriaxone, cefotaxime, ceftazidime, or cefepime were considered suggestive of ESBL production. Isolates from patients with no culture yielding the same resistance phenotype of interest in the previous 14 days were counted as an incident case. Community-onset (CO) cultures were obtained ≤ day 3 of hospitalization; hospital-onset (HO) cultures were obtained ≥ day 4. We used a raking procedure to determine weights for extrapolating the number of discharges included in our sample to match the distribution of discharges, stratified by bed size, U.S. census division, urban/rural

Table 1. Unadjusted weighted rates per 10,000 discharges of extended-spectrum beta-lactamase producing (ESBL) Enterobacterales by location onset, 2012-2021

Phenotype	Year	All	Hospital-Onset	Community-Onset
ESBL *K. pneumoniae*	2012	9.54	2.52	7.02
	2013	9.92	2.48	7.44
	2014	11.06	2.70	8.36
	2015	11.77	2.79	8.97
	2016	11.01	2.61	8.40
	2017	10.97	2.30	8.68
	2018	11.09	2.33	8.76
	2019	12.26	2.60	9.66
	2020	14.39	3.58	10.81
	2021	15.28	4.06	11.22
ESBL *E. coli*	2012	30.18	5.14	25.03
	2013	32.87	4.87	27.99
	2014	34.52	5.20	29.32
	2015	40.33	5.54	34.79
	2016	42.01	5.53	36.48
	2017	43.41	5.74	37.67
	2018	43.52	5.79	37.73
	2019	48.34	6.04	42.30
	2020	51.32	7.71	43.61
	2021	47.81	7.52	40.28

Figure 1. Rate of Extended-Spectrum Beta-Lactamase Producing Enterobacterales infections, 2012-2021

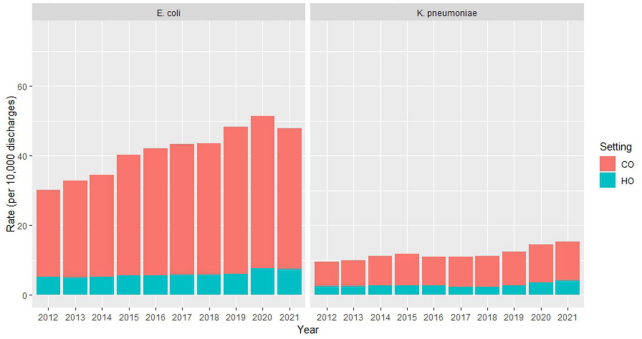
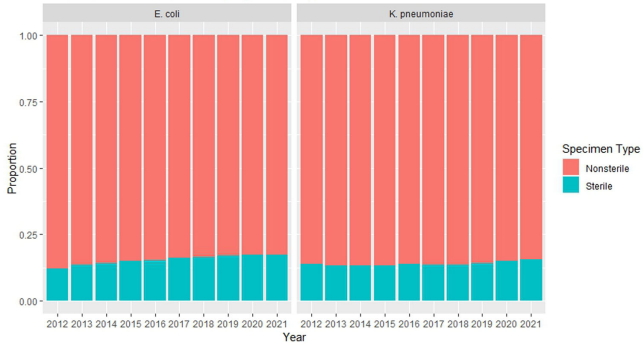


Figure 2. Proportion of Extended-Spectrum Beta-Lactamase Producing Enterobacterales Infections, by Specimen Type



designation, and teaching status, for U.S. hospitals included in the American Hospital Association survey. We evaluated rates over time due to the changes in number of hospitalizations during the COVID-19 pandemic. Results were stratified by HO and CO, and sterile and non-sterile specimen sources. **Results:** In 2021, there were 48,936 ESBL K. pneumoniae and 153,112 ESBL E. coli infections among approximately 32 million discharges. Overall, most infections were CO and from non-sterile specimens. From 2012-2021, the rate of ESBL K. pneumoniae increased from 9.54 to 15.28 per 10,000 discharges. ESBL E. coli infections increased from 2012-2020 (30.18 to 51.32 per 10,000 discharges), then declined in 2021 (47.81 per 10,000 discharges) (Table 1, Figure 1). The proportion of non-sterile ESBL E. coli declined from 88% in 2012 to 83% in 2021, and the proportion of non-sterile ESBL K. pneumoniae was 85-87% over the study period (Figure 2). **Conclusion:** ESBL E. coli and K. pneumoniae infections increased from 2012-2021, although the CO ESBL E. coli rate decreased between 2020 and 2021. Understanding changes in culturing practices over time may provide insights into the increased proportion of ESBL E. coli from sterile sites. Additionally, further investigation into differences in organism trends, particularly in 2021, may inform prevention strategies.

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FilmArray Meningitis/Encephalitis Panel Impact on Antibiotic Usage in Patients with Suspected Community-Acquired Meningitis

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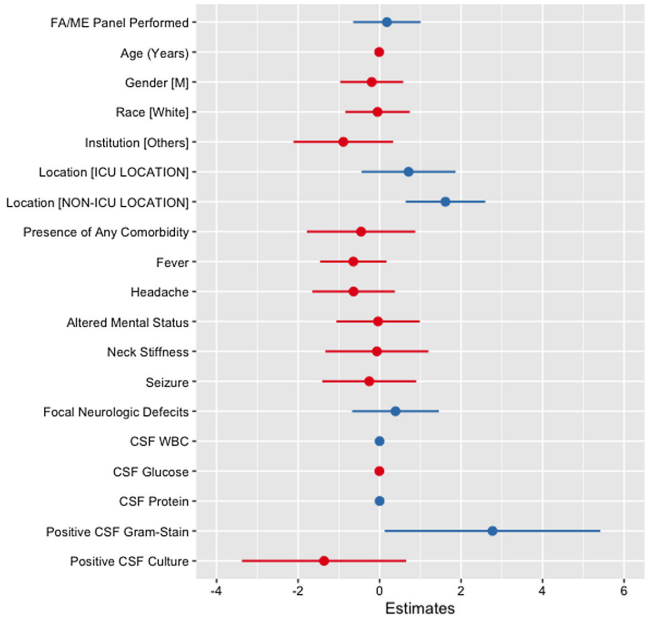
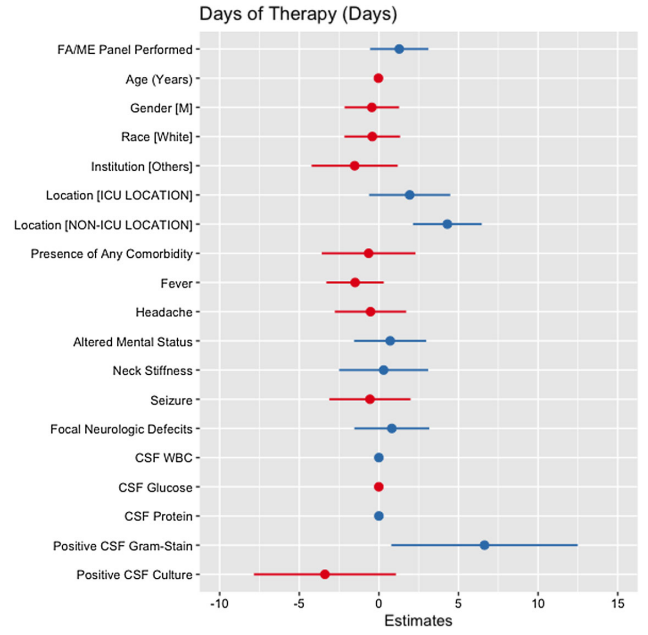
Duration of Empiric Therapy (Days)



Days of Therapy (Days)



Background: Cerebrospinal fluid (CSF) cultures are commonly performed to evaluate patients with suspected bacterial meningitis. These cultures, however, can take up to 72 hours, leading to delays in antibiotic de-escalation and increased antimicrobial utilization. The turnaround for the BioFire® FilmArray® Meningitis/Encephalitis(FA/ME) panel is less than an hour, which may facilitate early de-escalation. Our study aimed to assess whether the use of FA/ME panels in combination with CSF cultures could impact antimicrobial therapy compared to cultures alone in patients treated for suspected bacterial meningitis. **Methods:** Our retrospective study included patients from five hospitals in Texas (2017-2023) who received empiric antibiotics for suspected community-acquired meningitis and underwent a lumbar puncture within 96 hours of admission. Patients with ventricular drains, traumatic brain injury, and