Figure 1. Overall pneumonia panel usage by location pre- and post-intervention

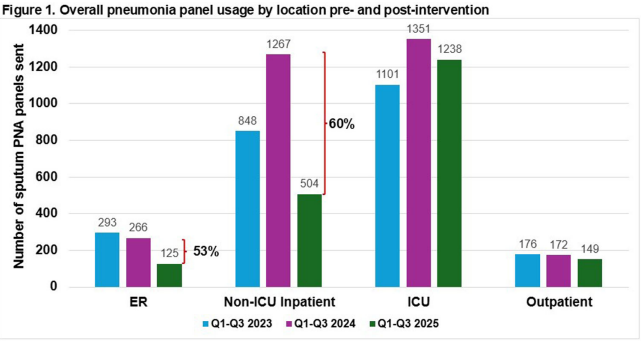
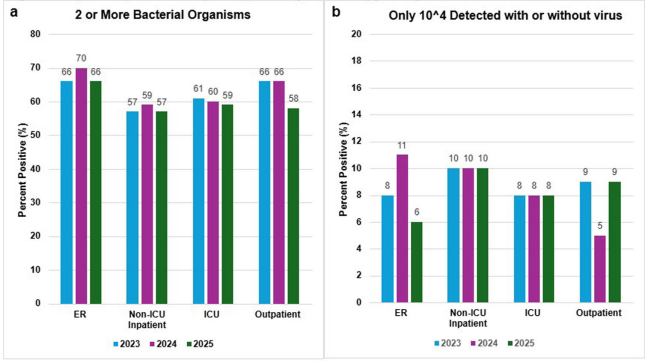


Figure 2. Sputum pneumonia panel positivity rates suggesting colonization or contamination



outpatient, which are areas not targeted by the intervention. The positivity rate was consistent over the three years (70-75%). Most sputum PCRs detected multiple bacterial organisms (57-70%, Figure 2a) and 5-11% of samples detected bacteria at a quantity of only 10^4, with or without viral co-infection (Figure 2b). After reviewing post-implementation quarter 1 2025 data, broad Gram-negative coverage was removed as a testing criterion since it was selected frequently (32%) but not accurately (10% accuracy). **Conclusion:** Implementation of a clinical decision support tool in Epic led to more appropriate diagnostic stewardship of the multiplex pneumonia PCR, improving care and reducing costs. Future interventions will target improving stewardship in the ICU.

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Presentation Type:
Poster Presentation
Subject Category: Diagnostic Stewardship
Evaluating meningitis/encephalitis PCR panel performance‡

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Introduction: The BioFire® FilmArray® meningitis/encephalitispanel can be a helpful test for early diagnosis of community acquired central nervous system infection. However, excessive ordering can lead to patient harm, increased healthcare costs, and excessive environmental impact. Despite a diagnostic stewardship algorithm in place at our institution, ME panels are frequently nondiagnostic, prompting inquiry into whether our diagnostic stewardship algorithm could be improved and if a ME panel ordering decision rule could improve test utility. Objective: Review ME panels performed over a one month period and evaluate for adherence to our institution's diagnostic stewardship pathway. **Methods:** We performed a retrospectivechart review of ME panels performed on adult patients over a one month time period at our institutionfor order indication,progress note clinical indication, other cerebrospinal fluid (CSF) test results, ME panel result, and patient outcome. Adherence to our current microbiology lab diagnostic stewardship algorithm and clinical utility were evaluated. The current algorithm calls for ME panels to be performed only on CSF collected via lumbar puncture (LP) with CSF total nucleated cells (TNC) <5, low glucose (<40 mg/dL), or abnormal protein (<15 mg/dL or <45 mg/dL) in non-neutropenic adults. Our electronic medical record (EMR) also provides hard stops if order indication for ME panels include "Evaluate for ventriculoperitoneal shunt infection" or "Evaluate for brain mass/abcess." An "other" option was made available to prompt an infectious disease consult to discuss clinical indication for the test. **Results:** Twenty-three ME panels were performed on adult inpatients and outpatients at our healthcare system over the month reviewed. All 23 ME panels resulted as normal for all 14 pathogens. Eleven out of 23 ME panels met clinical indication outlined in our microbiology lab's diagnostic stewardship algorithm. Ten out of 23 were ordered for meningitis in an immunocompromised host, although none of the patients had WBC <1 or ANC <0.5. Five out of 10 panels were ordered on immunocompromised individuals who did not were not appear immunocompromised upon chart review. Two out of six ME panels were run for community acquired meningitis despite completely normal CSF parameters. **Conclusion:** There is a discrepancy between our institution's diagnostic stewardship algorithm indications for for ME panels and actual ME panel ordering and completion. There is also a high rate of negative ME panel test results which may indicate test overuse. Re-evaluation of our ME panel algorithm and the utility of a clinical decision rule are warranted.

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Presentation Type:
Poster Presentation
Subject Category: Dialysis
Identifying Resilient Systems in Outpatient Hemodialysis Using Machine Learning‡

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Background: Resilient healthcare systems prevent, absorb, and learn from stressors. Identifying resilient performance in healthcare systems can be challenging due to complex underlying processes and associated outcomes. This study aimed to identify resilient performance in US outpatient hemodialysis (HD) facilities during the COVID-19 pandemic by characterizing associated operational factors and classifying longitudinal patterns in bloodstream infections (BSI) rates using machine learning. **Methods:** This study used longitudinal BSI data reported to National Healthcare Safety Network (NHSN) by outpatient HD facilities during pre-pandemic (April 1, 2018–April 30, 2019) and pandemic (April 1, 2021–April 30, 2023) periods. For each period, facilities were classified into distinct patterns based on facility-level BSI rates (cases per 100 patient months) using k-means clustering for longitudinal data (KmL), an unsupervised machine-learning method. CMS Dialysis Facility data provided key facility characteristics and NHSN Annual Dialysis Facility Surveys provided use of Core Interventions for Dialysis BSI Prevention. Facility resilience was operationalized as classification in a lower BSI rate cluster during the pandemic period. Associations between KmL classification during the pandemic and facility operational factors were assessed using multivariable logistic regression. **Result:** Of 7084 outpatient HD facilities, 4907 (69%) reported BSIs to NHSN during both periods and linked to CMS data. KmL grouped facilities into two clusters for each period. During the pandemic, a lower-rate cluster (n=4132, 84%) and a higher rate cluster (n=775, 16%) had mean BSI rates of 0.19 and 0.76 per 100 patient-months, respectively. Both clusters reported strong implementation of Core Interventions; however, the higher-rate cluster had increased odds of implementing ≤64% of interventions. In the multivariable model, facilities in the

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