important safety goal. Hospitals should exercise caution when considering reductions in SARS-CoV-2 admission screening.
Disclosures: None

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Presentation Type:
Poster Presentation - Oral Presentation
Subject Category: Diagnostic/Microbiology
Comparison of clinical antibiotic susceptibility testing interpretations to CLSI standard interpretations
Erin Hitchingham; Ashley Gambrell; Raquel Villegas and Daniel Muleta

Background: Clinical antibiotic susceptibility testing (AST) interpretations based on minimum inhibitory concentrations (MIC) breakpoints are important for both clinical decision making and some reportable condition criteria. Standardization of MIC breakpoints across clinical laboratories is lacking; AST instruments are often validated for outdated Clinical and Laboratory Standards Institute (CLSI) MIC breakpoint guidelines. In this study, we analyzed the agreement between the reported clinical laboratory AST interpretations and the guideline CLSI interpretation. **Methods:** Clinical laboratory AST data collected from the Multisite Gram-Negative Surveillance Initiative (MuGSI) carbapenem-resistant Enterobacterales (CRE) surveillance program in Tennessee between 2019 and 2021 were utilized. MIC values from the clinical instrument were used to calculate CLSI standard interpretations following the 2019–2021 CLSI M100 guidelines. Agreement between the clinical laboratory and CLSI interpretations of the reported MIC values were measured using a weighted Cohen κ calculated in SAS version 9.4 software. Total matches were isolates with identical CLSI and clinical laboratory interpretations. **Results:** In total, 14 antibiotics were assessed. Of those, 9 antibiotics had at least moderate agreement ($\kappa > 0.41$) between interpretations. Agreement between the clinical laboratory and the CLSI interpretations were near perfect ($\kappa > 0.81$) for 3 antibiotics. Agreement between the clinical laboratory and the CLSI interpretations were poor for cefazolin (0.06) and ertapenem (0.14). Cefotaxime (−0.07) was the only antibiotic that suggested no agreement. **Conclusions:** Of the antibiotics included in the analysis, 36% had less than moderate agreement between clinical laboratory and CLSI AST interpretations. Given the increases in antimicrobial resistance globally and the emphasis placed on antibiotic stewardship, standardization across clinical AST panels should be prioritized. Inconsistencies have the potential to contribute to inappropriate antibiotic use in addition to under- or overidentification of reportable conditions, including CRE.

Table 1: Agreement between clinical AST interpretations and CLSI standard interpretations by antibiotic.

Antibiotic (n=)	Total Matched (%)	Cohen's Kappa (95% CI)
Aztreonam (191)	181 (94.8%)	0.87 (0.79 – 0.95)
Cefepime (285)	248 (87.0%)	0.77 (0.70 – 0.84)
Ceftazidime (280)	263 (93.8%)	0.81 (0.72 – 0.89)
Ertapenem (313)	159 (50.8%)	0.14 (0.06 – 0.22)
Imipenem (318)	166 (91.8%)	0.84 (0.76 – 0.92)
Meropenem (318)	298 (93.8%)	0.84 (0.78 – 0.91)
Cefotaxime (169)	124 (73.4%)	-0.07 (-0.10 – -0.04)
Ciprofloxacin (282)	193 (68.4%)	0.38 (0.30 – 0.47)
Gentamicin (273)	219 (80.2%)	0.69 (0.64 – 0.74)
Levofloxacin (289)	186 (64.4%)	0.32 (0.24 – 0.39)
Tobramycin (277)	225 (81.3%)	0.75 (0.70 – 0.79)
Nitrofurantoin (273)	158 (57.9%)	0.57 (0.50 – 0.63)
Cefazolin (266)	81 (30.4%)	0.06 (0.03 – 0.08)
Tetracycline (141)	94 (66.7%)	0.66 (0.59 – 0.72)

Disclosures: None

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Presentation Type:
Poster Presentation - Oral Presentation
Subject Category: Environmental Cleaning
Paradoxical consequences of wastewater interventions targeting carbapenemase-producing Enterobacterales
David Lehman; Shireen Kotay; Hardik Parikh; Stacy Park and Amy Mathers

Background: *Serratia marcescens* is a leading cause of hospital-acquired infections. There has been increasing recognition of hospital wastewater as a reservoir for carbapenemase-producing Enterobacterales (CPE), including *S. marcescens*. Because CPE can proliferate in biofilms in sink drains and traps, controlling nosocomial spread is challenging. The ideal approach to eliminate transmission from wastewater to patients remains unknown. **Methods:** Patients were included if they were admitted to 1 of 2 intensive care units (ICUs) for >12 hours between December 1, 2010, and January 31, 2016. During this period at the University of Virginia Hospital, there was ongoing patient acquisition of multiple species producing *Klebsiella pneumoniae* carbapenemase (KPC) as well as consistent perirectal KPC surveillance. In January 2014, to eliminate CPE-colonized sinks, the sink drains and traps in one of the ICUs (ie, the "intervention unit") were exchanged followed by varied chemical mitigations to prevent recolonization. In another ICU, the same chemical mitigations were performed but without plumbing replacement (ie, the "control unit"). Acquisition of KPC-producing *S. marcescens* was defined as colonization or infection >12 hours after admission to either unit. To control for increases in patient-to-patient transmission, acquisition of methicillin-resistant *Staphylococcus aureus* (MRSA) was evaluated in the intervention unit during the same period and was defined as new colonization or infection with MRSA >12 hours after unit admission but within 21 days of last unit exposure. **Results:** For the postintervention period, risk of *S. marcescens* acquisition was increased (RR, 2.85; 95% CI, 1.24–6.58; $P = .01$) in the intervention unit compared to the control unit. In the intervention unit, the risk of *S. marcescens* acquisition increased in the postintervention period compared to the preintervention period (RR, 6.26; 95% CI, 2.59–15.1; $P < .0001$). There was no change in MRSA acquisition in the intervention unit representing consistent patient-to-patient infection prevention (RR, 0.95; 95% CI, 0.61–1.48; $P = .81$). *S. marcescens* isolates were noted to be highly clonal. **Conclusions:** Exposure to the intervention unit following plumbing replacement was associated with increased relative risk of acquisition of KPC-producing *S. marcescens*. This increased risk was not observed in the control unit, which had only chemical plumbing interventions. There was no concomitant increase in patient-to-patient MRSA transmission. The disturbance of the wastewater environment through the plumbing replacement intervention may have led to the unintended consequence of more KPC-producing *S. marcescens* acquisition.
Disclosures: None

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Presentation Type:
Poster Presentation - Oral Presentation
Subject Category: Implementation Science
Electronic phenotyping of community-acquired pneumonia: A tool for inpatient syndrome-specific antimicrobial stewardship
Amy Chang; Annie Bui; David Ha; William Alegria; Marisa Holubar; Brian Lu; Leah Mische; Rebecca Linfield; Kyle Walding and Emily Mui

Background: Using patient data from the electronic health record (EHR) and computer logic, an "electronic phenotype" can be created to identify patients with community-acquired pneumonia (CAP) in real time to assist

with syndrome-specific antimicrobial stewardship efforts.[1] We adapted and validated the performance of an inpatient CAP electronic phenotype for antimicrobial stewardship interventions. **Methods:** An automated scoring system was created within the EHR (Epic Systems) to identify hospitalized patients with CAP based on the variables and logic listed in Fig. 1B. We adapted a score used by the Michigan Hospital Medicine Safety Consortium (HMS) to identify patients with CAP, with additions made to improve sensitivity (Fig. 1).[1] The score can be displayed in a column within the EHR patient list (Fig. 2). We validated the electronic phenotype via chart review of all hospitalized patients on systemic antimicrobials admitted to a medicine team consecutively between November 8 and 18, 2021. Patients who were readmitted within the validation time frame were excluded. We assessed the performance of the electronic phenotype by comparing the score to manual chart review, where "CAP diagnosis" was defined as (1) mention of "pneumonia" or "CAP" as part of the differential diagnosis in the admission documentation, (2) antimicrobials were started within 48 hours of admission, and (3) radiographic findings were suggestive of pneumonia. After initial evaluation, the scoring system was adjusted, and performance was re-evaluated during prospective audit and feedback performed on EHR CAP–positive patients over 13 days between July 2022 and December 2022. **Results:** We included 191 patients in our initial validation cohort. The CAP score had high sensitivity (95.83%), specificity (92.2%), and negative predictive value (99.35%), though lower positive predictive value (63.89%) was noted (Table 2). The rules were further refined to include bloodstream infection only with *Haemophilus influenza* or *Streptococcus pneumoniae* in rule 2B, and azithromycin was removed from "CAP antibiotics." After these changes, repeated evaluation of 88 patients with positive CAP EHR score was performed, and only 20 (23%) were considered false-positive results. **Conclusions:** Electronic phenotypes can be used to create automated tools to identify patients with CAP with reasonable performance. Data from this tool can be used to guide more focused antimicrobial stewardship interventions and clinical decision support in the future. **Reference:** Vaughn VM, et al. A statewide collaborative quality initiative to improve antibiotic duration and outcomes in patients hospitalized with uncomplicated community-acquired pneumonia. *Clin Infect Dis* 2022;75:460–467.

Figure 1: EHR Rules for identifying CAP at HMS vs. Stanford

A) HMS Rules

Rule 1: CAP Antibiotic* orders administered during encounter within 48 hours of admission
AND
Rule 2: Active order for a CAP Antibiotic ordered for a "pulmonary" indication
CAP EHR POSITIVE: IF Rule 1 AND Rule 2 present, THEN Positive

*CAP Antibiotic = ampicillin/sulbactam, azithromycin, cefepime, ceftriaxone, levofloxacin, moxifloxacin, piperacillin/tazobactam, vancomycin

B) Stanford adjusted Rules

Rule 1: CAP Antibiotic§ orders administered during encounter within 48 hours of admission (Score = 100,000)		
AND		
Rule 2: Any ONE of the following criteria met:		
Added Score for each rule:		
Rule 2A	1	Active order for a CAP Antibiotic ordered for a "pulmonary" indication
Rule 2B	10	CAP Antibiotic ordered with an indication of "bloodstream infection" AND CXR† ordered that admission
Rule 2C	100	CAP Antibiotic ordered with indication of "other" AND CXR ordered
Rule 2D	1000	CAP Antibiotic ordered AND Positive respiratory culture¶
Rule 2E	10,000	CAP Antibiotic ordered AND RVP‡ ordered
CAP EHR SCORE POSITIVE: Add scores from Rule 1 and Rule 2. If SUM >100,000, then Positive Score		

§CAP Antibiotic = amoxicillin/clavulanate, ampicillin/sulbactam, azithromycin, cefepime, ceftriaxone, cefpodoxime, doxycycline, levofloxacin, meropenem, moxifloxacin, piperacillin/tazobactam, vancomycin
†CXR = Chest X-ray
¶Positive Respiratory Culture = Respiratory culture marked as "abnormal result" in EHR. Note: respiratory cultures with growth of flora are not marked as "abnormal result" in Stanford's EHR
‡RVP = Respiratory Viral Panel; RT-PCR including influenza A/B, respiratory syncytial virus, parainfluenza 1/2/3/4, metapneumovirus, rhinovirus, adenovirus

Table 1: Validation of CAP "electronic phenotype"

		CAP Diagnosis on Clinical Chart Review		
		Yes	No	Total
"CAP" electronic phenotype	Positive	23	13	36
	Negative	1	154	155
	Total	24	167	191

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Poster Presentation - Oral Presentation

Subject Category: Infection Control in Low- and Middle-Income Countries

Hyperendemic carbapenem-resistant *Acinetobacter baumannii* at a hospital in Botswana: Insights from whole-genome sequencing

Jonathan Strysko; Tefelo Thela; Janet Thubuka; Tichaona Machiya; Jack Mkubwa; Celda Tiroyakgosi; Moses Vurayai; Kgomotso Kgomanyane; Tlhalefo Dudu Ntereke; Tshiamo Zankere; Kwana Lechiile; Teresia Gatonye; Chimwemwe Tembo; Naledi Betsi Mannathoko; Margaret Mokomane; Andries Feder; Melissa Richard-Greenblatt;

Figure 2: CAP EMR Score in a Patient List