	2017	2018	2019	2020	Overall
Positive MRSA by both PCR and Culture= True Positive	7	15	14	21	57
Positive MRSA PCR and Negative culture= False Negative	4	11	4	5	24
MRSA Culture Sensitivity	63.6%	57.7%	77.8%	80.8%	70.4%

Table 1- MRSA Culture Sensitivity by Year

guidelines for the control of *Staphylococcus aureus* colonization and infection in neonatal intensive care units.

Disclosures: None

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Decolonization Strategies
Decolonization of hospital patients may aid efforts to reduce transmission of carbapenem-resistant Enterobacterales
Brajendra K. Singh; Prabasaj Paul; Camden D. Gowler; Sujan C. Reddy and Rachel B. Slayton

Background: Multimodal approaches are often used to prevent transmission of antimicrobial-resistant pathogens among patients in healthcare settings; understanding the effect of individual interventions is challenging. We designed a model to compare the effectiveness of hand hygiene (HH) with or without decolonization in reducing patient colonization with carbapenem-resistant Enterobacterales (CRE). **Methods:** We developed an agent-based model to represent transmission of CRE in an acute-care hospital comprising 3 general wards and 2 ICUs, each with 20 single-occupancy rooms, located in a community of 85,000 people. The model accounted for the movement of healthcare personnel (HCP), including their visits to patients. CRE dynamics were modeled using a susceptible–infectious–susceptible framework with transmission occurring via HCP–patient contacts. The mean time to clearance of CRE colonization without intervention was 387 days (Zimmerman et al, 2013). Our baseline included a facility-level HH compliance of 30%, with an assumed efficacy of 50%. Contact precautions were employed for patients with CRE-positive cultures with assumed adherence and efficacy of 80% and 50%, respectively. Intervention scenarios included decolonization of culture-positive CRE patients, with a mean time to decolonization of 3 days. We considered 2 hypothetical intervention scenarios: (A) decolonization of patients with the baseline HH compliance and (B) decolonization with a slightly improved HH compliance of 35%. The hospital-level CRE incidence rate was used to compare the results from these intervention scenarios. **Results:** CRE incidence rates were lower in intervention scenarios than the baseline scenario (Fig. 1). The baseline mean incidence rate was 29.1 per 10,000
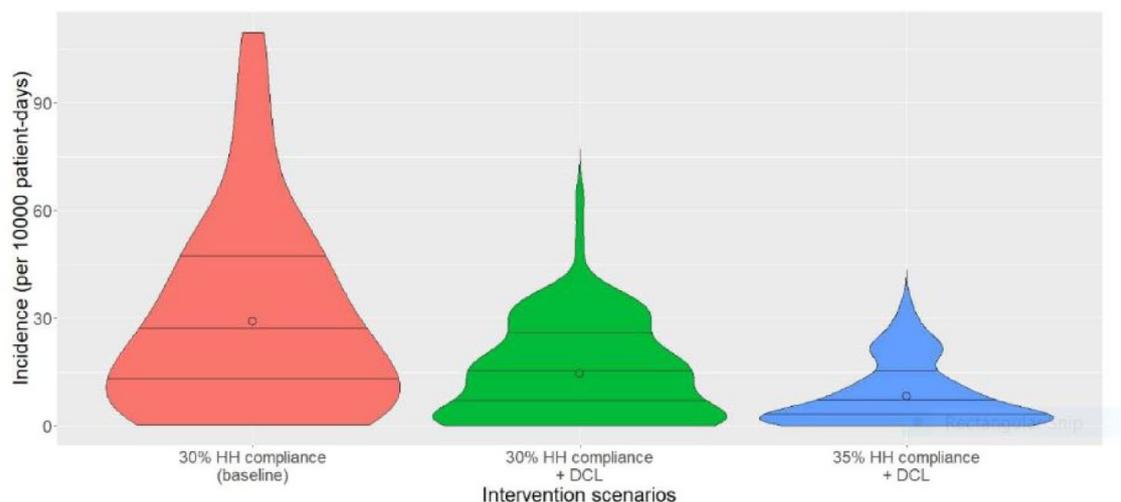

Figure 1. The distributions of the CRE (carbapenem-resistant Enterobacterales) incidence rates. These results are summarized from a set of 100 simulations of the model. In each violin plot, the empty circle represents the mean of the data points, and the three horizontal lines the median and interquartile range of the density. The baseline was run with a hand hygiene (HH) compliance of 30%. The acronym DCL represents decolonization of culture-positive CRE patients.

Table 1. The summary of the results from the baseline and intervention scenarios

Intervention scenarios with % facility-wide HH compliance (no decolonization in baseline)	The mean (IQR) of incident CRE-colonized patients (per 10000 patient-days)	The reduction in incident CRE-colonized patients relative to the baseline: the % mean reduction (IQR)
30% HH compliance (baseline)	29.1 (7.5 – 44.2)	NA
30% HH compliance with decolonization	14.5 (2.2 – 23.7)	50.2 (-26.3 – 87.9)
35% HH compliance with decolonization	8.2 (1.4 – 12.3)	71.9 (23.4 – 94.0)

Note. IQR: interquartile range; CRE: carbapenem-resistant Enterobacterales.

patient days. For decolonization with the baseline HH, the mean incidence rate decreased to 14.5 per 10,000 patient days, which is a 50.2% decrease relative to the baseline incidence (Table 1). The decolonization scenario with a slightly improved HH compliance of 35% produced a relative reduction of 71.9% relative to the baseline incidence. **Conclusions:** Our analysis shows that decolonization, combined with modest improvement in HH compliance, could lead to large decreases in pathogen transmission. In turn, this model implies that efforts to identify and improve decolonization strategies for better patient safety in health care may be needed and are worth exploring.
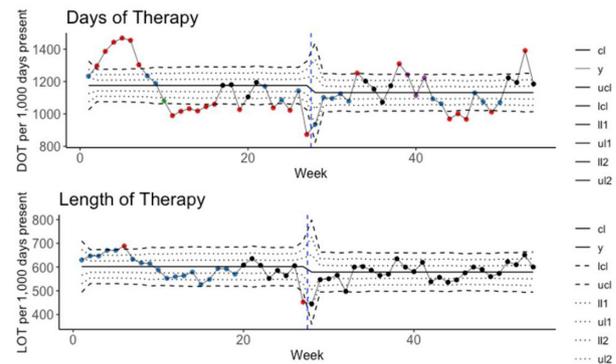
Disclosures: None

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Diagnostic/Microbiology
The impact of a blood-culture diagnostic stewardship intervention on utilization rates and antimicrobial stewardship

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Figures:

Figure 1 - Blood culture utilization

This figure represents a u-chart for blood culture utilization per 100 days present (y-axis) over the study period (x-axis). The blue dashed line represents the start of the intervention (week 28).
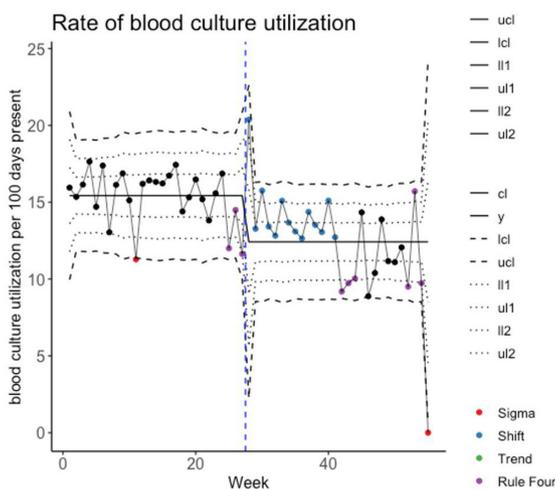
Figure 2- Antibiotic Utilization

Legend for figure 2- This figure represents a u-chart for days of therapy (DOT) per 1,000 days present (top) and length of therapy (LOT) per 1,000 days present (bottom) over the study period. The blue dashed line represents the start of the intervention (week 28).

Background: Blood cultures are often ordered when an infection is suspected; however, they have a low yield in most cases. The overuse of blood culture is associated with high contamination rates, resulting in excess diagnostics, unnecessary antibiotics, longer hospital stays, and higher hospital costs. We evaluated the safety of a multifaceted intervention, which encompassed education and blood-culture restriction, and its impact on blood-culture utilization and antibiotic use in adult intensive care unit (ICU) patients. **Methods:** The study was performed between October 2020 and October 2021 in the 12 general medicine and specialty ICUs of a quaternary academic care center. The intervention, implemented in April 2021, included providing education to ICU and infectious disease physicians based on an algorithm adapted from the Johns Hopkins DISTRIBUTE study in addition to restricting blood-culture ordering on these units to these providers. The month of April 2021 was excluded as a washout period. Study outcomes comprised blood-culture utilization, blood-culture positivity, days of therapy (DOT), and length of therapy (LOT), which were compared across the study periods using IRR or the Pearson χ^2 test, as appropriate. In addition, 30-day mortality and 30-

Table 1- Multiple Cox Proportional Hazard Regression Analysis:

Predicters	30-day Mortality		30-day ICU Readmission	
	HR (95% CI)	P value	HR (95% CI)	P value
Post-intervention (vs. pre-intervention)	1.111 (0.932-1.324)	0.241	1.013 (0.845-1.214)	0.888
Age (years)	1.021 (1.015-1.028)	<0.001	0.997 (0.991-1.002)	0.257
Male (vs. female)	0.986 (0.827-1.175)	0.87	0.969 (0.808-1.163)	0.738
Transplant (vs. non-transplant)	0.361 (0.231-0.563)	<0.001	2.498 (1.966-3.174)	<0.001
Positive SARS-COV2 during admission (vs negative)	2.746 (2.153-3.503)	<0.001	0.384 (0.216-0.684)	<0.001
No SARS-COV2 testing during admission (vs negative)	2.265 (1.817-2.822)	<0.001	0.919 (0.729-1.16)	0.478
Positive blood culture (vs negative)	1.478 (1.164-1.877)	0.001	0.584 (0.332-1.029)	0.063
No blood culture (vs negative)	0.262 (0.207-0.331)	<0.001	0.652 (0.443-0.959)	0.03
Stay in Both MICU and SICU (vs. SICU alone)	0.952 (0.724-1.25)	0.722	0.469 (0.31-0.709)	<0.001
Stay in MICU alone (vs. SICU alone)	1.825 (1.509-2.208)	<0.001	1.14 (0.935-1.39)	0.197
Antimicrobials days of therapy per days present	1.131 (1.093-1.171)	<0.001	1.015 (0.944-1.092)	0.68
Number of negative blood cultures during admission	0.957 (0.917-0.999)	0.045	0.705 (0.607-0.818)	<0.001
Length of stays (days)	0.998 (0.997-0.999)	<0.001	1 (0.999-1.001)	0.92

HR: Hazard Ratio; MICU: Medical Intensive Care Unit; SICU: Surgical Intensive Care Unit; SARS-COV2: Severe Acute Respiratory Syndrome Coronavirus 2