Presentation Type:
Poster Presentation

Effect of Meropenem Restriction on Time Between Order and Administration in a Medical Intensive Care Unit

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Background: In this study, we assessed whether meropenem restriction led to delays in administration for patients in a medical intensive care unit (MICU) at a large tertiary-care urban teaching hospital. **Methods:** The antimicrobial stewardship program (ASP) at Virginia Commonwealth University Health System (VCUHS) requires approval for restricted antimicrobial orders placed between 8 A.M. and 9 P.M. Between 8 A.M. and 5 P.M. (daytime), authorized approvers include ASP and infectious diseases (ID) physicians. From 5 P.M. to 9 P.M. (evening) orders are approved by ID fellows. Orders were entered as Stat, Now, and Routine. Between 9 P.M. and 8 A.M. (night), patients receive doses without approval. Meropenem restriction began in mid-January 2018. Pre- and postmeropenem restriction periods were defined as February–December 2017 and February–December 2018. Meropenem use data were compared for adult patients in the MICU. A multivariable Cox regression model was implemented to compare (1) time from order entry to approval; (2) time from order approval to patient administration; (3) total time from order entry to patient administration, adjusting for order priority, approver (ASP, ID consult, ID fellow, pharmacy); and (4) time of day of order placement (day, eve, night). The analyses were performed using SAS version 9.4 software (SAS Institute, Cary, NC). **Result:** Time from order approval to patient administration was significantly decreased in the postrestriction period (HR, 1.840; $P < .001$) (Table 1). Stat orders were faster compared to routine orders for order entry to approval (HR, 1.735; $P < .001$), approval to administration (HR, 2.610; $P < .001$), and total time from order entry to administration (HR, 2.812; $P < .001$). No significant differences were found in time to approval by approving service. Time from order entry to approval was faster for nighttime orders than for daytime orders (HR, 1.399; $P = .037$). **Conclusions:** Our data indicate that the time from order entry to administration decreased following meropenem restriction in our MICU. More research is needed to identify the reason for this finding, but we postulate that this is due to an effect on drug administration prioritization within nursing workflow. These data will inform our local meropenem restriction efforts.

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Effectiveness of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Nasal Screening for Reduction of Vancomycin Use for Pneumonia

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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) nasal colonization has been a well-established risk for developing MRSA pneumonia. In previous studies, the MRSA nasal screening test has shown an excellent negative predictive value (NPV) for MRSA pneumonia in patients without exclusion criteria such as mechanical ventilation, hemodynamic instability, cavitary lesions, and underlying pulmonary disease. MRSA nasal screening can be used as a stewardship tool to de-escalate broad antibiotic coverage, such as vancomycin. **Objective:** The purpose of this study was to determine whether implementation of a MRSA nasal screening questionnaire improves de-escalation of vancomycin for patients with pneumonia. **Methods:** A retrospective review was performed on 250 patients from October 2018 to January 2019 who received MRSA nasal screening due to their prescriber choosing only "respiratory" on the vancomycin dosing consult form. Data obtained included demographics and clinical outcomes. Statistical analyses were performed, and $P < .05$ was considered significant. **Results:** Of the 250 patients screened, only 19 patients (8%) were positive for MRSA. Moreover, 40% of patients met exclusion criteria. In 149 patients without exclusion criteria, the MRSA nasal swab had a 98% NPV. Although not statistically significant, vancomycin days of therapy (DOT) based on MRSA nasal swab result was 1 day shorter in those with negative swabs (3.49 days negative vs 4.58 days positive; $P = .22$). Vancomycin DOT was significantly reduced in pneumonia patients without exclusion criteria (3.17 days "no" vs 4.17 days "yes"; $P = .037$). **Conclusions:** The implementation of an electronic MRSA nasal screening questionnaire

Table 1.

Table 1. Time from Order Entry to Administration Pre-Restriction vs. Post-Restriction

	Order Entry to Administration Median Time in Hours (Range)		Hazard Ratio
	Pre-Restriction (2017)	Post-Restriction (2018)	(HR>1 implies shorter time to administration)
All orders	3.14 (0.12-36.23)	1.76 (0.12-44.26)	1.578 (p<0.001)
Routine	4.32 (0.21-36.23)	5.73 (0.12-44.26)	1.094 (p=0.543)
Now	2.19 (0.13-24.34)	1.35 (0.20-5.65)	2.424 (p<0.001)
Stat	2.09 (0.12-19.66)	0.91 (0.19-3.77)	3.103 (p<0.001)

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resulted in reduced vancomycin DOT in pneumonia patients at UAB Hospital. The MRSA nasal swab is an effective screening tool for antibiotic de-escalation based on its 98% NPV for MRSA pneumonia if utilized in the correct patient population.
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Enhancing Infection Prevention and Control Capacity in Health Facilities Following the 2019 Ebola Outbreak in Kasese, Uganda

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Background: In June 2019, 3 people were diagnosed with Ebola virus disease (EVD) in Kasese district, Uganda, all of whom had come from the Democratic Republic of Congo (DRC). Although no secondary transmission of Ebola occurred, an assessment of infection prevention and control (IPC) using the WHO basic IPC facility assessment checklist revealed significant gaps. Robust IPC systems are critical for the prevention of healthcare-associated infections like EVD. A rapid intervention was developed and implemented in Kasese to strengthen IPC capacity in high-risk facilities. **Methods:** Of 117 healthcare facilities, 50 were considered at high risk of receiving suspected EVD cases from DRC based on population movement assessments. In August 2019, IPC mentors were selected from 25 high-risk facilities and assigned to support their facility and a second high-risk facility. Mentors ensured formation of IPC committees and implemented the national mentorship strategy for IPC preparedness in non-EVD treatment facilities. This effort focused on screening, isolation, and notification of suspect cases: 4 mentorship visits were conducted (1 per week for 1 month). Middle and terminal assessments were conducted using the WHO IPC checklist 2 and 4 weeks after the intervention commenced. Results were evaluated against baseline data. **Results:** Overall, 39 facilities had data from baseline, middle, and end assessments. Median scores in facility IPC standard precautions increased from baseline 50% (IQR, 39%–62%) to 73% (IQR, 67%–76%) at the terminal assessments. Scores increased for all measured parameters except for water source (access to running water). Greatest improvements were seen in formation of IPC committees (41% to 75%), hand hygiene compliance (47% to 86%), waste management (51% to 83%), and availability of dedicated isolation areas (16% to 42%) for suspect cases. Limited improvement was noted for training on management of suspect isolated cases and availability of personal protective equipment (PPE) (Fig. 1). No differences were noted in scores for facilities with nonresident mentors versus those with resident mentors at baseline (48% vs 50%) and end assessments (72% vs 74%). **Conclusions:** This intervention improved IPC capacity in health facilities while avoiding the cost and service disruption associated with large-scale classroom-based training of health workers. The greatest improvements were seen in activities relying on behavior change, such as hand hygiene, IPC committee, and waste management. Smaller changes were seen in areas requiring significant investments such as isolation areas, steady water source, and availability of personal protective equipment (PPE). Mentorship is ongoing in moderate- and lower-risk facilities in Kasese district.
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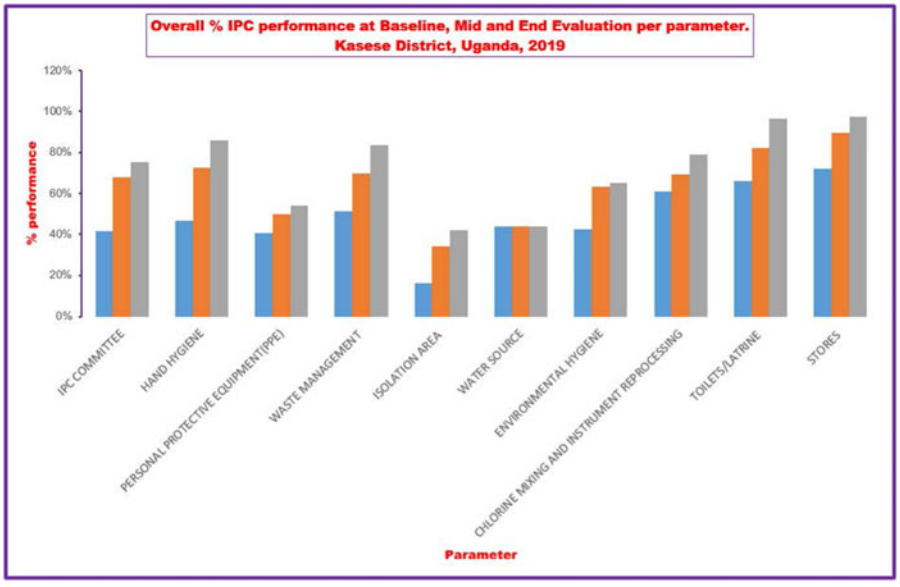

Fig. 1.