Summing the points for each of the 4 categories, the greatest possible total is 40. A total score of 0–10 indicates low risk of HAI; 11–20 indicates low-to-medium risk of HAI; 20–30 indicates a high risk of HAI; and 30–40 indicates a very high risk of HAI. **Results:** This equation was designed to stimulate thought and encourage multidisciplinary cooperation among providers, nursing, environmental services, and facilities departments rather than provide an exact number for HAI risk. All of these categories are key players in the determining patient risk of acquiring an HAI. If any of the 4 hospital departments mentioned fails in their duties, the patient is at higher risk of HAI. **Conclusions:** This categorical HAI risk assessment relies on the subjective medical and environmental knowledge of the assessor to assign risk across the continuum of the healthcare environment. Although it is nearly impossible to provide exact numbers regarding total risk in these risk categories, the goal of the scoring system is to encourage clinical dialogue among hospital staff so that they communicate and collaborate within their specialties and with their peers to assure that each category poses as low a risk as possible, thus driving the total risk for HAI lower.

1. https://www.cdc.gov/hai/data/portal/progress-report.html

Presentation Type:
Poster Presentation
The Impact of a Best-Practice Advisory on Inpatient Use of Piperacillin-Tazobactam

Katherine Peterson, University of Vermont Medical Center and Larner College of Medicine at The University of Vermont; Lindsay Smith, University of Vermont Medical Center and Larner College of Medicine at The University of Vermont; John Ahern, University of Vermont Medical Center; Bradley Tompkins, Larner College of Medicine at The University of Vermont

Background: Antibiotic "time outs" have been identified as a way to decrease inappropriate use of antibiotics in hospitals.[1] The University of Vermont Medical Center created a best-practice advisory (BPA) to alert clinicians to review piperacillin-tazobactam prescriptions after 72 hours (Fig. 1). Data examining the use of a BPA as a method to prompt clinicians to perform an antibiotic "time out" are limited. **Objective:** The purpose of our retrospective study was to evaluate the effectiveness of the BPA on the rate of piperacillin-tazobactam prescribing as measured by defined daily dose per 1,000 patient days (DDD). **Methods:** The BPA was integrated into the electronic health record and designed to activate once piperacillin-tazobactam has been prescribed for ≥72 hours. Under approval of the University of Vermont's Institutional Review Board, administered data for piperacillin-tazobactam and 3 control antibiotics (cefazolin, ceftriaxone, and meropenem) were collected for 1 year prior to and 1 year following the launch of the BPA. Administered data were converted to DDD, and an interrupted time-series analysis was performed to evaluate
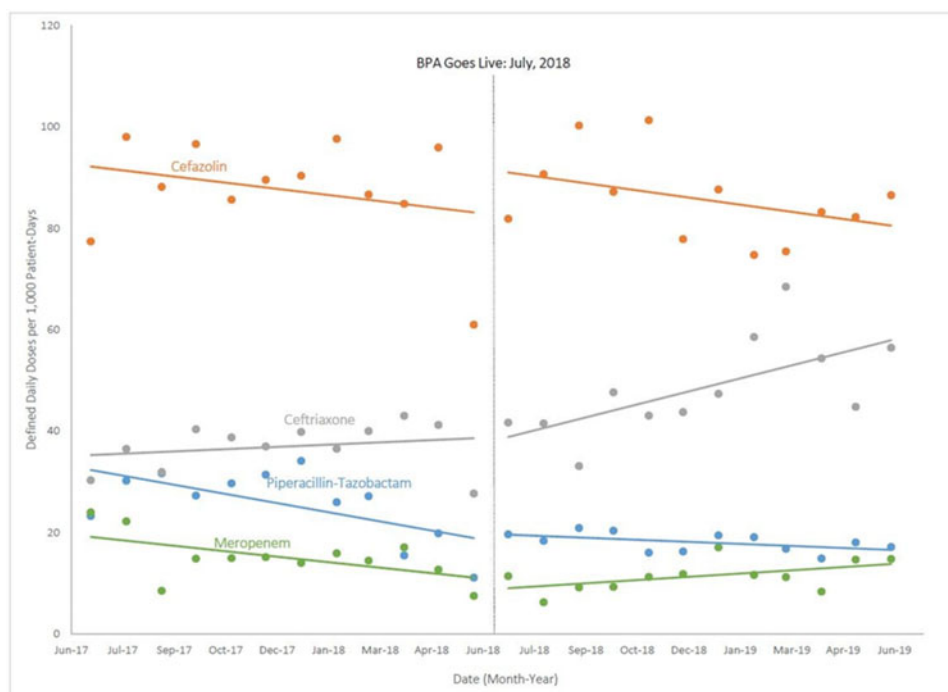

Fig. 1.

Fig. 2.

for changes in antibiotic use. **Results:** The data included 7,094 patients in the preintervention group and 6,661 patients in the postintervention group. The BPA fired 1,478 times. The prescribing rate of piperacillin-tazobactam 1 year prior to the BPA was 32.34 DDD and decreased every month both before (−1.22 DDD) and after (−0.27 DDD) the BPA initiation, with no significant difference in prescribing trends ($P = .10$). Meropenem prescribing in the BPA era increased each month compared to the pre-BPA period (1.16 DDD; $P = 0.02$), whereas cefazolin use ($P = .93$) and ceftriaxone ($P = .09$) use did not significantly change. **Conclusions:** The data show that piperacillin-tazobactam utilization at our institution is decreasing. Considering that this trend started prior to the launch of the BPA and that rate of decline remained unchanged post-BPA, we conclude that the BPA did not further impact our piperacillin-tazobactam consumption. It is possible that other factors influencing prescribing account for the observed decline, including an institution-wide educational campaign regarding the appropriate use of broad-spectrum antibiotics that was initiated in the months prior to the BPA. The reason for the significant rise in meropenem post-BPA is unclear. This may be unrelated to the BPA; however, it requires further investigation.

1. Core elements of hospital antibiotic stewardship programs. Centers for Disease Control and Prevention website. https://www.cdc.gov/antibioticuse/healthcare/implementation/core-elements.html. Updated July 19, 2019. Accessed October 6, 2019.

Presentation Type:
Poster Presentation

The Impact of Changing to an Algorithm-Based *Clostridioides difficile* Test on the Decision to Treat *Clostridioides difficile*

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Background: Polymerase chain reaction (PCR) testing for the diagnosis of *Clostridioides difficile* infection (CDI) detects the presence of the organism; a positive result therefore cannot differentiate between colonization and the pathogenic presence of the bacterium. This may result in overdiagnosis, overtreatment, and risking disruption of microbial flora, which may perpetuate the CDI cycle. Algorithm-based testing offers an advantage over PCR testing as it detects toxin, which allows differentiation between colonization and infection. Although previous studies have demonstrated the clinical utility of this testing algorithm in differentiating infection from colonization, it is unknown whether the test changes CDI treatment decisions. Our facility switched from PCR to an algorithm-based testing method for CDI in June 2018. **Objective:** In this study, we evaluated whether clinicians' decisions to treat patients are impacted by a test result that implies colonization (GDH+/Tox−/PCR+ test), and we examined the impact of this decision on patient outcomes. **Methods:** This is a retrospective cohort study of inpatients with a positive *C. diff* test between June 2017 and June 2019. The primary outcome was the proportion of patients treated for CDI. We compared this outcome in 3 groups of patients: those with a positive PCR test (June 2017–June 2018), those who had a GDH+/Tox−/PCR+ or a GDH+/Tox+ test result (June 2018–June 2019). Secondary outcomes included toxic megacolon, critical care admission, and mortality in patients with GDH+/Tox−/PCR+ who were treated versus those who were untreated. **Results:** Of patients with a positive PCR test, 86% were treated with CDI-specific antibiotics, whereas 70.4% with GDH+/Tox+ and 29.25% with GDH+/Tox−/PCR+ result were treated ($P < .0001$). Mortality was not different between patients with GDH+/Tox−/PCR+ who were treated versus those who were untreated (2.7% vs 3.4%; $P = .12$), neither was critical care admission within 2 or 7 days of test result (2% vs 1.4%; $P = .15$) and (4.1% vs 5.4%, $P = .39$), respectively. There were no cases of toxic megacolon during the study period. **Conclusions:** The change to an algorithm-based *C. difficile* testing method had a significant impact on the clinicians' decisions to treat patients with a positive test, as most patients with a GDH+/Tox−/PCR+ result did not receive treatment. These patients did not suffer more adverse outcomes compared to those who were treated, which has implications for testing practices. It remains to be explored whether clinicians are using clinical criteria to decide whether or not to treat patients with a positive algorithm-based test, as opposed to the more reflexive treatment of patients with a positive PCR test.

Presentation Type:
Poster Presentation

The Impact of Intervention-Related Risk Factors on the Risk of Ventilator-Associated Pneumonia Is High in a Neurosurgical Intensive Care Unit

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Background: Ventilator-associated pneumonia (VAP) represents the highest burden among all healthcare-associated infections (HAIs), with a particularly high rate in patients in neurosurgical ICUs. Numerous VAP risk factors have been identified to provide a basis for preventive measures. However, the impact of individual factors on the risk of VAP is unclear. The goal of this study was to evaluate the dynamics of various VAP risk factors given the continuously declining prevalence of VAP in our neurosurgical ICU. **Methods:** This prospective cohort unit-based study included neurosurgical patients who stayed in the ICU >48 consecutive hours in 2011 through 2018. The infection prevention and control (IPC) program was implemented in 2010 and underwent changes to adopt best practices over time. We used a 2008 CDC definition for VAP. The dynamics of VAP risk factors was considered a time series and was checked for stationarity using theAugmented Dickey-Fuller test (ADF) test. The data were censored when a risk factor was present during and after VAP episodes. **Results:** In total, 2,957 ICU patients were included in the study, 476 of whom had VAP. Average annual prevalence of VAP decreased from 15.8 per 100 ICU