

2-person dressing change team, (2) enhanced quality daily chlorhexidine treatments, and (3) staff and patient line-care stewardship. The bundle included training of nurse champions to execute a team approach to changing central-line dressings. Standard process description and supplies are contained in a cart. In addition, 2 sets of sterile hands and a second person to monitor for breaches in sterile procedure are available. Site disinfection with chlorhexidine scrub and dry time are monitored. Training on quality chlorhexidine bathing includes evaluation of preferred product, application per product instructions for use and protection of the central-line site with a waterproof shoulder length glove. In addition to routine BMT education, staff and patients are instructed on device stewardship during dressing changes. CLABSIs are monitored using NHSN definitions. We performed an interrupted time-series analysis to determine the impact of our enhanced prevention bundle on CLABSI rates in the BMT unit. We used monthly CLABSI rates since January 2017 until the intervention (October 2018) as baseline. Because the BMT changed locations in December 2018, we included both time points in our analysis. For a sensitivity analysis, we assessed the impact of the enhanced prevention bundle in a hematology-oncology unit (March 2019) that did not change locations. **Results:** During the period preceding bundle implementation, the CLABSI rate was 2.2 per 1,000 central-line days. After the intervention, the rate decreased to 0.6 CLABSI per 1,000 central-line days ( $P = .03$ ). The move in unit location did not have a significant impact on CLABSI rates ( $P = .85$ ). CLABSI rates also decreased from 1.6 per 1,000 central-line days to 0 per 1,000 central-line days ( $P < .01$ ) in the hematology-oncology unit. **Conclusions:** An enhanced CLABSI prevention bundle was associated with significant decreases in CLABSI rates in 2 high-risk units. Novel infection prevention bundle elements should be considered for special populations when all other evidence-based recommendations have been implemented.

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#### Presentation Type:

Poster Presentation

#### Impact of Critical Care Consultation Requests for Avoidable Central Venous Catheters on Medical-Surgical Units

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**Background:** Although central-line-associated bloodstream infections (CLABSI) in US hospitals have improved in the last decade, ~30,100 CLABSIs occur annually.<sup>1,2</sup> Central venous catheters (CVC) carry a high risk of infections and should be limited to appropriate clinical indications.<sup>6,7</sup> Montefiore Medical Center, a large, urban, academic medical center in the Bronx, serves a high-risk population with multiple comorbidities.<sup>8-11</sup> Despite this, the critical care medicine (CCM) team is often consulted to place a CVC when a peripheral intravenous line (PIV) cannot be obtained by nurses or primary providers. We evaluated the volume of CCM consultation requests for avoidable CVCs and related CLABSIs. **Methods:** Retrospective chart review was performed for patients with CCM consultation requests for CVC placement between July and October 2019. The indication for CVC, type of catheter

inserted or recommended, and NHSN data were used to identify CLABSIs. CVCs were considered avoidable if a PIV was used for the stated indication and duration of therapy, with no anatomical contraindications to PIV in nonemergencies, according to the Michigan Appropriateness Guide for Intravenous Catheters (MAGIC).<sup>6</sup> **Results:** Of 229 total CCM consults, 4 (18%) requests were for CVC placement; 21 consultations (9%) were requested for avoidable CVCs. Of 40 CVC requests, 18 (45%) resulted in CVC placement by the CCM team, 4 (10%) were deferred for nonurgent PICC by interventional radiology, and 18 (45%) were deferred in favor of PIV or no IV. Indications for CVC insertion included emergent chemotherapy ( $n = 8$ , 44%) and dialysis ( $n = 3$ , 16%), vasopressors ( $n = 3$ , 16%), antibiotics ( $n = 2$ , 11%) and blood transfusion ( $n = 2$ , 11%). Of 18 CVCs, 9 (50%) were potentially avoidable: 2 short-term antibiotics and rest for nonemergent indications; 2 blood transfusions, 1 dialysis, 2 chemotherapy and 2 vasopressors. Between July and October 2019, 6 CLABSIs occurred in CVCs placed by the CCM team; in 3 of 6 CLABSI events (50%), the CVC was avoidable. **Conclusions:** More than half of consultation requests to the CCM team for CVCs are avoidable, and they disproportionately contribute to CLABSI events. Alternatives for intravenous access could potentially avoid 9% of CCM consultations and 50% of CLABSIs in CCM-inserted CVCs on medical-surgical wards.

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#### Impact of Diagnosed and Undiagnosed Respiratory *Pseudomonas* on VAP and VAE During Long-Term Acute Care

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**Background:** Clinically diagnosed ventilator-associated pneumonia (VAP) is common in the long-term acute-care hospital (LTACH) setting and may contribute to adverse ventilator-associated events (VAEs). *Pseudomonas aeruginosa* is a common causative organism of VAP. We evaluated the impact of respiratory *P. aeruginosa* colonization and bacterial community dominance, both diagnosed and undiagnosed, on subsequent *P. aeruginosa* VAP and VAE events during long-term acute care. **Methods:** We enrolled 83 patients on LTACH admission for ventilator weaning, performed longitudinal sampling of endotracheal aspirates followed by 16S rRNA gene sequencing (Illumina HiSeq), and bacterial community profiling (QIIME2). Statistical analysis was performed with R and Stan; mixed-effects models were fit to relate the abundance of respiratory *Psa* on admission to clinically diagnosed VAP and VAE events. **Results:** Of the 83 patients included, 12 were diagnosed with *P. aeruginosa* pneumonia during the 14 days prior to LTACH admission (known *P. aeruginosa*), and 22 additional patients received anti-*P. aeruginosa* antibiotics within 48 hours of admission (suspected *P. aeruginosa*); 49 patients had no known or suspected *P. aeruginosa* (unknown *P. aeruginosa*). Among the known *P.*

*aeruginosa* group, all 12 patients had *P. aeruginosa* detectable by 16S sequencing, with elevated admission *P. aeruginosa* proportional abundance (median, 0.97; IQR, 0.33–1). Among the suspected *P. aeruginosa* group, all 22 patients had *P. aeruginosa* detectable by 16S sequencing, with a wide range of admission *P. aeruginosa* proportional abundance (median, 0.0088; IQR, 0.00012–0.31). Of the 49 patients in the unknown group, 47 also had detectable respiratory *Psa*, and many had high *P. aeruginosa* proportional abundance at admission (median, 0.014; IQR, 0.00025–0.52). Incident *P. aeruginosa* VAP was observed within 30 days in 4 of the known *P. aeruginosa* patients (33.3%), 5 of the suspected *P. aeruginosa* patients (22.7%), and 8 of the unknown *P. aeruginosa* patients (16.3%). VAE was observed within 30 days in 1 of the known *P. aeruginosa* patients (8.3%), 2 of the suspected *P. aeruginosa* patients (9.1%), and 1 of the unknown *P. aeruginosa* patients (2%). Admission *P. aeruginosa* abundance was positively associated with VAP and VAE risk in all groups, but the association only achieved statistical significance in the unknown group (type S error <0.002 for 30-day VAP and <0.011 for 30-day VAE). **Conclusions:** We identified a high prevalence of unrecognized respiratory *P. aeruginosa* colonization among patients admitted to LTACH for weaning from mechanical ventilation. The admission *P. aeruginosa* proportional abundance was strongly associated with increased risk of incident *P. aeruginosa* VAP among these patients.

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#### Impact of Each Component of a Ventilator Bundle on Preventing Ventilator-Associated Pneumonia and Lower Respiratory Infection

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**Background:** Ventilator-associated lower respiratory infections (LRIs) and pneumonia (VAP) are important healthcare-associated infections and are among the leading causes of death worldwide. Prevention of these infections are often based on care bundles. We investigated the incidence of VAP+LRI and the preventive efficacy of each component of our ventilator bundle. **Methods:** Our ventilator bundle includes 6 components that are daily checked by an infection control practitioner. These 6 evidence-based practices were implemented in 3 ICUs from a general tertiary-care private hospital in Belo Horizonte City (Brazil): (1) daily oral care with chlorhexidine; (2) elevate the head of the bed to between 30° and 45°; (3) avoid scheduled ventilator circuit change; (4) monitor cuff pressure; (5) use subglottic secretion drainage; and (6) daily “sedation interruption” and daily assessment of readiness to extubate. VAP and ventilator-LRI definitions were obtained from the CDC NHSN. The impact of adherence rate to items in the ventilator bundle (%) on the incidence rate of VAP+LRI was assessed using linear regression and scatterplot analyses. **Results:** Between January 2018 and April 2019, 1,888 ventilator days were observed in the 3 ICUs, with 42 VAP and LRI events, an overall incidence rate of 22.2 cases per 1,000 ventilator days. After September 2018, the infection control service started a campaign to increase the ventilator bundle compliance (Fig. 1). Adherence rates to all 6 bundle components increased between January–August 2018 and September 2018–April 2019 from 25% to 55% for daily oral care, from 34% to 79% for elevating the head of the bed, 28% to 86% for avoiding scheduled ventilator circuit change, from 32% to 83% for cuff pressure monitoring, from 32% to 83% for subglottic secretion drainage, and from 33% to 85% for daily sedation interruption. PAV and LRI incidence decreased from

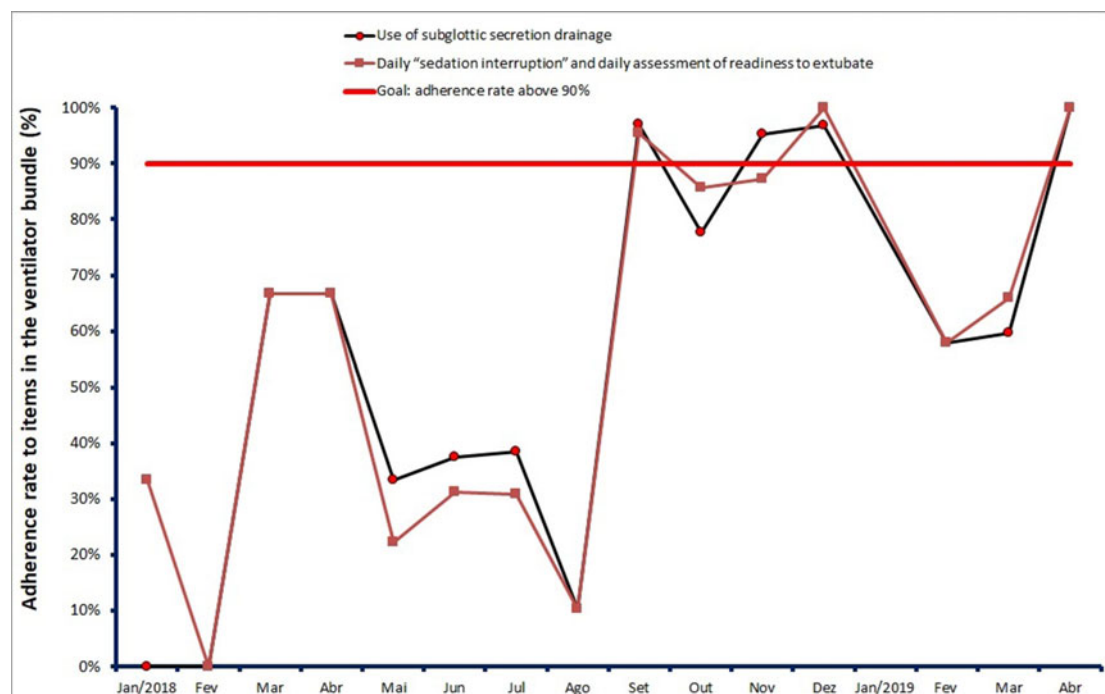


Fig. 1.