Background. Long-term acute care hospitals (LTACHs) care for chronically critically ill patients with high utilization of central lines and high risk for morbidity from central line-associated bloodstream infections (CLABSI). Our 38-bed LTACH noted a substantial increase in the incidence of CLABSI (as defined by the National Healthcare Safety Network) between fiscal year (FY) 2016 and FY 2018 (Figure 1). Detailed case review identified a large number of CLABSI which were clinically consistent with blood culture contaminants from central lines. Feedback from bedside staff also suggested gaps between practice and evidence-based measures for central line care.

Methods. A three-pronged CLABSI prevention project was implemented in July 2018 consisting of (1) staff education regarding daily chlorhexidine (CHG) bathing for all patients, combined with an electronic audit report to identify patients without active CHG orders; (2) change in practice to the use of venipuncture alone for blood culture collection, combined with an electronic audit report to identify blood cultures collected from central lines; and (3) a recurring 6-part educational series for nurses focused on central line care. The pre-intervention period was defined as the 12-month period between July 1, 2017 and June 30, 2018 (FY 2018). The primary outcome was the fiscal year CLABSI rate. A secondary outcome was the proportion of blood cultures drawn from central lines.

Results. After 9 months of the intervention, one CLABSI had been reported for FY 2019 year-to-date at a rate of 0.4 per 1,000 CL-days, representing an 86% decrease from the FY 2018 rate of 2.8 per 1,000 CL-days. The 12-month rolling CLABSI rate decreased to 1.6 per 1,000 CL-days (Figure 2). The proportion of blood cultures collected from central lines decreased from 10.5% (69/658) to 4.5% (15/334), representing a 57% reduction. The proportion of patients ordered and receiving CHG bathing in the intervention period was >95%.

Conclusion. A multidisciplinary effort focused on CHG bathing, central line care, and blood culture collection led to a substantial reduction in CLABSI in our LTACH. The use of electronic audit reports was particularly useful in achieving high adherence to practice changes.

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1170. A Quality Improvement Study to Assess the Effectiveness of a Meaningful Use Protocol in the Reduction of PICC Line Use and Complications

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Background. The use of peripherally-inserted central catheters (PICC) has grown substantially over time because of their ease of insertion, cost-effectiveness and relative safety. With increased use, however, there are increased complications including catheter-related bloodstream infections (CLABSI) and PICC line-associated deep vein thrombosis (DVT). To help decrease complications a meaningful use protocol was implemented based on the Michigan Appropriateness Guide for Intravenous Catheters (MAGIC) to define appropriate indications for PICC line use. The objectives of this study were (1) to determine the rate of PICC line use at our hospital; (2) to determine rates of complications associated with PICC line use, including CLABSI and DVT; and (3) to compare the metrics listed above and after implementation of the meaningful use protocol.

Methods. We performed a retrospective chart review of all inpatient admissions before (June 1, 2017 to September 1, 2017) and after the implementation of the meaningful use protocol (June 1, 2018 to September 1, 2018) in patients who had a PICC line inserted at another institution or in the outpatient setting were excluded. We compared the rate of insertion, patient demographics, characteristics of the use of PICC lines and complications from the two periods. Data were analyzed using the chi-squared test, Student's t-test, the Mann–Whitney U test and the z test for proportions.

Results. We reviewed 281 patient charts, 166 before the implementation of the meaningful use protocol and 115 after implementation. Overall, the mean age was 55.8 ± 17.9 years, 58.7% male and 54.1% white. There were no significant differences between groups with respect to demographics, comorbidities, source of admission, or complications. Post-implementation there was a significant reduction in lines used for unknown reasons as well as lines used for multiple blood draws (P < 0.0001). The overall rate of PICC line use decreased from 23 per 1,000 admissions to 17.2 per 1,000 admissions after the intervention (P = 0.007).

Conclusion. Implementation of a meaningful use protocol reduced the rate of PICC line use at our institution by 25%. The proportion of lines used for unknown reasons decreased as well. Widespread implementation could have a significant impact on the reduction of PICC line use.

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1171. Impact of Catheter Management on the Clinical Outcome in Adult Cancer Patients with Gram-Negative Bacteremia

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Background. Over the last 2 decades, Gram-negative organisms have been on the rise as an etiology of bloodstream infections (BSI) in cancer patients. Management of the central venous catheter (CVC) in the setting of Gram-negative BSI remains challenging. The aim of our study was to evaluate cancer patients with different types of Gram-negative BSI, in the presence of an indwelling CVC, and assess the impact of line management on the outcome of the BSI.

Methods. We identified all the patients older than 14 years with CVC who had a documented BSI with a Gram-negative organism at MD Anderson Cancer Center, from May 2017 until May 2018. Patients were divided into three groups. Group 1 (G1) included patients with central-line associated bloodstream infection and no mucosal barrier injury (non-MBI CLABSI) and/or those who met the catheter-related bloodstream infection (CRBSI) criteria; Group 2 (G2) consisted of patients who had a CLABSI with a mucosal barrier injury that did not meet the CRBSI definition; and Group 3 (G3) consisted of patients who had a non-line-related BSI. We assessed catheter management (CVC removed/exchanged or retained) at 2 days after the onset of bacteremia. We then determined the effect of line management on clinical and microbiologic outcomes through various measures.

Results. A total of 300 patients were included with 100 patients in each group. The univariate analyses showed that in G1, CVC removal within 2 days of bacteremia was significantly associated with higher rate of microbiologic eradication of the bacteremia compared with delayed CVC removal (3 to 5 days) or CVC retention (98% vs. 72% vs. 78% respectively, P = 0.002; P < 0.001), and lower overall mortality rate at 3 months follow-up (3% vs. 22% vs. 17% respectively, P = 0.02; P = 0.01). By multivariate analysis, this association persisted (P = 0.018 and P = 0.016, respectively). CVC removal within 2 days of bacteremia did not affect the outcome of BSI in G2 and G3.

Conclusion. CVC removal within 48 hours of the onset of Gram-negative bacteremia significantly improved the infectious outcome and the overall mortality in adult cancer patients with definite CRBSI and CLABSI without MBI.

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1172. The Proper Maintenance Duration for Peripherally Inserted Central Catheter (PICC) In order to Prevent Central Line-Associated Bloodstream Infection

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Background. Prolonged maintenance of central venous catheter including peripherally inserted central catheter (PICC) is a major risk factor for central line-associated bloodstream infection (CLABSI).

Methods. A single-center retrospective study was conducted in an 828-bed tertiary pediatric hospital in Korea between 1 January 2010 and December 2017. All hospitalized patients who underwent ultrasound-guided PICC insertion were enrolled. Patients were excluded if they: (1) were under 19 years old, (2) died, were discharged, or were transferred to other medical institutions within 3 days of PICC placement, and (3) had at least one result of absolute neutrophil count (ANC) under 500 cells/µL during control. CLABSI was diagnosed using the definitions of the National Health