To operationalize or prioritize CLABSI risk factors when making decisions regarding the use of PICCs using a risk model to estimate an individual’s risk of PICC-CLABSI prior to device placement” Herc et al (2017).

Abstract:

BACKGROUND: Peripherally inserted central catheters (PICCs) are associated with central-line-associated bloodstream infections (CLABSI). However, no tools to predict risk of PICC-CLABSI have been developed.

METHODS: Using data from the Michigan Hospital Medicine Safety consortium, patients that experienced PICC-CLABSI between January 2013 and October 2016 were identified. A Cox proportional hazards model with robust sandwich standard error estimates was then used to identify factors associated with PICC-CLABSI. Based on regression coefficients, points were
assigned to each predictor and summed for each patient to create the Michigan PICC-CLABSI (MPC) score. The predictive performance of the score was assessed using time-dependent area-under-the-curve (AUC) values.

RESULTS: Of 23,088 patients that received PICCs during the study period, 249 patients (1.1%) developed a CLABSI. Significant risk factors associated with PICC-CLABSI included hematological cancer (3 points), CLABSI within 3 months of PICC insertion (2 points), multilumen PICC (2 points), solid cancers with ongoing chemotherapy (2 points), receipt of total parenteral nutrition (TPN) through the PICC (1 point), and presence of another central venous catheter (CVC) at the time of PICC placement (1 point). The MPC score was significantly associated with risk of CLABSI (P<.0001). For every point increase, the hazard ratio of CLABSI increased by 1.63 (95% confidence interval, 1.56-1.71). The area under the receiver-operating-characteristics curve was 0.67 to 0.77 for PICC dwell times of 6 to 40 days, which indicates good model calibration.

CONCLUSION: The MPC score offers a novel way to inform decisions regarding PICC use, surveillance of high-risk cohorts, and utility of blood cultures when PICC-CLABSI is suspected. Future studies validating the score are necessary.

Reference:

Thank you to our partners for supporting IVTEAM