OBJECTIVE: To determine whether the risk of central line-associated bloodstream infections (CLA-BSIs) remained constant over the duration of peripherally inserted central venous catheters (PICCs) in high-risk neonates.

PATIENT AND METHODS: We performed a retrospective cohort study of NICU patients who had a PICC inserted between January 1, 2006, and December 31, 2008. A Poisson regression model with linear spline terms to model time since PICC insertion was used to evaluate potential changes in the risk of CLA-BSI while adjusting for other variables.

RESULTS: Six hundred eighty-three neonates were eligible for analysis. There were 21 CLA-BSIs within a follow-up period of 10 470 catheter-days. The incidence of PICC-associated CLA-BSI was 2.01 per 1 000 catheter-days (95% confidence interval: 1.24â€“3.06). The incidence rate of CLA-BSIs increased by 14% per day during the first 18 days after PICC insertion (incidence rate ratio: 1.14 [95% CI: 1.04â€“1.25]). From days 19 through 35 after PICC insertion, the trend reversed (IRR: 0.8 [95% CI: 0.66â€“0.96]). From days 36 through 60 after PICC insertion, the incidence rate of CLA-BSI again increased by 33% per day (IRR: 1.33 [95% CI: 1.12â€“1.57]). There was no statistically significant association between the risk of CLA-BSI and gestational age groups, birth weight groups, or chronological age groups.
CONCLUSIONS: Our data suggest that catheter duration is an important risk factor for PICC-associated CLA-BSI in the NICU. A significant daily increase in the risk of CLA-BSI after 35 days may warrant PICC replacement if intravascular access is necessary beyond that period.