

## Does the Type of Central Line for Induction Therapy Impact Outcomes for Children with Cancer?

**BACKGROUND:** Cancer patients are at an increased risk for catheter related complications due to their pro-inflammatory and immunocompromised state. The decision to initiate chemotherapy with non-tunneled peripherally inserted central catheters (PICC) may be indicated prior to insertion of a definitive tunneled catheter or subcutaneously implanted port. There has been concern regarding the potential for higher complication rates when a PICC is used. The aim of this study is to determine whether the choice to initiate induction chemotherapy treatment via PICC prior to placement of definitive access alters the complication risk in pediatric oncology patients.

**METHODS:** A retrospective review of pediatric oncology cases requiring central access between 2011 to 2018 was performed. To accurately assess the initial line placement and have detailed records of complications, we defined 'start time' as initial diagnosis or relapse and 'end time' as completion of induction chemo. 219 patients were included based on diagnosis, induction initiation, and initial line placement at our institution. The data was divided into two separate cohorts for analysis: one based on initial catheter (PICC/CVL vs Definitive: tunneled or implanted port) and another based on presence or absence of complications. Fisher's exact test was used to analyze categorical data and 2 sample t tests were used to analyze continuous data. P values were adjusted to account for false discovery rate.

**RESULTS:** PICC lines were noted in 83 patients, while 136 began treatment with definitive lines. At baseline, there was no significant difference between demographics with regard to age and gender for either of the cohorts. When comparing complication vs. no complication, there was not a significant difference in baseline white cells or neutrophils. Additionally, data did not support an association with type of initial line when comparing lines that experienced complications with lines that did not. Overall, 75 complications with any initial line were recorded. No difference was seen in total number of complications between those patients initially receiving a PICC and those initially receiving definitive lines (p value = 0.68).

**CONCLUSION:** The use of a PICC line as the initial access did not represent any additional risk for complications or poor outcomes in this study. This effect was independent of the neutrophil count. In situations where the ability to obtain a definitive line may be constrained due to patient or facility related factors, timely initiation of chemotherapy should be considered with a PICC line with subsequent transition to the definitive catheter.