Infection Rates of Initial and Exchanged Peripherally-Inserted Central Catheters in Pediatric Patients

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Background/Objective: Peripherally-inserted central catheters (PICCs) act as modes of long-term access to the bloodstream in patients who would otherwise need frequent needle sticking to obtain intravenous access. PICCs are beneficial because they allow for efficient access to the bloodstream to administer medications such as chemotherapy, antibiotics, total parenteral nutrition, and pain control through a single long-term access point. This allows for less pain and discomfort for patients (especially pediatric patients), minimizes waste, and allows for convenient access to the bloodstream for delivery of medications or sampling of blood for testing which allows for better long-term care. However, PICC replacement procedures are associated with increased risk of introducing infections and thrombosis. We hypothesize that patients who do not receive PICC exchanges will have lower rates of infection than those who do receive an exchange.

Methods: For this quality improvement retrospective study, we examined one year worth of PICC placement/exchange procedures in pediatric patients at a single academic hospital through their electronic medical records in Cerner. Infections were documented by positive blood cultures at the PICC site within 30 days of the procedure and were corroborated through clinical documentation to ensure the PICC was the origin of the infection, rather than just a site of infection spread.

Results: In the year 2024, pediatric patients displayed significantly higher infection rates in PICC exchanges at 1.97%, compared to 0.40% in initial PICC placements ($p=0.040$).

Clinical Implications and Conclusion: The data from this investigation supports previously identified infection rates in the pediatric patient population. The results from this project will help support and guide future guidelines regarding clinical decision making in pediatric patients who require long-term intravenous access.