

Abstract:

Background: Despite being the most common hospital procedure, limited information is available on the peripheral intravenous (PIV) catheter insertion practices. This study was designed to evaluate the contemporary PIV insertion practice (all age groups), and to identify the patient and device-related factors influencing the dwell times (<18 years).

Methods: Single Center Retrospective study. Patients of all age groups admitted to the hospital for >4 midnights, from 01/2015 to 12/2019. Data extracted by automated EMR audits. Variables included patient demographics, number of PIVs inserted, PIV size, location, dwell time, and length of stay. Standard comparative analysis, including multivariable linear regression for dwell time performed for patients <18 years.

Results: A total of 44,198 (39,341 (89%) adults and 4857 (11%) children) PIVs on unique patients met study criteria, with mean duration of 2.8 ± 2.4 days in children and 2.6 ± 1.3 days in adults ($p < 0.001$). Pediatric PIV had more dwell time variation, with a higher proportion lasting <1-day and also >2 SD of the age-specific mean, compared to adults. Adults had significantly higher number of PIVs placed/week compared to children. The failure rate for PIV was 56% in children and 76% in adults ($p < 0.001$). 1 out of 5 adults required >5 PIV/admission. Forty-five percent of children requiring only one PIV versus 21.8% of seniors. Discharge department, body part, and PIV size were independently associated with the dwell duration in children. No PIV size, however, had an independent increase in dwell duration over the reference of the 24 Ga cannula in children. PIVs placed in ante cubital vein and upper arm had dwell duration 26% and 20% longer than PIVs placed in the hand.

Conclusions: The failure rate of PIV is high, and patients are subjected to multiple insertions during hospitalization. Hospital unit, body part, and PIV size are associated with the dwell duration in children.

Reference:

Tripathi S, Gladfelter T. Peripheral intravenous catheters in hospitalized patients: Practice, Dwell times, and factors impacting the dwell times: A single center retrospective study. *J Vasc Access*. 2021 Mar 30;11297298211000874. doi: 10.1177/11297298211000874. Epub ahead of print. PMID: 33784876.