After placement of four USG PIVCs, new learners of the procedure are capable of a greater than 70% success rate. A success rate of greater than 88% is achieved after 15 to 26 attempts” Stolz et al (2016).

Abstract:

Introduction: It is unclear how many ultrasound-guided peripheral intravenous catheters (USG PIVC) one must place to become proficient at the procedure. The objective of this study was to determine the learning curve associated with PIVC placement and determine how many attempts are required for non-physician learners to reach proficiency.

Methods: This is a prospective observational study. Emergency department (ED) nurses and paramedics with competence in traditional PIVC placement underwent a USG PIVC placement training program. Their success or failure in placing USG PIVCs as part of patient care on ED patients with difficult IV access was monitored. Number of attempts (defined as one skin puncture) was recorded and success was defined as the ability to aspirate blood and flush saline. The probability of success over time was analyzed. Proficiency was defined a priori as 70% probability of success.

Results: Thirty-three providers with 1077 PIV access attempts on 796 patients over 1000 unique patient ED encounters were included in the study. Overall success rate for all providers was 88.24% (86.3%-90.2%). LOcally WEighted Scatter-plot Smoother (Lowess) smoothing and mixed effects logistic regression analysis both determined that a learner’s probability of success would be greater than 70% after four USG PIVCs have been placed. Post hoc analysis for a more stringent 88% success rate resulted in 15 and 26 required attempts, respectively.

Discussion: After placement of four USG PIVCs, new learners of the procedure are capable of
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a greater than 70% success rate. A success rate of greater than 88% is achieved after 15 to 26 attempts.

Reference:


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