This study aimed to identify the incidence of and factors associated with peripheral intravenous catheter/cannula (PIVC) first time insertion success (FTIS) in the emergency department (ED)” Carr et al (2019).

Abstract:

OBJECTIVES: This study aimed to identify the incidence of and factors associated with peripheral intravenous catheter/cannula (PIVC) first time insertion success (FTIS) in the emergency department (ED).

DESIGN: Prospective cohort study.

SETTING: Two tertiary EDs in Western Australia.

PARTICIPANTS: 879 ED patients.

PRIMARY OUTCOME: To identify factors affecting FTIS using univariate and multivariate logistic regression modelling. We created four models: patient factors only; clinician factors only; products and technology factors only and all factors model. We assessed each model’s performance using area under the receiver operating characteristic curve.

RESULTS: A total of 1201 PIVCs were inserted in 879 patients. The mean age was 60.3 (SD 22) years with slightly more females (52%). The FTIS rate was 73%, with 128 (15%) requiring a second attempt and 83 (9%) requiring three or more attempts. A small percentage (3%) had no recorded number of subsequent attempts. FTIS was related to the following patient factors: age (for a 1-year increase in age: OR 0.99, 95% CI 0.983 to 0.998; p=0.0097); and target vein palpability: (always palpable vs never palpable: OR 3.53 95% CI 1.64 to 7.60; only palpable with tourniquet vs never palpable: OR 2.20, 95% CI 1.06 to 4.57; p=0.0014). Clinician factors related to FTIS include: clinicians with greater confidence (p<0.0001) and insertion experience (301-1000 vs <301: OR 1.54, 95% CI 1.02 to 2.34; >1000 vs <301: OR 2.07, 95% CI 1.41 to 3.04; p=0.0011). The final all factors model combining patient factors; clinician factors and product and technology factors has greater discriminative ability than specific factors models. It has a sensitivity of 74.26%, specificity of 57.69%, positive
predictive value of 82.87% and negative predictive value of 44.85%. CONCLUSION: A clinical decision, matching patients who have no palpable veins and are older, with clinicians with greater confidence and experience, will likely improve FTIS. TRIALREGISTRATION NUMBER: ANZCTR12615000588594; Results.

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Reference: