

Clinical and environmental factors are not associated with establishment of pre-hospital intravenous access

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unique pre-hospital setting clinical and environmental factors may challenge the procedure. Previous studies have investigated IV procedure time and overall success-rates with little or no attention to the impact of challenging factors. The aim of this study was to investigate clinical and environmental factors associated with the first attempt of IV access establishment.

Methods: Data containing information on IV procedure characteristics, patient condition and environmental factors were obtained by paramedics operating in the Capital Region of Denmark. Data was collected during three non-consecutive months in 2017 and 2018. Data was exported to IBM's Statistical Package for the Social Sciences (SPSS) for analysis. A chi-square test for independence (with Yates' Continuity Correction for 2x2 tables and likelihood ratio for expected count violations) was applied to test for association between first attempt

Background: Establishing intravenous (IV) access is part of the paramedic scope of practice and in critically ill patients the procedure is essential to administer fluids and/or drugs. However, in the

of IV access establishment, patient condition and environmental factors.

Results: A total of 259 datasets were available. Statistical analysis revealed a significant association between first attempt of IV access establishment and assessed level of difficulty ($p=0.00$). No significant association was found between first attempt of IV access establishment and presence of radial pulse ($p=0.21$), patient triage category ($p=0.35$), size of catheter ($p=0.80$), site of catheter insertion ($p=0.11$), light conditions ($p=0.26$) and procedure location ($p=0.31$).

Conclusion: This study concludes that first-attempt IV access establishment was significantly associated with assessed level of difficulty, and non-significantly associated with the investigated clinical end environmental factors. Based on the findings, paramedics should reconsider IV access for patients where the procedure is considered difficult, and consider other available administration options. On the contrary, paramedics should not refrain from attempting IV access establishment based on present clinical and environmental factors thought to challenge the procedure.