Determine if the pediatric peripheral vascular access algorithm (PPVAA) led to differences in first-attempt and overall peripheral intravenous (PIV) success, staff attempting PIV access per episode and overall attempts and first PIV attempt success by provider" Hartman et al (2018).

Abstract:

Purpose: Determine if the pediatric peripheral vascular access algorithm (PPVAA) led to differences in first-attempt and overall peripheral intravenous (PIV) success, staff attempting PIV access per episode and overall attempts and first PIV attempt success by provider.

Design/Methods: A two-cohort pre-/post-implementation comparative design involved pediatric nurses and patients. The PPVAA included four components: a patient comfort plan, PIV grading score, nurses' self-assessed IV access capability and nurse decision to stop-the-line. Two sample t-test or Wilcoxon rank sum test and Pearson's chi-square test were used to evaluate differences between groups and measures.

Results: Healthcare providers (N = 96) attempted 721 PIV insertions (pre-PPVAA, n = 419 and post-PPVAA, n = 302). Of 78 nurse providers, mean (SD) age was 37.4 (11.0) years and 20.0% self-assessed PIV capability as expert. Of children, mean age was 8.3 (7.0) years. Post-PPVAA, first-attempt ($p = 0.86$) and overall ($p = 0.21$) success did not change, though fewer staff were needed per episode to initiate PIV; $p = 0.017$. Overall rate of success after one attempt in the post-PPVAA period compared to pre-PPVAA was reduced ($p = 0.002$), reflecting greater awareness to stop-the-line. Compared to pre-PPVAA, advanced practice nurses and non-clinician providers were more likely to achieve success on first attempt.

Conclusions: The PPVAA did not increase first-attempt or overall PIV success; however, it decreased overall IV attempts and the number of staff attempting access per episode.

Practice Implications: The multi-component PPVAA provided a guide for nurses during PIV and assisted decision making to stop attempts in difficult cases.

Reference:

Hartman, J.H., Baker, J., Bena, J.F., Morrison, S.L. and Albert, N.M. (2018) Pediatric Vascular Access Peripheral IV Algorithm Success Rate. Journal of Pediatric Nursing. 39, p.1–6.

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