

The DIVA tool gave novice nurses a reliable indication of the probable difficulty of an IV insertion and resulted in a change in the IV policy standard at the institution, which now limits the number of peripheral IV insertion attempts to two per nurse and four per patient, bringing current policy into alignment with the 2016 Infusion Therapy Standards of Practice” Ehrhardt et al (2018).

Abstract:

Background: Establishing peripheral IV access for infusions is one of the most common invasive procedures performed in the hospital setting, but it isn't always successful on the first attempt. Multiple attempts delay treatment and cause stress in patients and nurses. The literature reports that venipuncture skills are among the most challenging for novice nurses to master.

OBJECTIVES: The goal of this quality improvement (QI) initiative was to develop, validate, and refine a simple evidence-based tool that novice nurses can use in the clinical setting to better identify those patients with preexisting conditions or anatomical variances that result in difficult IV access.

METHODS: Novice nurses employed in an urban medical center were enrolled in a vascular access education program with didactic and skill-enhancement components. Based on evidence found in the literature, the QI team developed and piloted a difficult intravenous access (DIVA) tool tailored to the adult patient population served by this institution. Following an initial trial, the tool was further refined and retested with a larger group of novice nurses. In the first phase, there were 94 IV insertion attempts; in the second, there were 971 attempts, for a total of 1,065. The two samples were analyzed independently using descriptive statistics, and Pearson product moment correlation coefficients were calculated to examine the relationship between the DIVA tool and the various factors that could affect the establishment of IV access.

RESULTS: Analysis of the first sample showed moderate positive correlations between DIVA tool scores and five variables: tough skin (scars, tattoos, or both), vein not palpable with

tourniquet, vein not visible with tourniquet, IV drug use, and chronic renal failure. Analysis of the second sample showed high positive correlations between DIVA tool scores and the two vein visibility variables; moderate positive correlations between DIVA tool scores and chronic renal failure, altered fluid status, diabetes, IV drug use, tough skin (scars, tattoos, or both), and only one arm available; and low positive correlations between DIVA tool scores and frail and/or elderly skin and chemotherapy. Analysis of the degree of correlation between DIVA tool scores and the total number of IV insertion attempts per patient showed a moderate correlation ($r = 0.32$). All correlations were significant at $P < 0.01$. Eighty percent of the novice nurses who used the pilot tool and 84% who used the modified tool rated it as a good indicator of the degree of difficulty of IV access.

CONCLUSIONS: The DIVA tool gave novice nurses a reliable indication of the probable difficulty of an IV insertion and resulted in a change in the IV policy standard at the institution, which now limits the number of peripheral IV insertion attempts to two per nurse and four per patient, bringing current policy into alignment with the 2016 Infusion Therapy Standards of Practice. Use of the revised and validated DIVA tool has the potential to enhance patient comfort and satisfaction and effect significant change in nursing practice.

Reference:

Ehrhardt, B.S., Givens, K.E.A. and Lee, R.C. (2018) Making It Stick: Developing and Testing the Difficult Intravenous Access (DIVA) Tool. *The American Journal of Nursing*. 118(7), p.56-62.

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