



Intravenous literature: Szmuk, P., Steiner, J., Pop, R.B., Farrow-Gillespie, A., Mascha, E.J. and Sessler, D.I. (2013) The VeinViewer Vascular Imaging System

Worsens First-Attempt Cannulation Rate for Experienced Nurses in Infants and Children with Anticipated Difficult Intravenous Access. *Anesthesia and Analgesia*. March 14th. .

Abstract:

BACKGROUND: The VeinViewer (Luminetx, Memphis, TN) helps identify veins by projecting an image of subcutaneous vasculature on the skin surface. We tested the primary hypothesis that VeinViewer use improves cannulation success by skilled nurses in pediatric patients with anticipated difficult IV access. A secondary goal was to evaluate the relationship between obesity and cannulation success.

METHODS: Patients aged 0 to 18 years were included. Anticipated cannulation difficulty was evaluated with the difficult IV access score. All cannulations were performed by members of the Intravenous Access Team. Patients were randomized to: (1) routine IV catheter insertion; or (2) insertion facilitated by the VeinViewer. The primary outcome was first-attempt insertion success. The proportion of successful insertions was evaluated using Cochran-Mantel-Haenszel χ^2 analysis to adjust for any imbalanced baseline variables. The effect of obesity on cannulation success was evaluated with multivariable logistic regression.

RESULTS: Two hundred ninety-nine patients (49%) were randomly assigned to VeinViewer



Will technology improve cannulation success by skilled nurses in pediatric patients with anticipated difficult IV access? | 2

and 301 (51%) to routine cannulation. First-attempt cannulation success was 47% in patients assigned to VeinViewer vs 62% in patients assigned to routine cannulation, with an adjusted relative “risk” (95% confidence interval), of 0.76 (0.63-0.91). The Z-statistic of -3.6 crossed the “harm” boundary ($Z < -2.41$), with corresponding P value of 0.0003. The trial was stopped on statistical grounds since the harm boundary for the primary outcome was crossed. There was no association between first-attempt success and the 4-level categorization of obesity after adjusted for baseline variables ($P = 0.94$).

CONCLUSIONS: The VeinViewer worsened first-attempt IV insertion success by skilled nurses. Surprisingly, first-attempt success for IV cannulation was not worsened by obesity.

