

UTILIZATION AND CHARACTERISTICS OF A NEW VEIN FINDING DEVICE

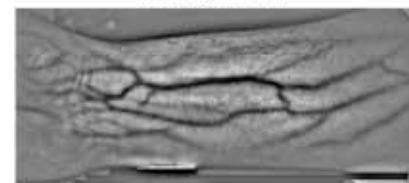
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Introduction: Securing venous access can be technically challenging and may require significant time. A vein finding device (VF) that is minimally invasive and portable would allow for improved patient care. We studied a VF (VueTek Scientific) that uses digitized infrared imaging on a head mounted display. It is designed to improve visualization of superficial veins.

Methods: We designed a randomized prospective study to determine if there was a significant difference in the number of veins visible using the VF and conventional eyesight method (CM). Ten operators viewed a minimum of ten independent volunteers with both VF and CM. Order was randomized between VF and CM. A power analysis for moderate effect size, $\beta=0.9$ required 97 samples.

Results: 106 completed samples (212 observations) ranged in age from a few weeks to 72 years of age. Average age of patients was 35 (sd =22). BMI of patients averaged 25 (sd= 6). The VF took a mean time of 12 seconds (sd= 6) to place on the head and position comfortably. On average, 2.5 more veins were found with VF than CM (sd = 1.5, $p<0.01$). Age was a significant variable in the number of veins found. Gender, weight and skin color did not impact vein finding significantly.

Age (years)	CM	VF	Difference
<2	1.77 _(0.97)	3.44 _(1.42)	1.67 _(1.12)
2-17	4.80 _(2.76)	6.90 _(3.29)	2.10 _(1.25)
18-64	5.04 _(1.68)	7.62 _(3.03)	2.58 _(0.12)
65+	6.00 _(3.02)	9.38 _(2.45)	3.38 _(0.74)
Total	4.79 _(2.99)	7.26 _(3.53)	2.47 _(1.54)



Discussion: There were significantly more veins visible with VF than CM. Skin color (dark/light), weight (normal/obese) and gender (M/F) did not affect the VF advantage. Increasing age categories were associated with greater numbers of veins identified with VF.

Conclusion: Our study showed that the VF increased the number of veins visible by 2.5 veins ($p<0.01$). Advanced age was a significant predictor for number of additional veins found. The VF increases the number of veins visible for attempted cannulation and is worthy of further study.