Reducing Risk of Extravasation and Improving Vasodilation through a Modular IV Access Device
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Introduction

Background
● Peripheral IVs are utilized in multiple clinical settings:
○ Radiology, Emergency Medical Services, Emergency Departments
● Peripheral IVs uses:
○ Radiology, Fluid replacement, Drug/Imaging Administration, Blood sampling

Problem
● 20% of patients at risk of a poor IV experience 1
○ Pediatric, elderly, obese, diabetic, drug using, and cancer patients
● Improving IV insertion saves money and time, improves the patient’s experience.

Needs Statement
An easily employable device developed to minimize extravasation and assist technicians in locating veins during IV insertion in patients.

Proposed Solution/Design

Features:
- Vibrational components
- Carbon fiber heating pad
- Velcro
- Tourniquet
- 8.15 V batteries
- Lighting: Red and Orange LEDs

Testing

Workflow:

Analysis:

Results:

Method
IV tourniquet
Device
Method to Baseline Ratio
1.26 ± 0.19
1.58 ± 0.18

T-test results: 0.022 (statistically significant)

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Reimbursement/ Patents

The Device would be covered via Medicare/Medicaid using the following codes:
- 187.2 of ICD-10-CM: ‘venous insufficiency (chronic) (peripheral)’
- ICD-10-PCS code BW25YZZ: Computerized Tomography (CT) Scan of Chest, Abdomen and Pelvis using Other Contrast
- CPT 36406 and 36410: Venipuncture, younger than age 3 years, necessitating physician's skill, not to be used for routine venipuncture

Patentability: No patents for IV tourniquets currently exist that incorporate all aspects of our device.

Conclusion

● We have created a device that integrates imaging, a tourniquet, vibrations, and heating together
● In comparison to usual methods, our solution leads to more vasodilation than a standard tourniquet
● Future work includes making the product more comfortable and easier to employ; distributing surveys

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References