Clinical Function Requirements of Near-Infrared Vein Visualization

The use of near-infrared (NIR) vein visualization is clinically proven to improve peripheral vascular access. The Infusion Therapy Standards of Practice now recommends the utilization of NIR technology "to identify peripheral venous site and facilitate more informed decisions about vein selection (i.e. bifurcating veins, tortuosity of vein, palpable but nonvisible veins)."[1] For improved safety practices, facility standards and education should include NIR visualization in PIVC guidelines for "pre-insertion, insertion and post-insertion."[2]

Vascular access experts have defined the necessary clinical function NIR vein visualization devices must provide to positively impact peripheral IV placement (Fig. 1). These clinical functions aid the clinician in optimizing site selection, promoting vein preservation and avoiding complications.[3]

Assessment capability with eyesight, palpation, ultrasound (U/S) and near-infrared (NIR).

Method For Assessment

Ideal Vein	Eye	Palp	U/S	NIR
Not Across a Joint	✓	-	-	-
Vein Size	+/-	+/-	✓	✓
Straight Pathway	+/-	+/-	+/-	✓
Avoid Valves	0	0	0	✓
Identify Obstruction	0	+/-	✓	✓
Venous Flow	0	0	+/-	✓
Catheter Tip- Valve	0	0	+/-	✓

Fig. 1 – Pre-access assessment for PIV best practice. Schears, "Reducing PIV Complications and Guiding Clinicians: Technology and the 5Ps"

✓ (achievable)
+/- (sometimes achievable)
0 (not achievable)
- (not applicable)

Clinical Function Requirements

While NIR devices are non-diagnostic, they must be able to perform the following functions. Healthcare facilities assessing NIR technology should evaluate devices based on these clinical function requirements to deliver peripheral IV best practice.

A NIR vein visualization device must be able to:

- ✓ Detect blood patterns up to 15mm beneath the skin.
- ✓ Identify the location of valves.
- ✓ Identify the location of venous bifurcations.
- ✓ Aid in the assessment of venous refill rates.
- ✓ Visualize a rolling vein during the catheter insertion process.
- ✓ Identify a hematoma forming during the catheter insertion process.
- ✓ Aid in the assessment of IV patency during a saline flush through visualization of blood clearing and refilling the vein lumen.
- ✓ Identify the presence of a hematoma during regular post-insertion assessment of the PIVC.

Only VeinViewer® by Christie Medical Holdings is indicated for and proven to provide these clinical functions.

1. Gorski, L., et al, Infusion Therapy Standards of Practice, *J Infusion Nursing* 2016: 39 [1S]: S44-46.
2. Vizcarra, C., et al, Recommendations for Improving Safety Practices with Short Peripheral Catheters, *J Infusion Nursing* 2014: 37 [2]: 121-124.
3. Schears, G., Reducing PIV Complications and Guiding Clinicians: Technology and the 5Ps, Association for Vascular Access conference 2017, presentation.

010-200818-01 Rev. 1 (11-2017)