

Targeting Vein Preservation & Optimal Site Choice

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Disclosures

- **I am a consultant for B.Braun & Christie Medical Holdings**
- **No off label use will be discussed**

Simulation Lab Agenda

- **Presentation Overview of Lab**
- **NIR Pre-Access Assessment**
- **Placing a PIV using NIR**
- **Enhanced Stabilization with SteadyCare.**

Objectives

- **Describe critical importance of pre-access assessment prior to PIVC placement**
- **Discuss optimal use of NIR as a screening tool to identify viable venous access targets and in an algorithm for optimal device choice**
- **Identify techniques using NIR to identify valves and other obstacles to strategically optimize site choice and help reduce complications**

Peripheral Venous Pre-Access Assessment (PVPA)

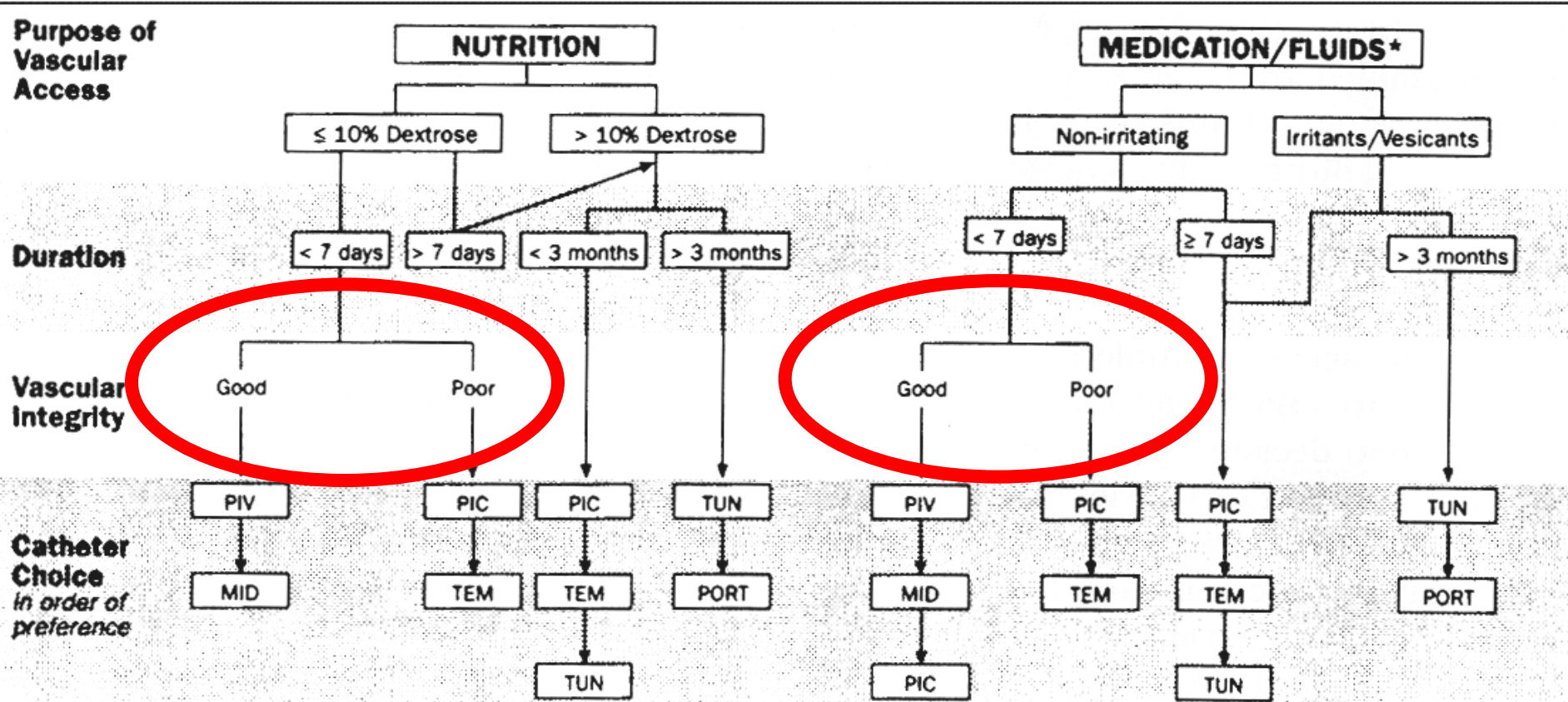
What is PVPA?

- **Entry point for VAD Choice Algorithm**
- **Method to quantify viable venous targets**
- **Means to prospectively match access needs with venous target opportunities**
- **Only realistic way to provide vein preservation strategies and limit sticks**
- **Initial part of optimal site choice**
- **Point of care evaluation of targets**

VASCULAR ACCESS PLANNING

(NON-EMERGENT USE, REASSESS DAILY)

FOR MULTIPLE ACCESS NEEDS, SELECT A MULTILUMEN CATHETER



*Home Use—Consider stable access PIC, TUN, PORT as appropriate. For patients with short-term therapy, good access, and good home care resources, PIV may be considered. Discuss with their case manager.

PVPA Best Practice

Eyes & Fingers



US & NIR



Goal of PVPA

- Quickly quantify viable venous targets for clinical decision making
- Use this information to partner with patient to choose optimal VAD
- Record and communicate findings
- Use this information to refine future algorithms through CQI and research

PVPA Screening

5 categories for Identifying Venous Targets

1. V-Easily locate accessible veins by sight
2. T-Easily locate accessible veins by palpation
3. N-Easily locate accessible veins with near-infrared vein visualization
4. U-Accessible veins only identified with ultrasound
5. 0-Lacks adequate veins for peripheral venous access

PVPA Screening

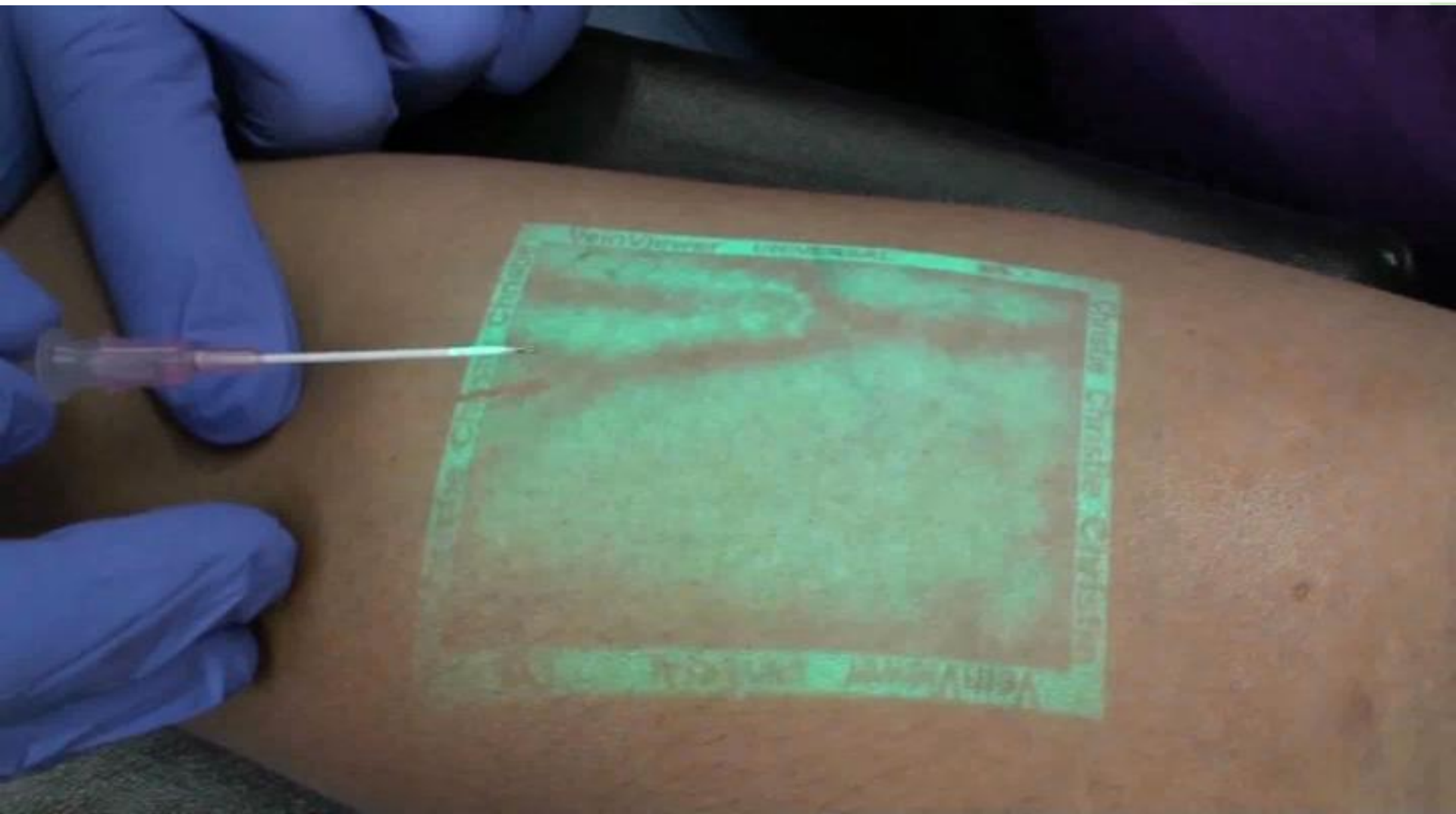
Quantification

- A. > 10 Optimal Choices
- B. 5-10 Optimal Choices
- C. 1-5 Optimal Choices

Qualifiers

- A. RF-Renal Failure
- B. CS-Chronic Steroids
- C. SL-Site Limitations
- D. LD-Limited Dwell
- E. P-Pediatrics
- F. G-Geriatrics
- G. Site:B-Bilateral, L-Left, R-Right

Placing a PIV with NIR

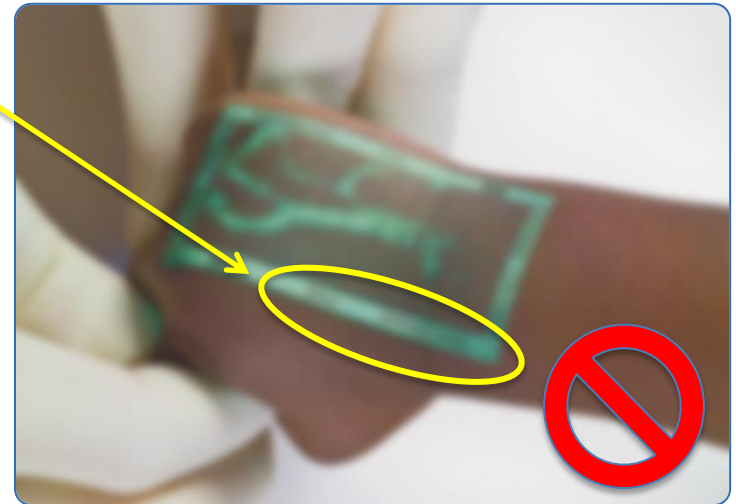
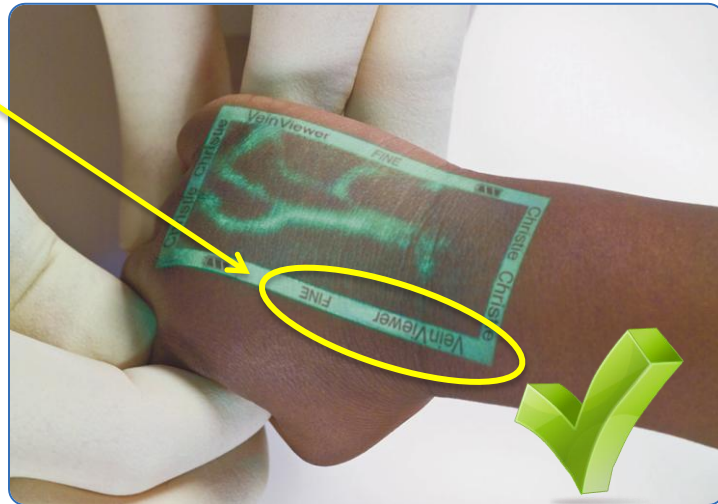


Tips

Set up and Focus



Set up and Focus



Keep Edge on Skin

Resize

- Standard



- Medium



- Narrow



External
Edge

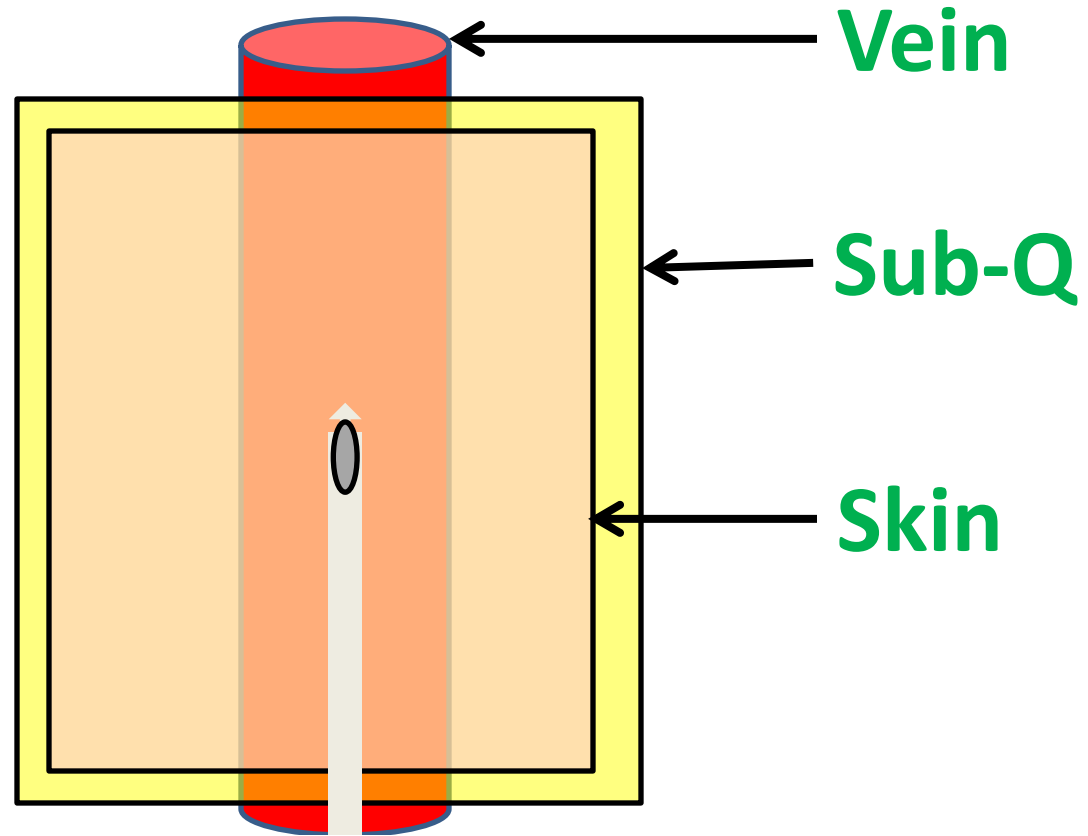


Internal
Edge



= True Intraluminal Vein Diameter

Vein Depth



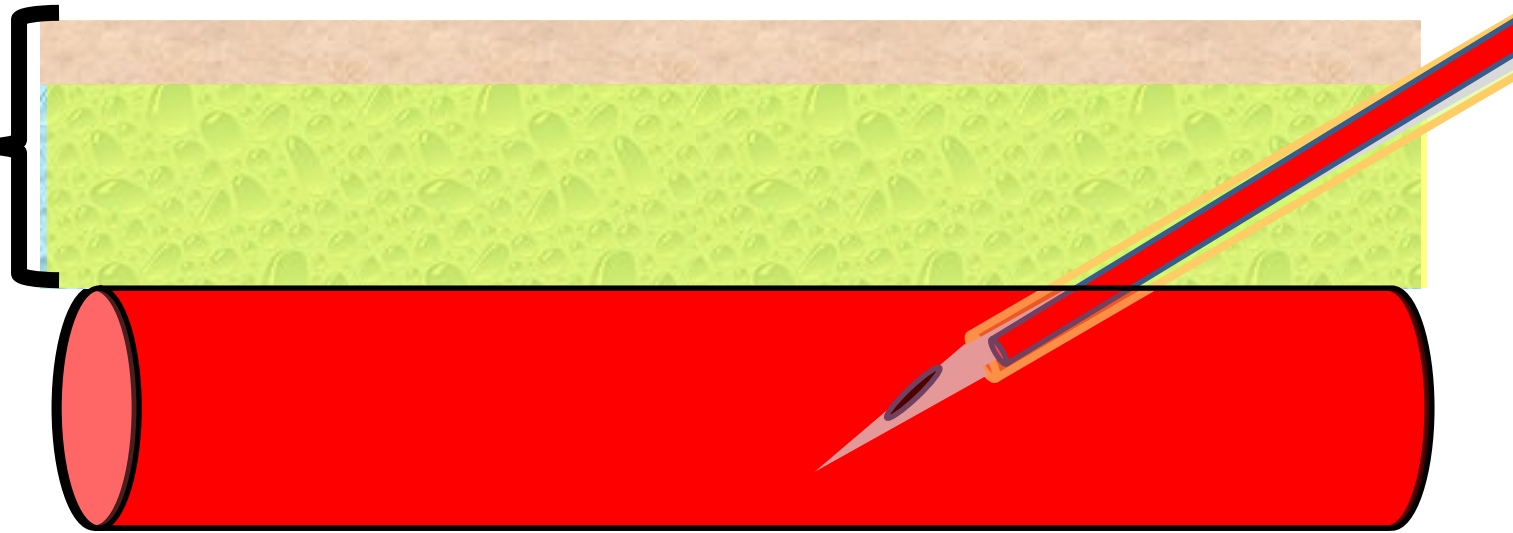
A Center Stick Controls 2 of 3 Dimensions

Vein Depth & Center Sticks



Vein Depth & Center Sticks

5 mm



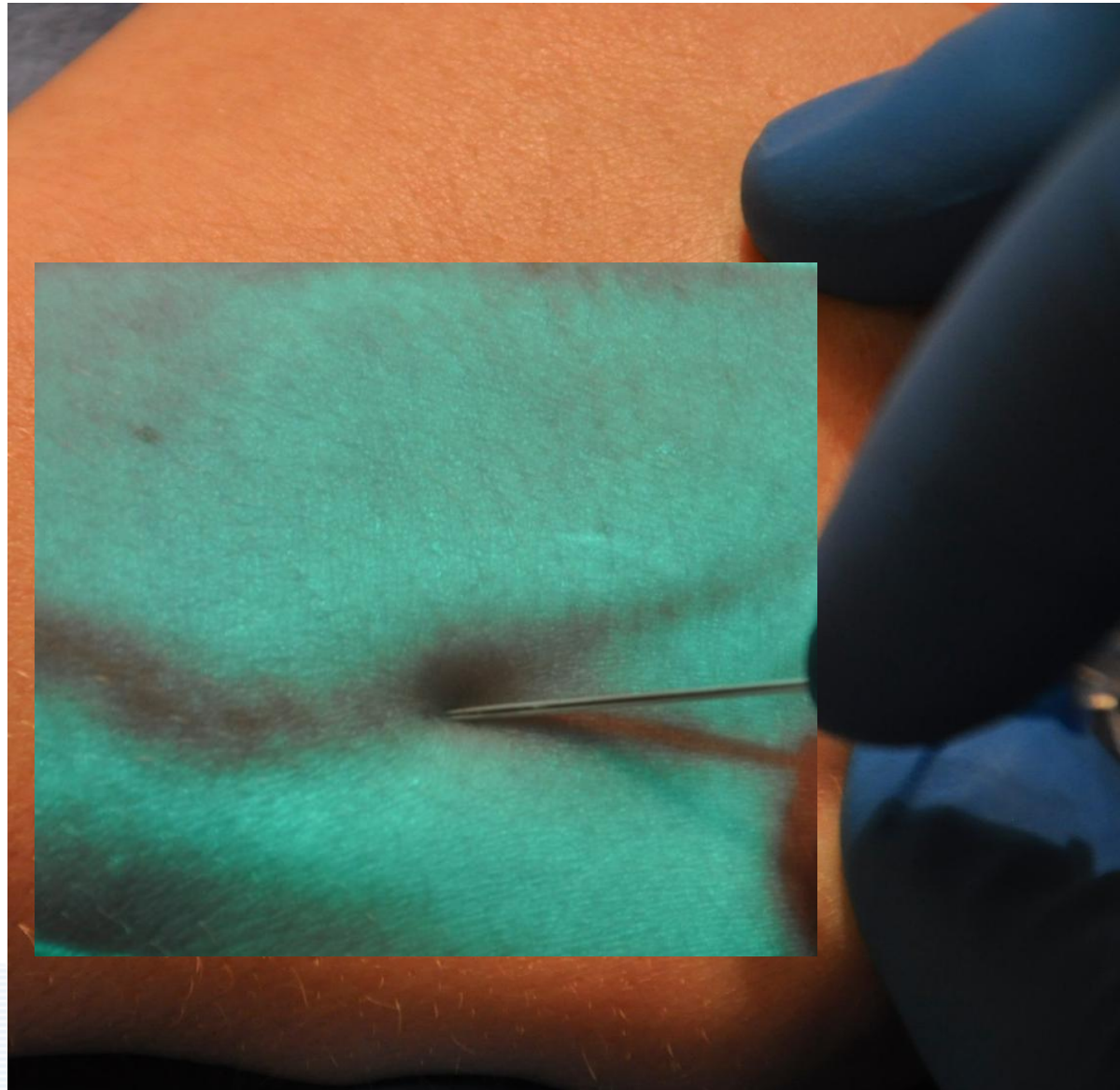
Tricks



Finding an Optimal Site



Your Venous GPS



Peripheral Venous Site Choice

Vein Visualization Strategies

Vein Characteristic	Eye	Palp	U/S	NIR
Internal Vein Diameter	+/-	+/-	√	√
Straight Vein Pathway	+/-	+/-	+/-	√
Valve Location	0	0	0	√
Venous Obstruction	0	+/-	√	√
Venous Flow	0	0	+/-	√
Catheter Tip-Valve	0	0	+/-	√

PIV Site Choice Strategy

- **Identify straight, wide vein segments**
- **Avoid catheter tip too close to valves, tortuosities and bifurcations**
- **Choose sites with good venous flow**
- **Find sites away from joints**
- **Choose sites that allow adequate stabilization**

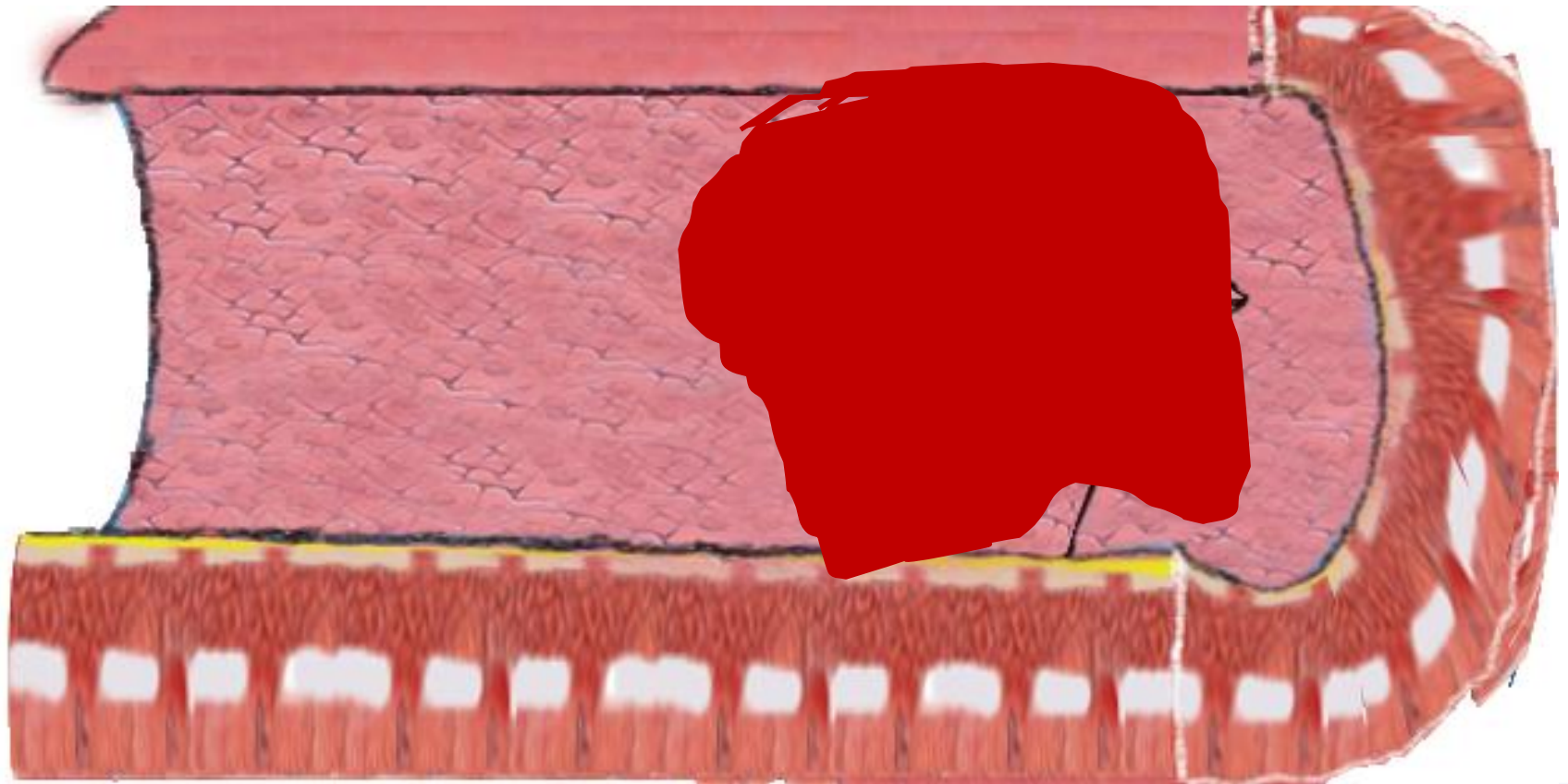




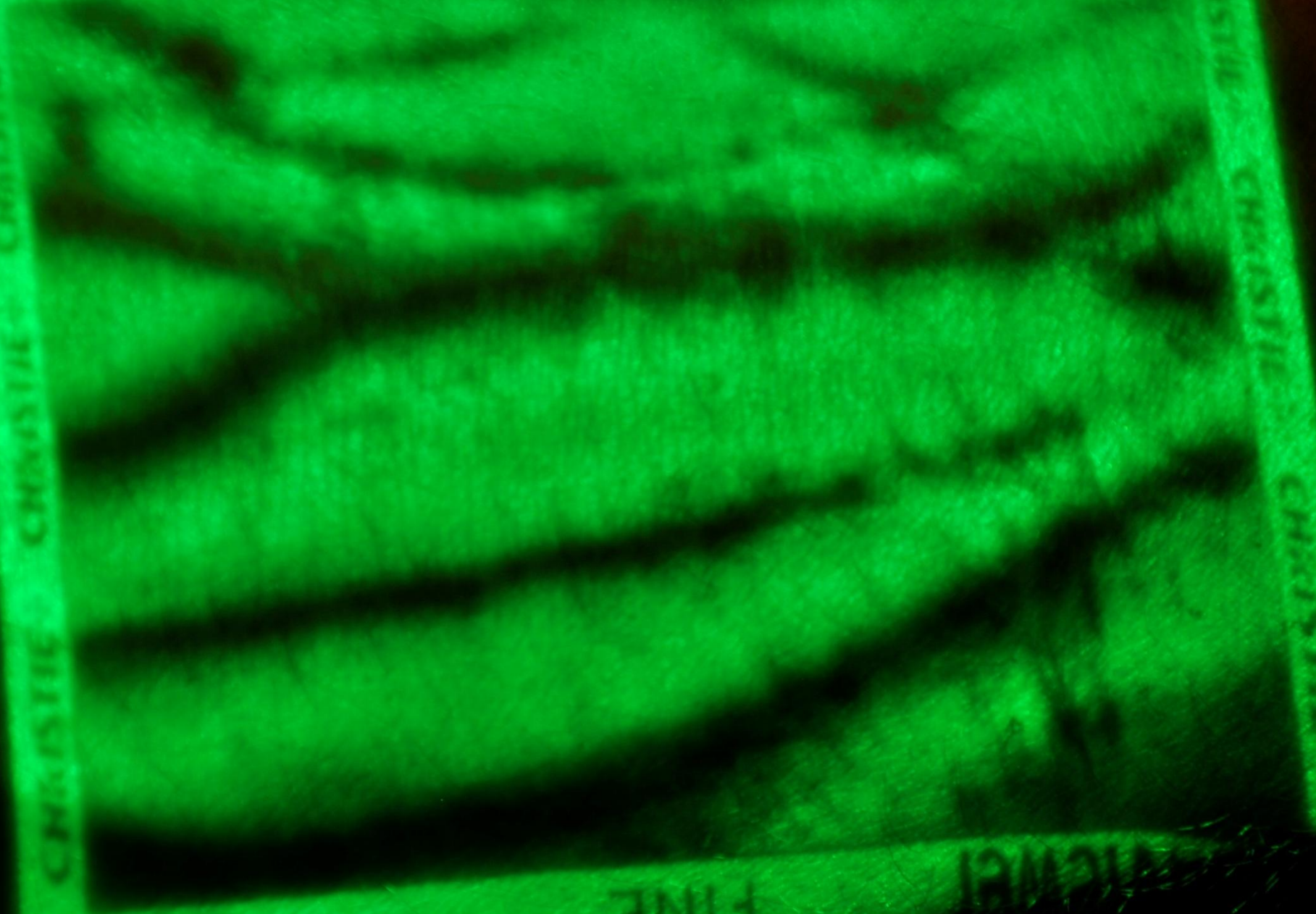
Valves and Site Choice

- Valves interfere with catheter placement
- May result in blown veins and failure to thread catheter
- Can reduce catheter flow and may bias toward thrombosis
- May contribute to the development of phlebitis
- Contribute to restarts and pain for patient

Vessel Hemtoma from Valve Strike



Vein Viewer

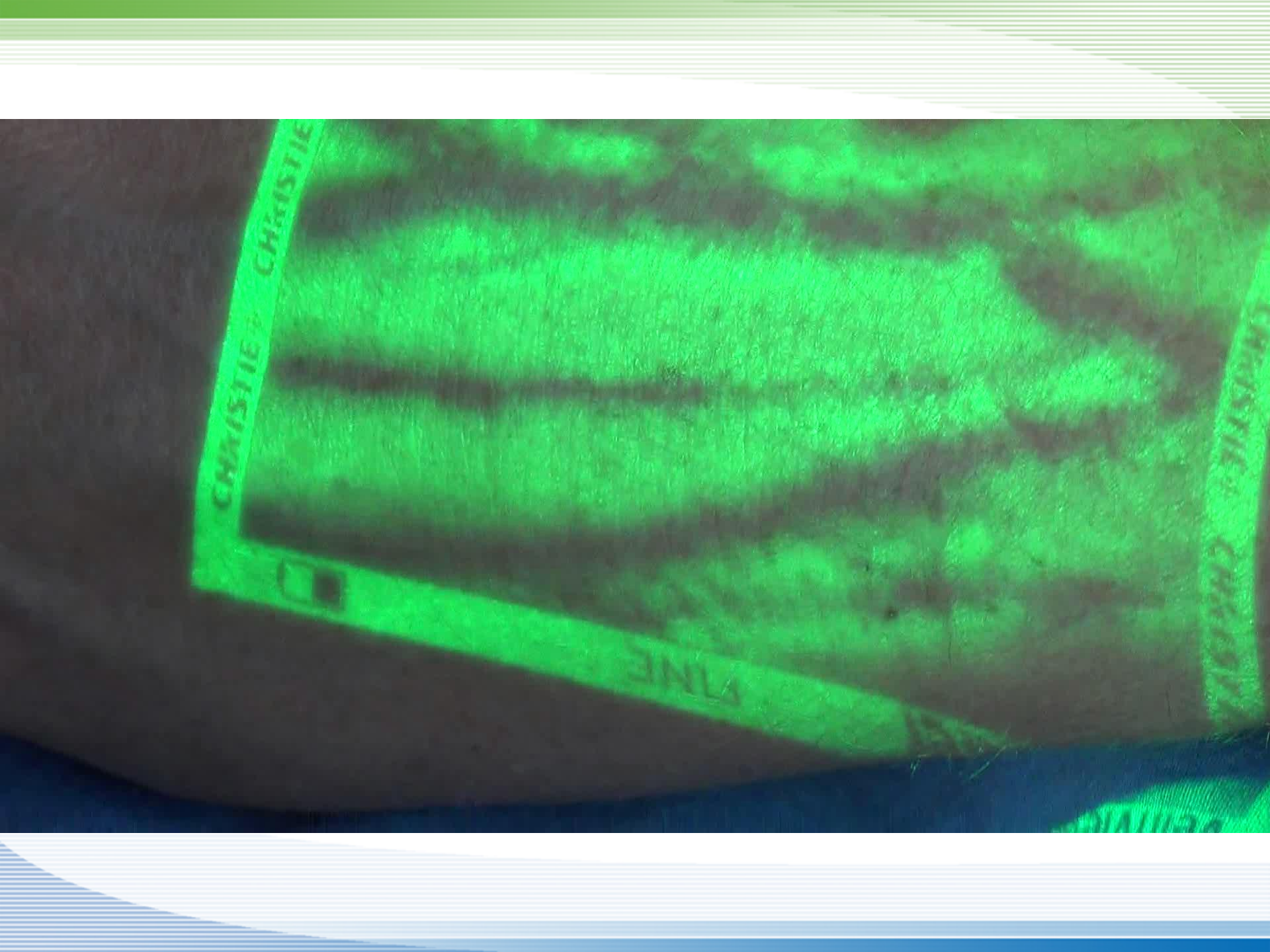


FINE

Vein Viewer

CHRISTIE CHRISTIE CHRISTIE

CHRISTIE CHRISTIE CHRISTIE

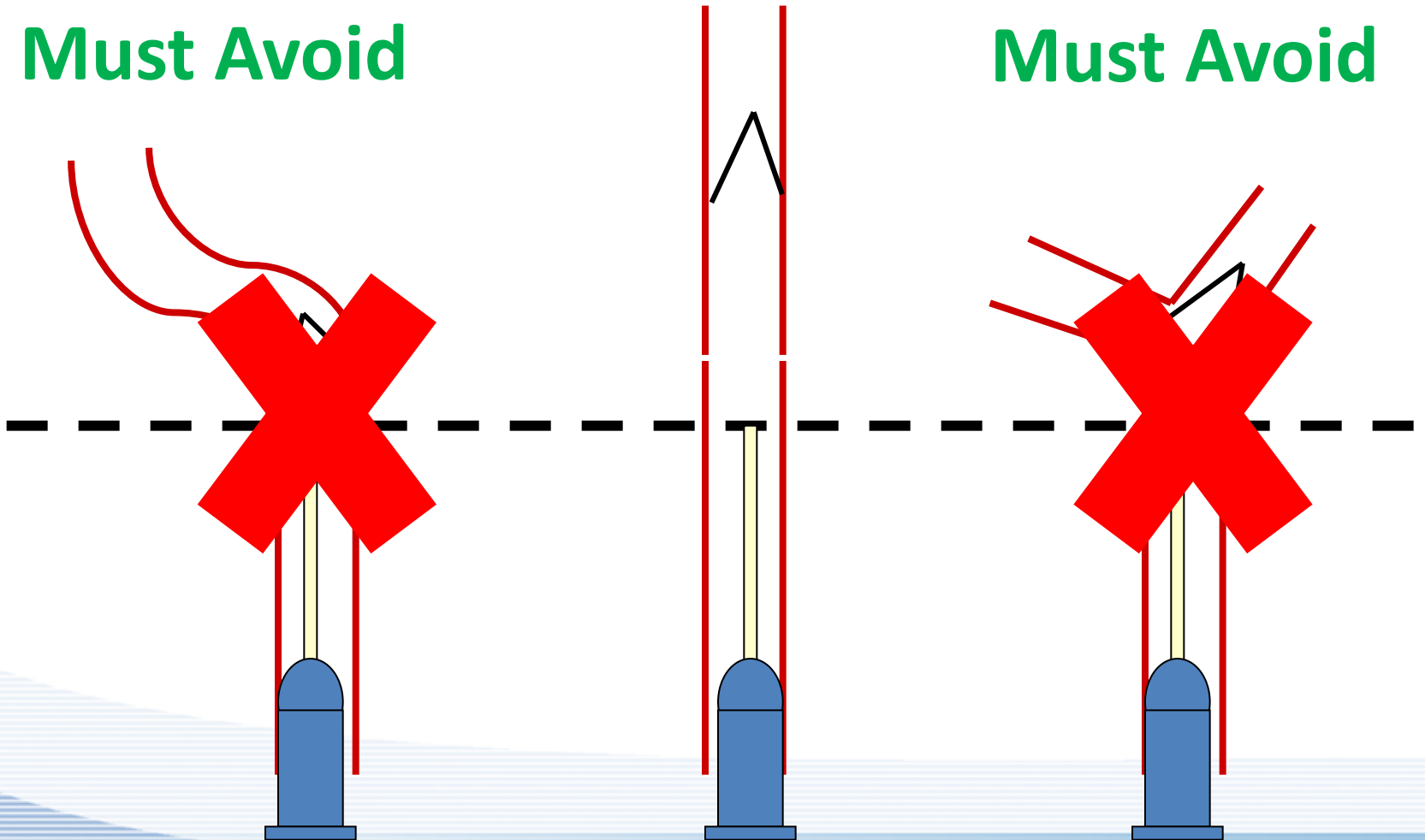


Picking an Optimal Access Site

Must Find

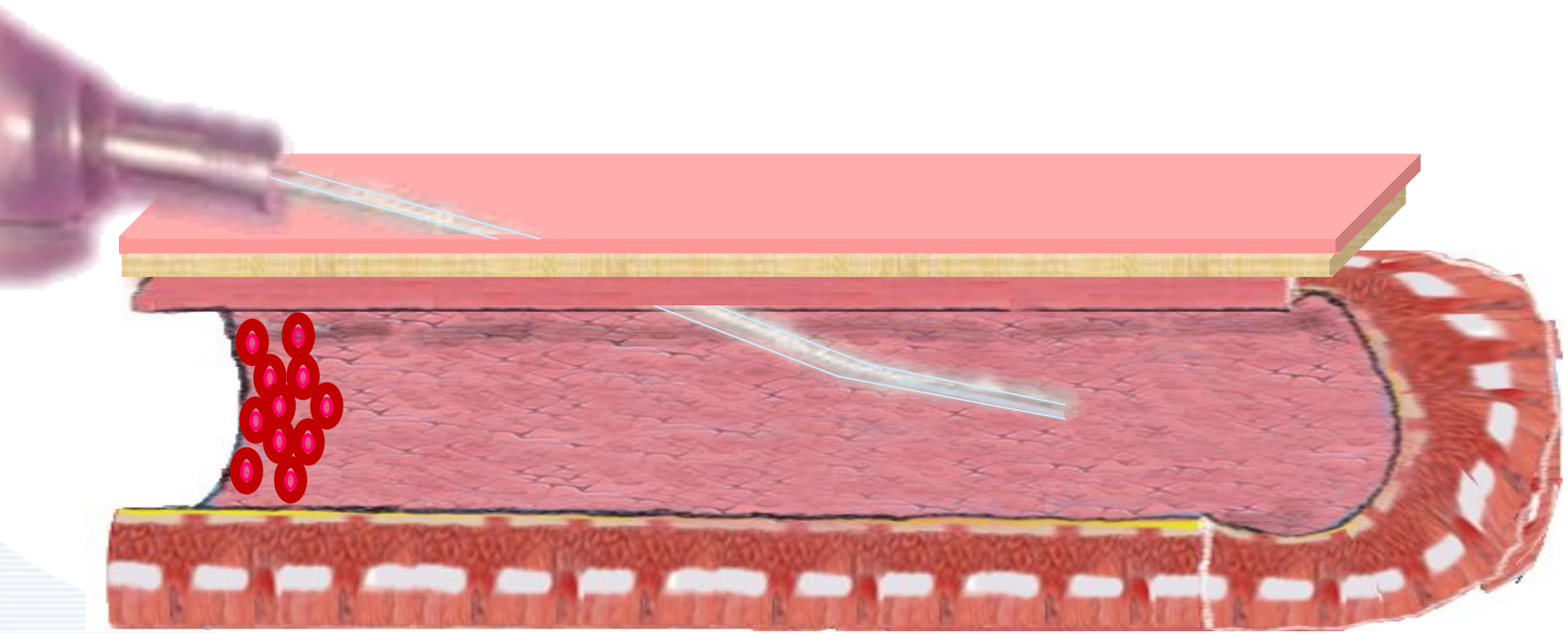
Must Avoid

Must Avoid

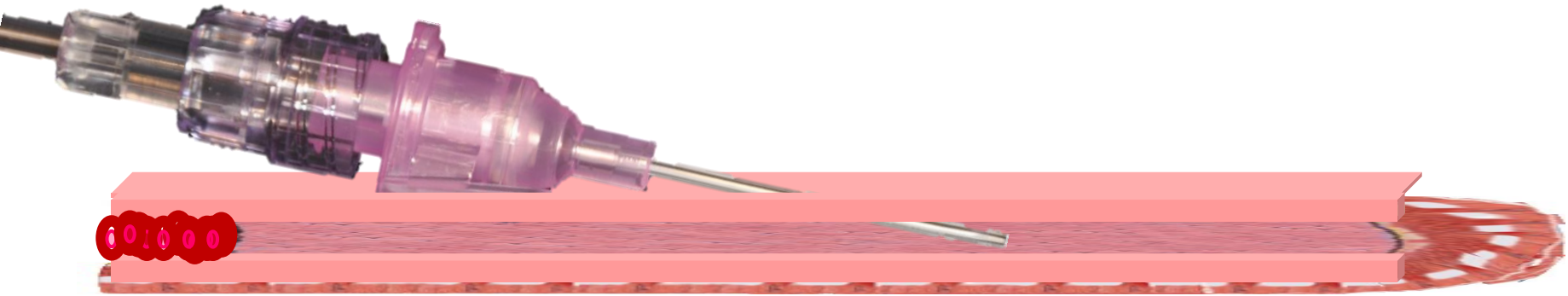


Catheter to Vein Ratio

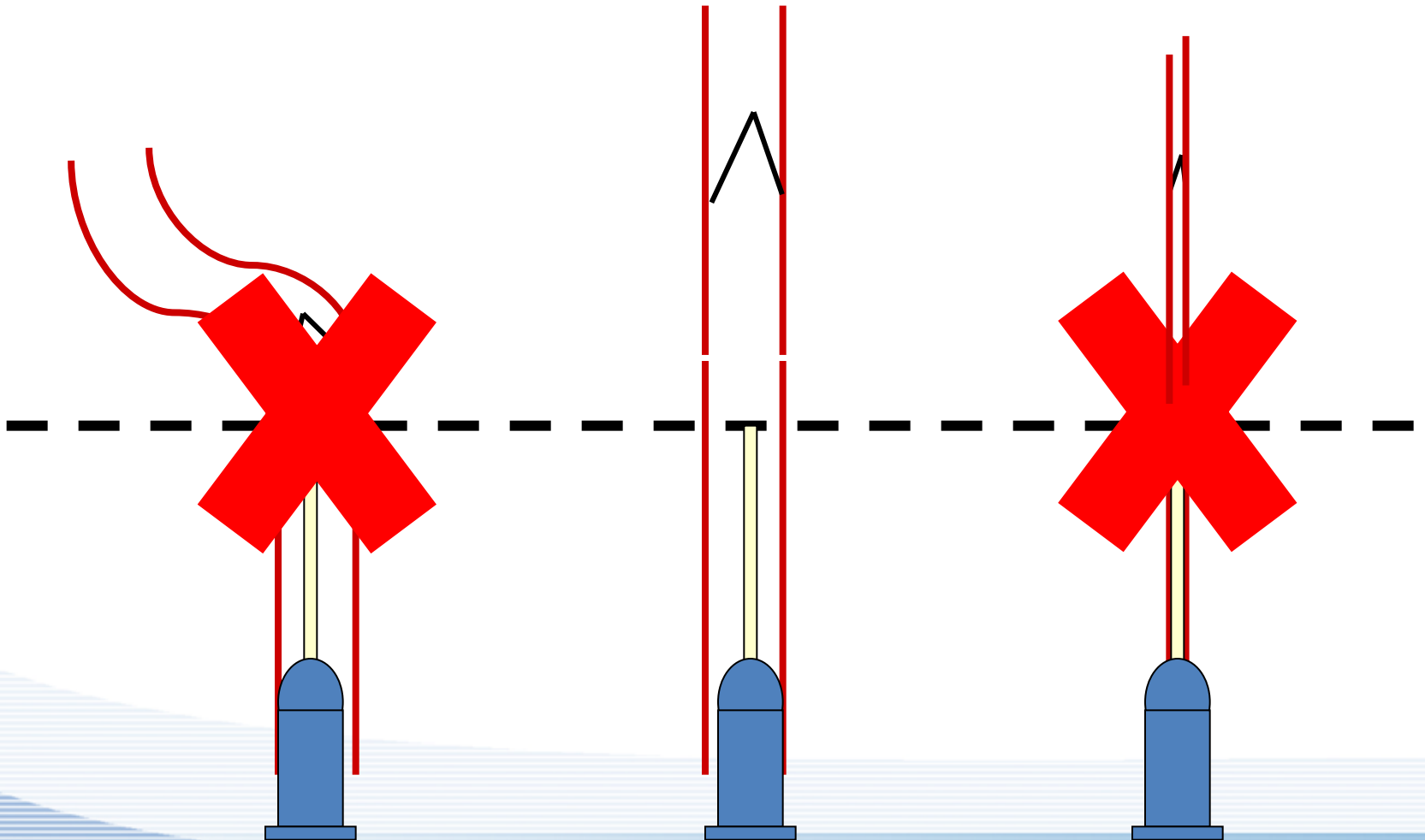
Optimal Catheter/Vein Ratio



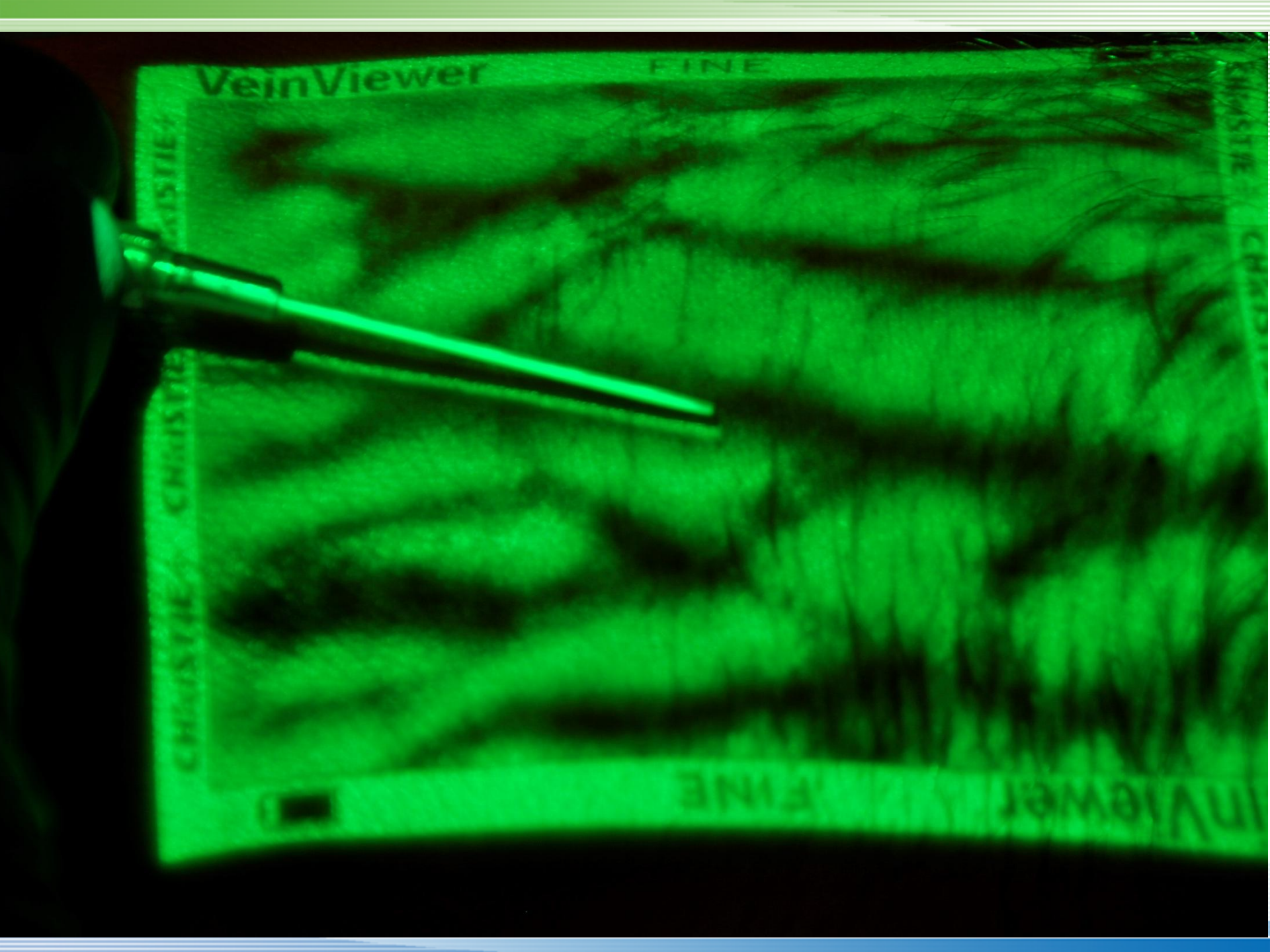
Suboptimal Catheter/Vein Ratio



Picking an Optimal Access Site







Vein Viewer

FINE

CHRYSTIE CHRISTIE

CHRYSTIE CHRISTIE

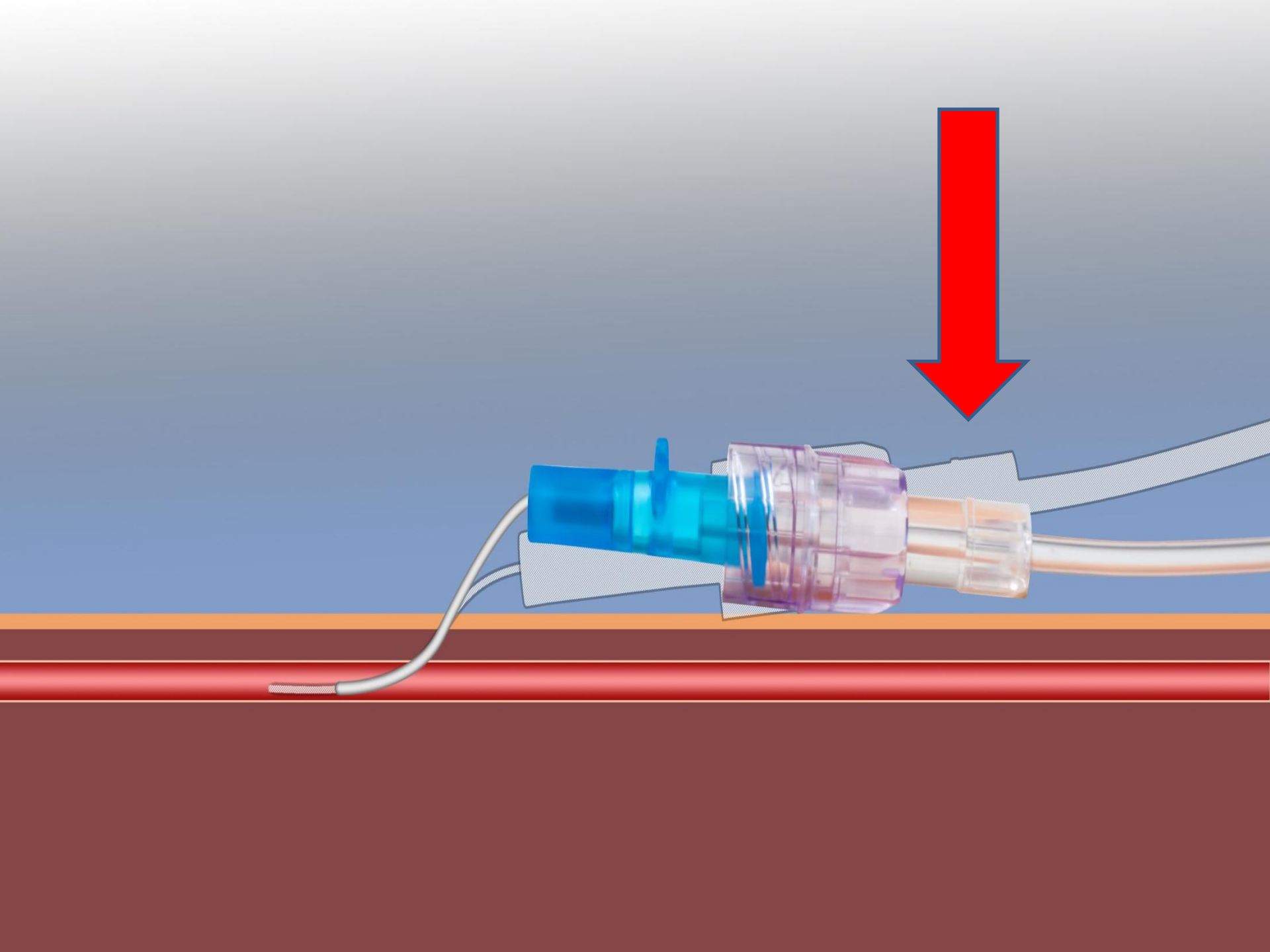
VIEWER FINE

Optimal Catheter/Vein

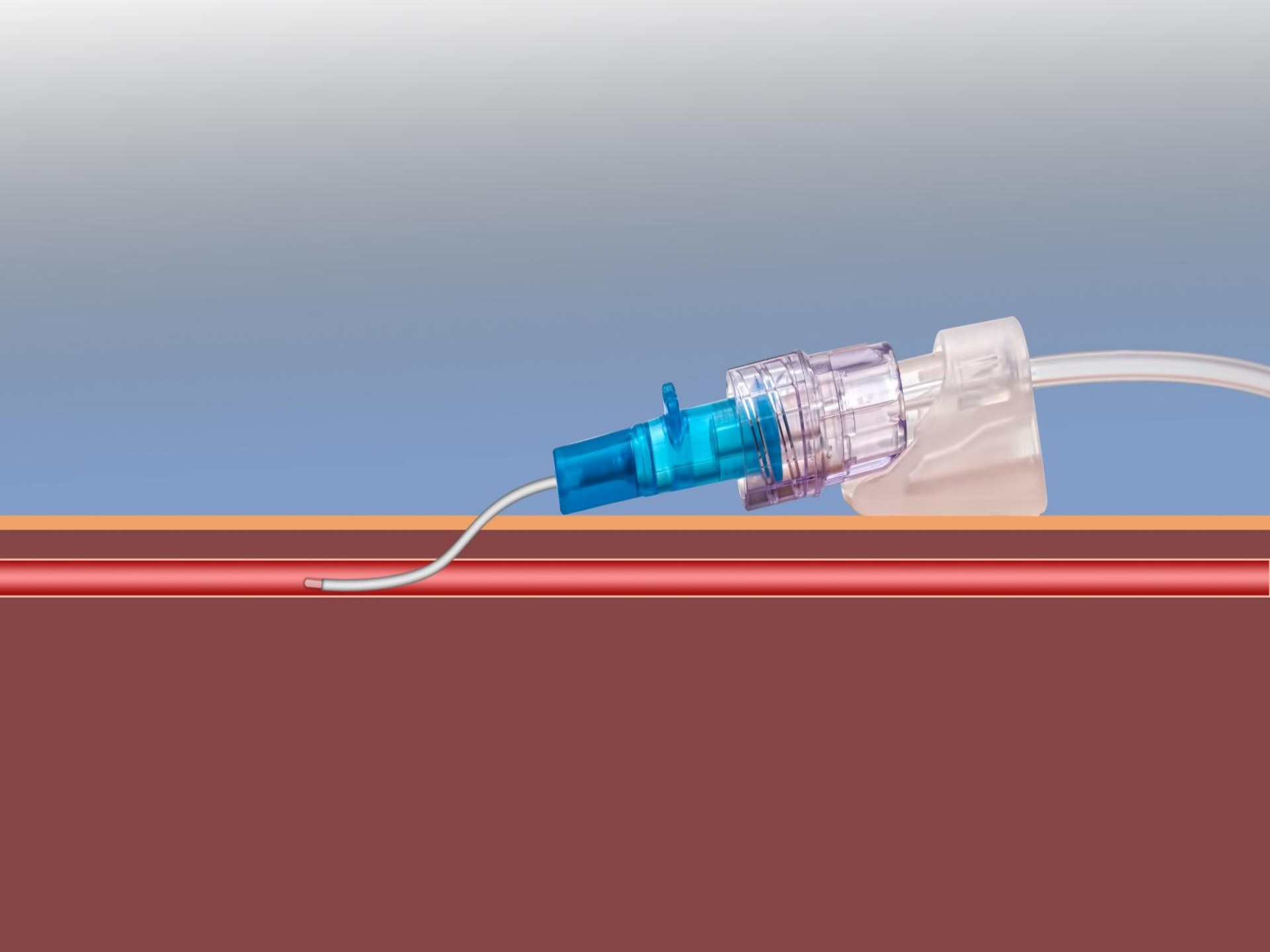
- Difficult to estimate real vein size for most PIV access using unaided eye.
- Palpation even more difficult.
- U/S good but harder to know straightaways and can't easily see valves or tortuosities
- NIR easily identifies straightaways and projects exact vein width with some products.
- Thus NIR is necessary for optimal PIV catheter/vein strategies to preserve flow & integrity.

Enhanced Stabilization











Simulation Time

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