



Sonographer Scanning Cheat Sheet:

Upper Extremity Venous Duplex US

Procedure Overview: A upper extremity venous duplex ultrasound assessment can be utilized to detect the presence, severity, and location of venous disease in the upper extremities.

Required Pre-Procedure Prep:

- Obtain patient verbal consent.
- Obtain patient history, current medications, and previous vascular surgery.
- If the patient is having limb pain ask location, when pain occurs, and what relieves the pain.
- Complete a physical exam. Assess upper extremities for trophic changes, lesions, color, and temperature.
- Instruct the patient to remove clothing from their entire arm. Typically it is best for the patient's arm to rest on the sonographer's lap.

Proper Probe: Linear array probe with a frequency of 6 - 12 MHz that has tri-duplex capabilities.

Protocol for Upper Extremity Venous Duplex Ultrasound Bilateral (93970) Unilateral (93971)

This protocol aligns with the Mindray I-Works protocol: Imagen Upper Venous

You may "Suspend" the protocol at any time to take additional images or handle pathology, then restart I-Works.

Proper imaging of UEV vessels:

Grey scale Trv- vessels should be round not obliqued and centered in screen.

Compression- Should show complete collapse of vessel if no DVT

Trv w/color- color box should be straight, not steered

COLOR BOX- should always be taller than wide. Straight for Trv. Steered appropriately for Sag.

Grey scale Sag- vessel should be perpendicular to probe and straight across the screen to best visualize intimal wall layer

Sag Color- the vessel should be angled and box steered accordingly

Sag Doppler- No angle correct required since not measuring PSV

Augmentations- Routine spectral Doppler distal augmentation is not necessary to diagnose DVT & no longer recommended by ACR. .

Thrombus- should be documented as acute or chronic. Acute- hypoechoic, vessel may be dilated, may be partially compressible (Spongy). Chronic- hyperechoic, firmly attached to the wall, incompressible.



If Bilateral, Begin Exam with Right Side:

If Unilateral, Begin Exam with Contralateral Side and Do the IJV Sag/TRV images only for opposite side :

1. TRV IJV Dual screen w/compression (label side appropriately Lt or Rt if not using Iworks)
2. Sag IJV
3. Sag IJV w/Color
4. Sag IJV w/color and Doppler (no aug)
5. TRV Subc V (compression not normally possible in this location)
6. TRV Subc V w/Color
7. Sag Subc V
8. Sag Subc V w/Color
9. Sag Subc V w/color and PW Doppler (no aug)
10. TRV Axillary V Dual screen w/compression
11. Sag Axillary V
12. Sag Axillary V w/Color
13. Sag Axillary V w/color and PW (no aug)
14. TRV Brachial V Prox Dual screen w/compression
15. TRV Brachial V Mid Dual screen w/compression
16. Sag Brachial V Mid
17. Sag Brachial V Mid w/Color
18. Sag Brachial V Mid w/color and PW Doppler (no aug)
19. Sag Brachial V(2) Mid w/color and PW Doppler (no aug)
20. TRV Brachial V Distal Dual screen w/compression
21. TRV Radial V Distal Dual screen w/compression
22. Sag Radial V
23. Sag Radial V w/Color
24. TRV Ulnar V Distal Dual screen w/compression
25. Sag Ulnar V
26. Sag Ulnar V w/Color
27. TRV Basilic V Prox Dual screen w/compression
28. Sag Basilic V Mid
29. Sag Basilic V Mid w/Color
30. Sag Basilic V Mid w/color and PW Doppler (no aug)
31. TRV Cephalic V Prox Dual screen w/compression
32. Sag Cephalic V Mid
33. Sag Cephalic V Mid w/Color
34. Sag Cephalic V Mid w/color and PW Doppler (no aug)

*****Repeat for Left side*****



Common Pathologies

- Deep Vein Thrombosis (DVT): Presents as a partial or completely occluding internal venous lesion with internal echoes. Differentiate between an acute and chronic thrombus formation documenting the location, extent of the thrombus, and the echogenicity (if possible).
 - Acute Thrombus: Typically appears hypoechoic, partial compressibility, painful, and without collateral veins.
 - Chronic Thrombus: Typically appears hyperechoic, minimal pain, incompressibility, and with collateral veins.
- Varicose Veins: Presents as dilated, superficial veins measuring >2 mm. These veins bulge above the skin surface and typically appear blue to purple in color. Document the origin of the vein and internal flow.
- Venous Insufficiency: Presents as an incompetent venous valve. Document reflux time with the patient standing to increase hydrostatic pressure with proximal or distal augmentation. Reflux time >500 ms is consistent with venous insufficiency.