



Sonographer Scanning Cheat Sheet:

Lower Extremity Arterial Duplex US

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

Required Pre-Procedure Prep:

- Obtain patient verbal consent.
- Obtain patient history including, but not limited to cardiovascular symptoms, history of tobacco usage, and previous vascular surgery.
- Instruct the patient to undress from the waist down covering up with a drape and lie supine.

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

Protocol for Lower Extremity Arterial Duplex Ultrasound Bilateral (93925) Unilateral (93926)

This protocol aligns with the Mindray I-Works protocol: Imagen Lower Arterial

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

Proper imaging of LEA vessels:

COLOR BOX- should always be taller than wide. 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- be sure angle correct is 45-60 degrees and that the internal stick is perfectly parallel to the anterior wall for proper quantification of velocity measurements

Measurements- measure the PSV for each vessel

Stenosis- walk the sample volume through the narrowing to find the highest velocity. Sample before, through and after stenosis. Document post stenotic turbulence if present. Cine any area of stenosis > 50% in longitudinal and transverse.



If Bilateral, begin Exam with Right Side:

1. Sag CFA (if not using I-Works, be sure to label appropriately RT or LT)
2. Sag CFA w/Color
3. Sag CFA color and Doppler
4. Sag DFA (profunda)
5. Sag DFA w/Color
6. Sag DFA color and Doppler
7. Sag SFA Prox
8. Sag SFA Prox w/Color
9. Sag SFA Prox color and Doppler
10. Sag SFA Mid
11. Sag SFA Mid w/Color
12. Sag SFA Mid color and Doppler
13. Sag SFA Distal
14. Sag SFA Distal w/Color
15. Sag SFA Distal color and Doppler
16. Sag Pop A Prox
17. Sag Pop A Prox w/Color
18. Sag Pop A Prox color and Doppler
19. Sag Pop A Distal
20. Sag Pop A Distal w/Color
21. Sag Pop A Distal color and Doppler
22. Sag ATA
23. Sag ATA w/Color
24. Sat ATA color and Doppler
25. Sag PTA (at ankle level)
26. Sag PTA w/Color
27. Sag PTA color and Doppler
28. Sag DPA
29. Sag DPA w/Color
30. Sag DPA color and Doppler

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

**** AN ABI (Ankle Brachial Index should be calculated for each exam):**

Take Brachial pressure in BOTH Arms.

Take Ankle Pressure in BOTH Ankles.

Divide EACH ankle by the HIGHEST Brachial (left or right).

Example:

Rt Brachial- 120/60 Lt Brachial- 125/62

Rt Ankle- 130/70 Lt Ankle- 132/68

Rt ABI: $130/125 = 1.04$

Lt ABI: $132/125 = 1.056$



ABI ^a	Interpretation
>1.30	Poorly compressible vessels, arterial calcification
0.90–1.30	Normal
0.60–0.89	Mild arterial obstruction
0.40–0.59	Moderate obstruction
<0.40	Severe obstruction

Abbreviation: ABI, ankle-brachial index.

^a Obtained by measuring the systolic blood pressure (using a properly sized sphygmomanometer) in the ankle divided by that in the brachial artery. The presence of arterial calcification can lead to an overestimate in the index.

Lower Extremity Arterial Stenosis Diagnostic Criteria		
Degree of Stenosis	Peak Systolic Velocity (cm/s)	Ratio (/max PSV/prior PSV)
<50%	<200 cm/s	<2.0
50 - 75%	200 - 300 cm/s	2.0 - 4.0
>75%	> 300 cm/s	> 4.0

Common Pathologies

- **Stenosis:** Appears as an area of visualized plaque, focal velocity acceleration within an area of visualized plaque, and post-stenotic turbulence distal to the stenosis.
- **Plaque:** If present, classify as one of the following and note texture, surface, and location.
 - **Homogeneous:** Soft plaque, uniform echo pattern
 - **Heterogeneous:** Complex echo pattern with multiple echoes and different densities
 - **Calcified:** High density echoes with posterior shadowing
- **Occlusive Disease:** Appears as a total blockage of the artery. Power Doppler is implemented to determine if trickle flow is present. Document the severity of the occlusion and locate any collateral pathways.
- **Arterial Dissection:** Appears as an internal flap (separation of the three arterial layers) with color Doppler showing two separate compartments with opposite directions of flow. Spectral analysis depicts opposite blood flow within both compartments.