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Vascular – Lower Extremity Arterial Duplex

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INDICATIONS:

To evaluate the arteries of the lower extremities for arterial disease, extent of plaque and severity of stenosis.
The indications for arterial duplex ultrasound examinations include, but are not limited to:

Claudication, rest pain, nonhealing wounds or ulcers, cyanosis, cold feet, known stenosis, abnormal ABI, absent pedal peripheral pulses, trauma, aneurysms

Required Images and Documentation:

A complete examination includes evaluating the entire course of the visualized portions of each vessel in the lower extremities bilaterally.

Lower Extremity Arterial Duplex Evaluation

A. Technique:

Supine position, using 9 MHz linear transducer. Optimize equipment gain and display settings while imaging vessels with respect to depth, dynamic range, and focal zones. Use color flow images with proper color scale to demonstrate areas of high flow and color aliasing. Set spectral Doppler gains to allow a spectral window and optimize to reduce artifact. Use an angle of 60 degrees or less to measure velocities. Doppler angle should always be parallel to the vessel wall.

B. Required Images and documentation bilaterally:

Gray scale images transverse

a. Common Femoral Artery
b. Profunda Femoris Artery
c. SFA: Proximal, mid, and distal
d. Popliteal Artery: Prox, distal

Gray scale, Color and spectral doppler along the long axis of the vessel

a. Common Femoral Artery
b. Profunda Femoris Artery

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c. SFA: Prox, mid, and distal
d. Popliteal Artery: Prox, distal
e. Posterior Tibial Artery: Prox, distal
f. Peroneal Artery: Prox, distal
g. Anterior Tibial Artery: Prox, distal
h. Dorsalis Pedis Artery

ABI ratios- Ankle & Brachial systolic blood pressure should also be included

- Abnormal findings generally require additional images to document the complete extent of the abnormalities.

    a. Identifying areas of stenosis and narrowing along the vessel for spectral broadening, or turbulent flow, suspected stenosis or occlusion should include doppler waveforms and velocity measurements prox, mid and distal to site of interrogation.

    b. Evaluation of stents and or grafts, should include doppler interrogation prox, mid, and distal

Interpretation criteria for Duplex classification of peripheral artery occlusive disease: Stenosis category Peak systolic velocity (cm/s) Velocity ratio Distal artery spectral waveform			
STENOSIS	**PSV**	**Ratio**	**Waveforms**
<20%	<150 cm/s	<1.5	Triphasic(multiphasic), Normal PSV
20% to 49%	150-200	1.5-2	Triphasic(multiphasic), Normal PSV
50% to 75%	200-300	2-4	Monophasic, reduced PSV
>75%	>300	4	monophasic, reduced PSV
Occlusion	No flow, length of occlusion estimated		

Ankle Brachial Index Interpretation	
1.0-1.4	Normal
0.9-1.0	Acceptable
0.8-0.9	Some arterial disease

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0.5-0.8	Moderate disease
< 0.5	Severe disease