Procedure Name: **Lower Extremity Arterial Doppler**
Updated 4/25/2019

Indications:
Hypertension, hyperlipidemia, heart disease, PAD, smoking, intermittent claudication, nocturnal claudication, rest pain, lower extremity parathesia, unhealed wounds or ulcers, cyanotic toes, leg pain or fatigue and any other indications determined by referring physician.

General Description:
This is a survey to localize and characterize arterial disease of bilateral lower extremity arteries.

Patient Preparation:
There is no preparation for this exam.

Equipment Selection and Settings:
Parks Flo-Lab vascular system will be used for ABIs and Doppler waveform.
If duplex scanning is needed, select Arterial preset and protocol on ultrasound imaging unit and use a linear 9.0MHz transducer for most patients. The sonographer should adjust gain, depth and focal zone settings to optimize images.
Imaging Sequence:

Complete NIPS (Non-Invasive Physiologic Studies) using Parks Flo-lab unit

Apply cuffs to the ankles and upper arms to obtain ABIs.
Recommended cuff bladder size should be 20% wider than limb diameter for accurate pressure determination.

Obtain systolic pressure in each arm. Use the higher of the two arm pressures for calculating indices. Do not take a pressure in an arm or leg with a shunt or dialysis access graft. Obtain Doppler readings from posterior tibial arteries AND dorsalis pedis to calculate bilateral ABIs.

TBI should be obtained in following instances:

1. If ABI cannot be obtained
2. When specifically requested by referring physician
3. With history of wound in the foot

Select Doppler setting from the menu and obtain Doppler waveforms from at least 4 levels of each leg. Preferable locations are dorsalis pedis, posterior tibial, popliteal and common femoral.

If ABIs are normal (.90-1.3) and all waveforms are triphasic, the exam is over. No other imaging is necessary. If an ABI is abnormal (<.9 or >1.3) or any of the waveforms are biphasic or monophasic, proceed with duplex imaging.

Duplex Imaging - Bilateral

Scans are obtained in the longitudinal and transverse. Vessels listed below are evaluated for peak systolic velocity and for the presence of a triphasic waveform. Spectral broadening is noted.

Long and Transverse (Grayscale, color Doppler and spectral waveform)

1. Image patient data (demographics page)
2. Common Femoral Artery (CFA)
3. Superficial Femoral Artery (SFA) at proximal, mid and distal
4. Popliteal Artery (POP A)
5. Posterior Tibial Artery (PTA)
6. Anterior Tibial Artery (ATA)
7. Dorsalis Pedis Artery (DPA)

Angle adjusted spectral Doppler evaluation: All spectral waveforms must be angle corrected. The angle is to be 60 degrees or less and the gate adjusted to half the size of the vessel utilizing color flow. If significant stenosis is visualized, Doppler spectrum analysis should be imaged proximal, at and distal to each stenosis. Take additional grayscale and color images deemed necessary to document disease. If color flow images demonstrate a high velocity variance (color reaches the extreme level at either end of the spectrum usually either yellow white or green) then drop an angle adjusted spectral Doppler for velocity measurement at the peak of the turbulence.

Send worksheets to PACS from Flo-Lab unit with ABI and waveforms from all levels documented on worksheet. If NIPS exam was abnormal and duplex imaging was performed, document findings on Flo-Lab worksheet to be sent directly to PACS.

When completing the exam in MI, the code MUST be updated to reflect the correct code for the exam that was performed. This MUST be done before sending images and/or worksheets to PACS.

Please see this article for further information on positioning, imaging and flow of lower extremity arteries. www.ultrasoundpaedia.com/normal-leg-arteries/