Procedure Name: Venous Insufficiency

General Description:
Assessment and grading of any retrograde flow in the deep and superficial veins of the lower extremity.

Indications:
May include but not limited to leg pain of questionable etiology, chronic leg ulcers or color changes of legs, varicosities, and assessment of reflux.

Patient Position:
Patient should be scanned in standing position. If standing position is not possible, sitting or reverse Trendelenburg position is acceptable.

Equipment Selection and Settings:
A 9MHz or lower linear transducer should be used for most patients. Preprogrammed venous setting should be chosen and adjust gain, depth and focal zone settings to optimize images.

Vessels Evaluation:
- Image demographics page
- Scan CFV through popliteal without/with compression to evaluate for evidence of acute or chronic DVT.
  - Take transverse without/with compression image of Common Femoral Vein, Femoral Vein and popliteal vein. If any positive signs, take additional images.
- Long GSV proximal
  - Transverse without/with compression for patency
  - Transverse diameter measurement
  - Long color with distal augmentation
  - Record time of reflux
- Long GSV mid
  - Transverse without/with compression for patency
  - Transverse diameter measurement
  - Long color with distal augmentation
  - Record time of reflux
- Long GSV distal (at level of knee or just below)
  - Transverse without/with compression for patency
  - Transverse diameter measurement
  - Long color with distal augmentation
  - Record time of reflux
- If GSV is normal, locate varicosities and perforators.
  - Long perforator with color and distal augmentation to evaluate for incompetence. Competent perforators have valves that only allow flow towards the deep system. An incompetent valve will allow retrograde flow.
- Locate branches of GSV (anterior lateral accessory and posterior medial accessory branches)
  - Transverse diameter measurement
  - Long color with distal augmentation
  - Record time of reflux
• LSV upper calf
  o Transverse diameter measurement
  o Long color with distal augmentation
  o Record time of reflux

Criteria for Venous insufficiency:
• Competent valves: 0 to < 0.5 sec
• Incompetent valves:
  Mild 0.5 to < 1 sec
  Moderate 1 to < 2 sec
  Severe > 2 sec

Criteria for Incompetent Perforator Veins:
• Reverse flow, or flow from deep to superficial is abnormal