Diagnosis and Management of Peripheral Arterial Disease (PAD)

DATE: SEP 11, 2025

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Optimizing the **evaluation** of PAD and CLTI

- What is PAD and CLTI?
  - Peripheral Arterial Disease
    - ABI <0.90
  - Chronic Limb-Threatening Ischemia
    - Presence of objectively documented PAD and any of the following
      - Ischemic rest pain with confirmatory hemodynamic studies
        - ABI <0.40
        - Ankle pressure < 50 mmHg
        - Toe pressure < 30 mmHg
        - TcPO2 < 20 mmHg
      - Diabetic foot ulcer (DFU) or any lower limb ulceration for at least 2 weeks
      - Gangrene involving any portion of the lower limb or foot

Optimizing the **evaluation** of PAD CLTI

- Why should we care about PAD and/or CLTI?
  - High morbidity
  - Significant mortality
  - Risk of Limb loss
  - Source of Pain
  - Diminished health-related quality of life (HRQL)
- What is not PAD/CLTI?
  - Venous ulcers
  - Traumatic injury
  - Acute limb ischemia, Embolic
  - Nonatherosclerotic etiology (vasculitis, Buerger's disease, radiation arteritis)

CLINICAL PRACTICE GUIDELINE DOCUMENT

Global vascular guidelines on the management of chronic limb-threatening ischemia

Check for updates

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Joint guidelines of the Society for Vascular Surgery, European Society for Vascular Surgery, and World Federation of Vascular Societies

Endorsed by the American Podiatric Medical Association, British Cardiovascular Society, British Society for Endovascular Therapy, British Society of Interventional Radiology, Circulation Foundation, College of Podiatry, Society of Interventional Radiology, Society for Vascular Nursing, the Society for Vascular Technology of Great Britain and Ireland, and the Vascular Society of Great Britain and Ireland

Conte MS, Bradbury AW, Kolh P, White JV, Dick F, Fitridge R, Mills JL, Ricco JB, Suresh KR, Murad MH; GVG Writing Group.
Global vascular guidelines on the management of chronic limb-threatening ischemia.
J Vasc Surg. 2019 Jun;69(6S):3S-125S.e40.

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Patient History

- Acuity of current presentation
  - Previous wounds
- Claudication symptoms
  - Ambulatory status
  - Functional status
- Rest pain
- Comorbidities/cardiovascular risk factors
  - Smoking – cessation efforts
  - Diabetes – Hgb a1c
  - Hypertension
  - Dyslipidemia
  - Coronary artery disease
  - Congestive heart failure
  - Prior vascular interventions
  - Chronic kidney disease/ ESRD

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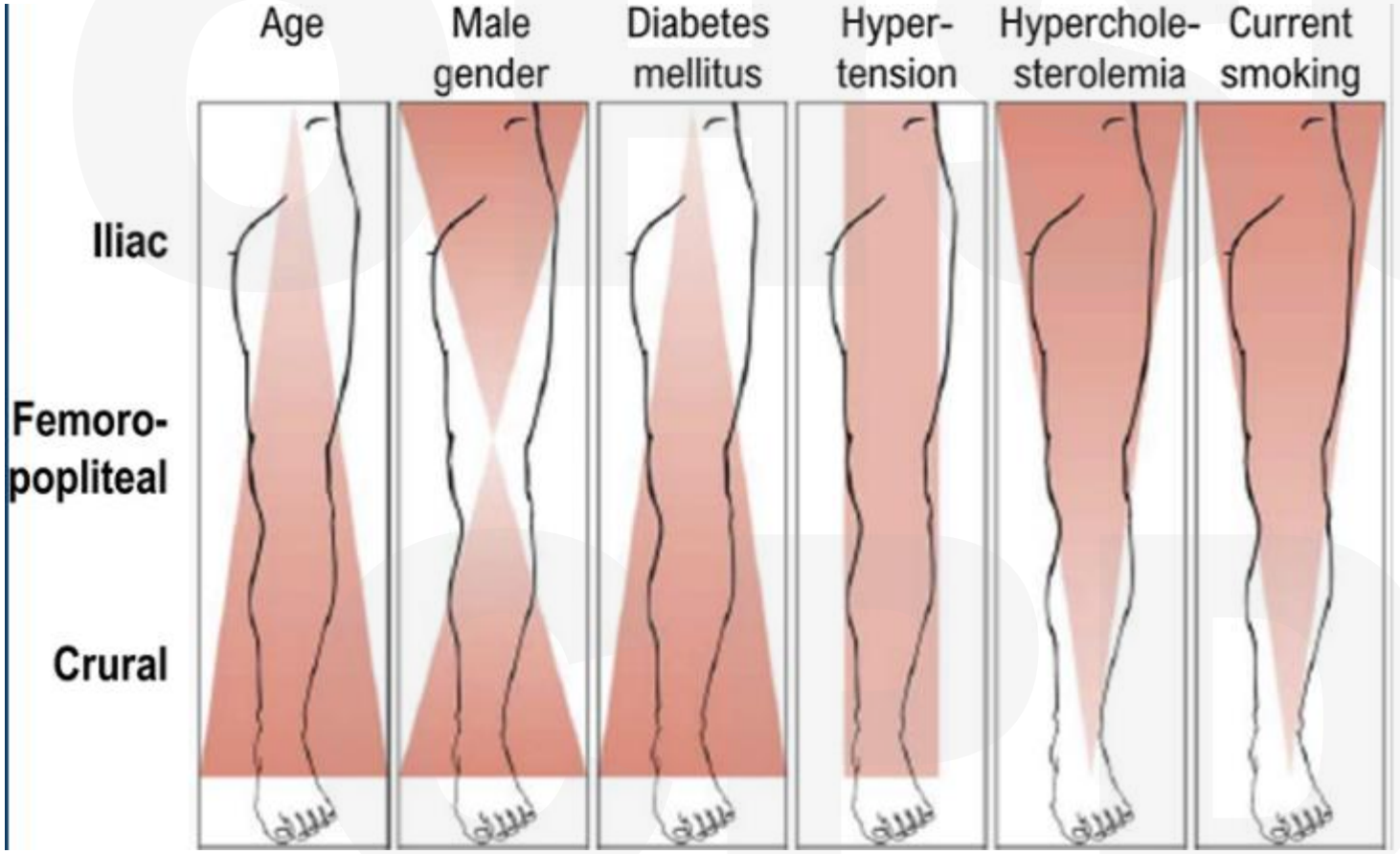
Cardiovascular risk factors



Diehm N, Shang A, Silvestro A, Do DD, Dick F, Schmidli J, et al. Association of cardiovascular risk factors with pattern of lower limb atherosclerosis in 2659 patients undergoing angioplasty. Eur J Vasc Endovasc Surg 2006;31:59–63.

Best Medical Therapy

- Antithrombotic therapy
  - Aspirin, clopidogrel, ticagrelor
  - Consider low-dose ASA and rivaroxaban
- Lipid-lowering therapy
  - Moderate to high-intensity statin to reduce all cause cardiovascular mortality
- Antihypertensive therapy
  - SBP < 140 mmHg
  - DBP < 90 mmHg
- Glycemic control
  - Hemoglobin A1c <7%
  - Metformin as primary agent in patient with type 2 DM and CLTI
- Smoking cessation
  - Pharmacotherapy
  - Counseling
  - Behavior modification therapy
- Dietary counseling
- Exercise
- Preventative foot care

Laboratory Evaluation

- CBC
  - Leukocytosis
  - Anemia
- CMP
  - CKD
  - Hepatic insufficiency
- Hgb A1c
- Nutrition labs
  - Albumin, prealbumin

Physical Exam

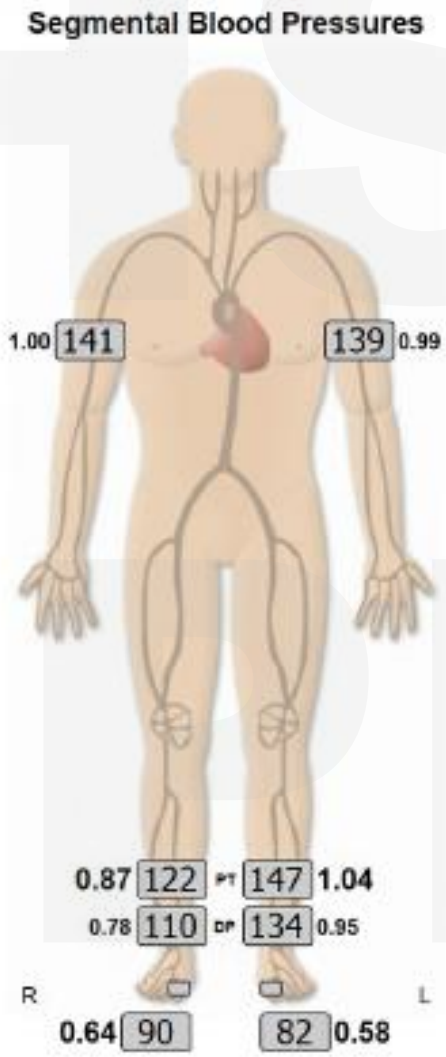
- Pulse exam
  - Radial pulses and bilateral brachial pressures
  - Aortic pulsation- concomitant aneurysm disease
  - Femoral pulses – for possible AIOD
  - Popliteal pulses
  - Pedal pulses/doppler signals
- Wound pictures and measurements
  - Assess for infection
- Frailty and Functional status

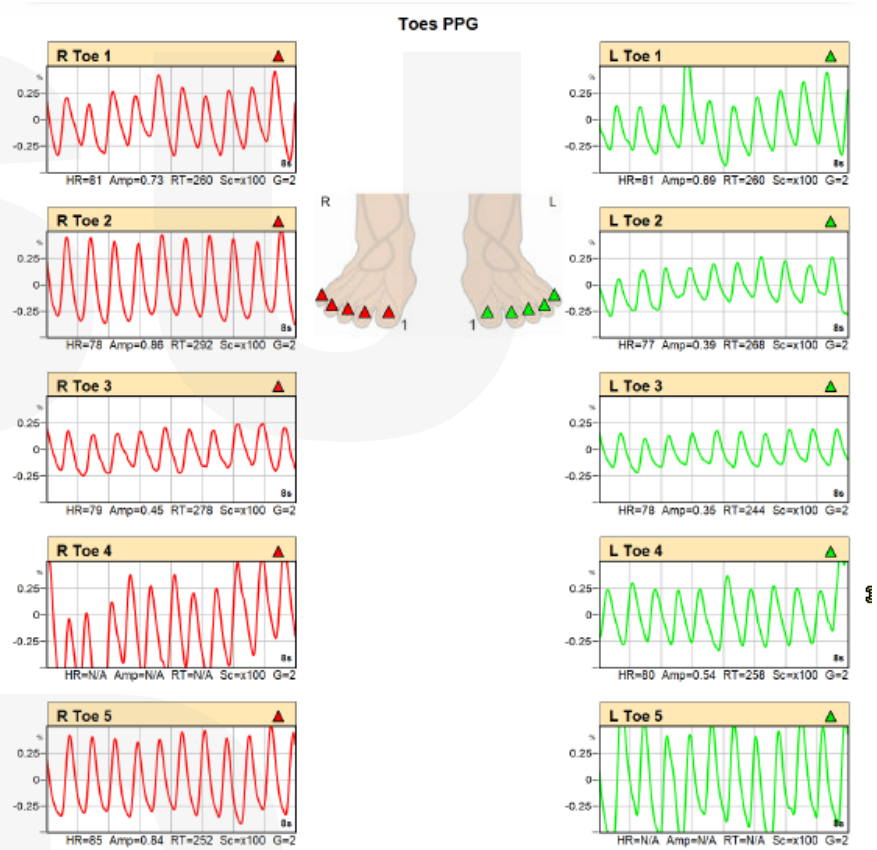
Vascular Lab Evaluation

- Ankle pressures and ABI
- Toe pressures and TBI
- PPGs
- Laser doppler/SPP
- TcPO2

- Arterial duplex

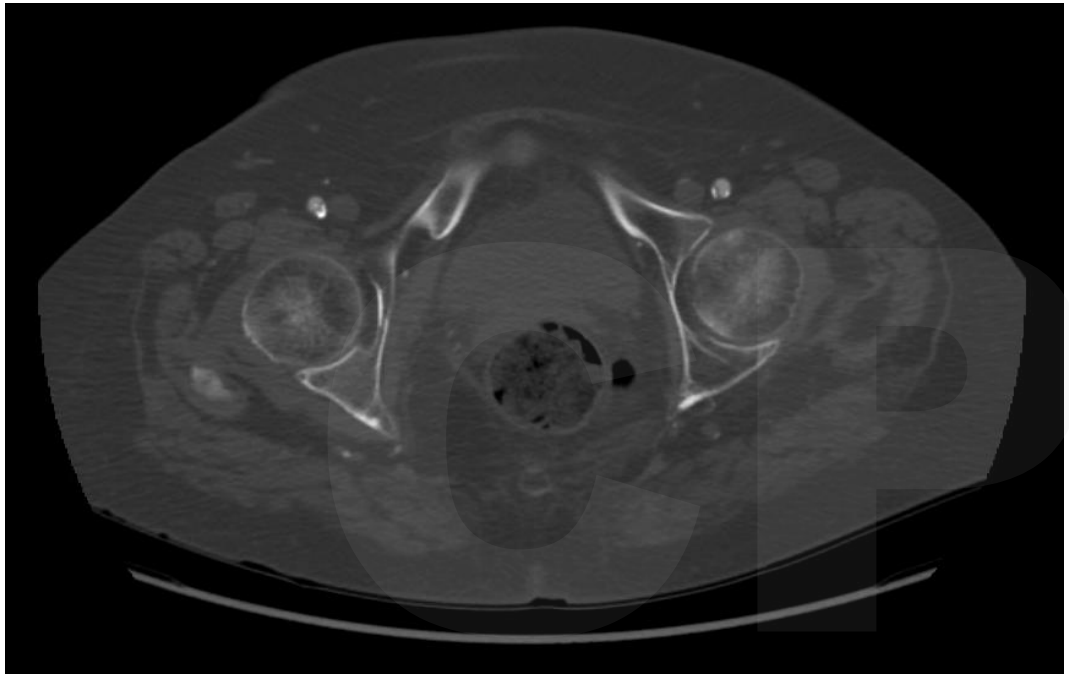
- Vein mapping

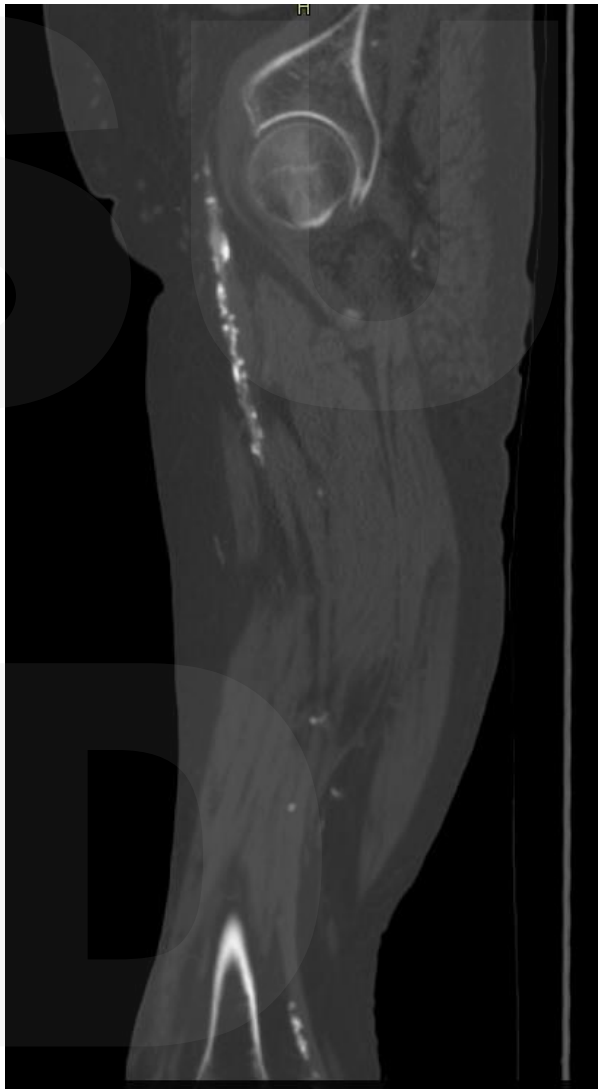




Axial Imaging

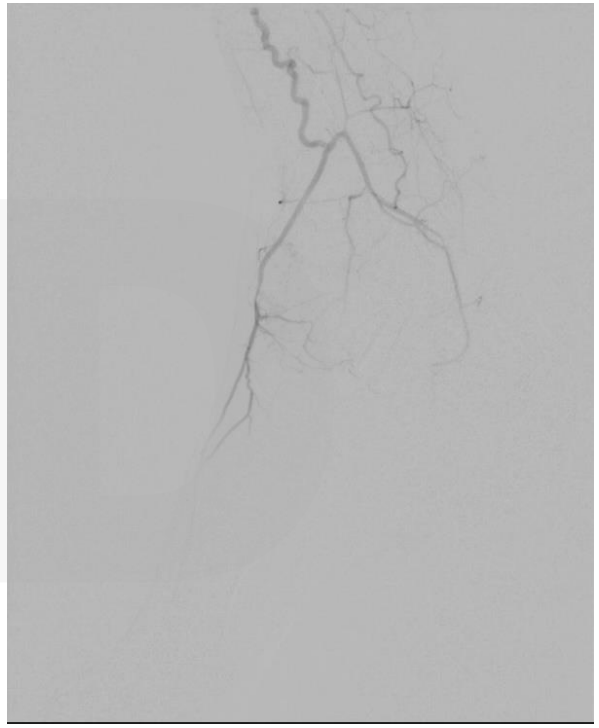
- CTA
- MRA





Angiography

- Diagnostic digital subtraction angiography (DSA)
  - High quality angiographic imaging with dedicated views of ankle and foot arteries to permit anatomic staging and procedural planning



SOCIETY FOR VASCULAR SURGERY® DOCUMENT

The Society for Vascular Surgery Lower Extremity Threatened Limb Classification System: Risk stratification based on Wound, Ischemia, and foot Infection (WIfI)

Joseph L. Mills, Sr, MD,[a] Michael S. Conte, MD,[b] David G. Armstrong, DPM, MD, PhD,[a] Frank B. Pomposelli, MD,[c] Andres Schanzer, MD,[d] Anton N. Sidawy, MD, MPH,[e] and George Andros, MD,[f] on behalf of the Society for Vascular Surgery Lower Extremity Guidelines Committee, *Tucson, Ariz; San Francisco and Van Nuys, Calif; Brighton and Worcester, Mass; and Washington, D.C.*

- Wound, Ischemia, and foot Infection (WIfI)

Mills JL Sr, Conte MS, Armstrong DG, Pomposelli FB, Schanzer A, Sidawy AN, Andros G; Society for Vascular Surgery Lower Extremity Guidelines Committee. The Society for Vascular Surgery Lower Extremity Threatened Limb Classification System: risk stratification based on wound, ischemia, and foot infection (WIfI). J Vasc Surg. 2014 Jan;59(1):220-34.e1-2.

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Conclusion

- History and Physical exam to assess cardiovascular risk factors and distribution of disease, candidacy for revascularization
- Best Medical Therapy to optimize risk factors
  - Smoking cessation
  - Diabetes, lipid, HTN management
- Noninvasive imaging for surgical planning and lesion characterization
- Angiography prior to revascularization
  - Vein mapping prior to angiography
- Control infection before revascularization

Thank you