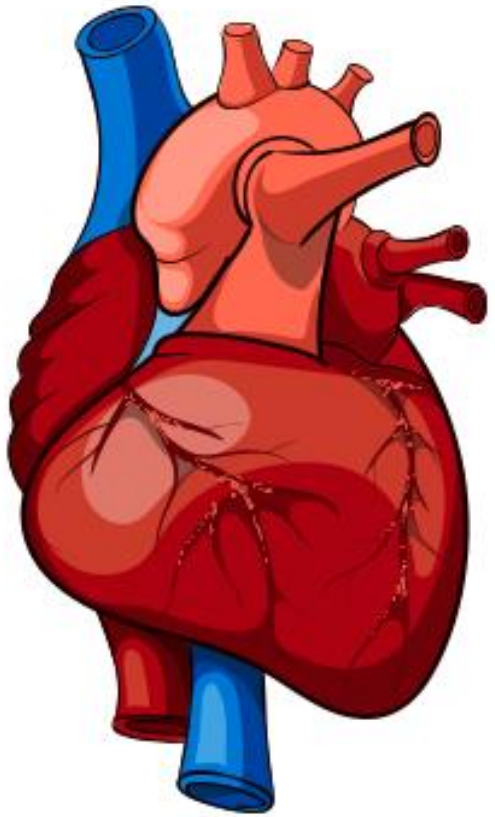
What should pharmacists know about optimizing care for patients with peripheral artery disease and venous insufficiency?

Angelisse J. Rivera-González PharmD, BCGP

Saturday August 26th, 2023

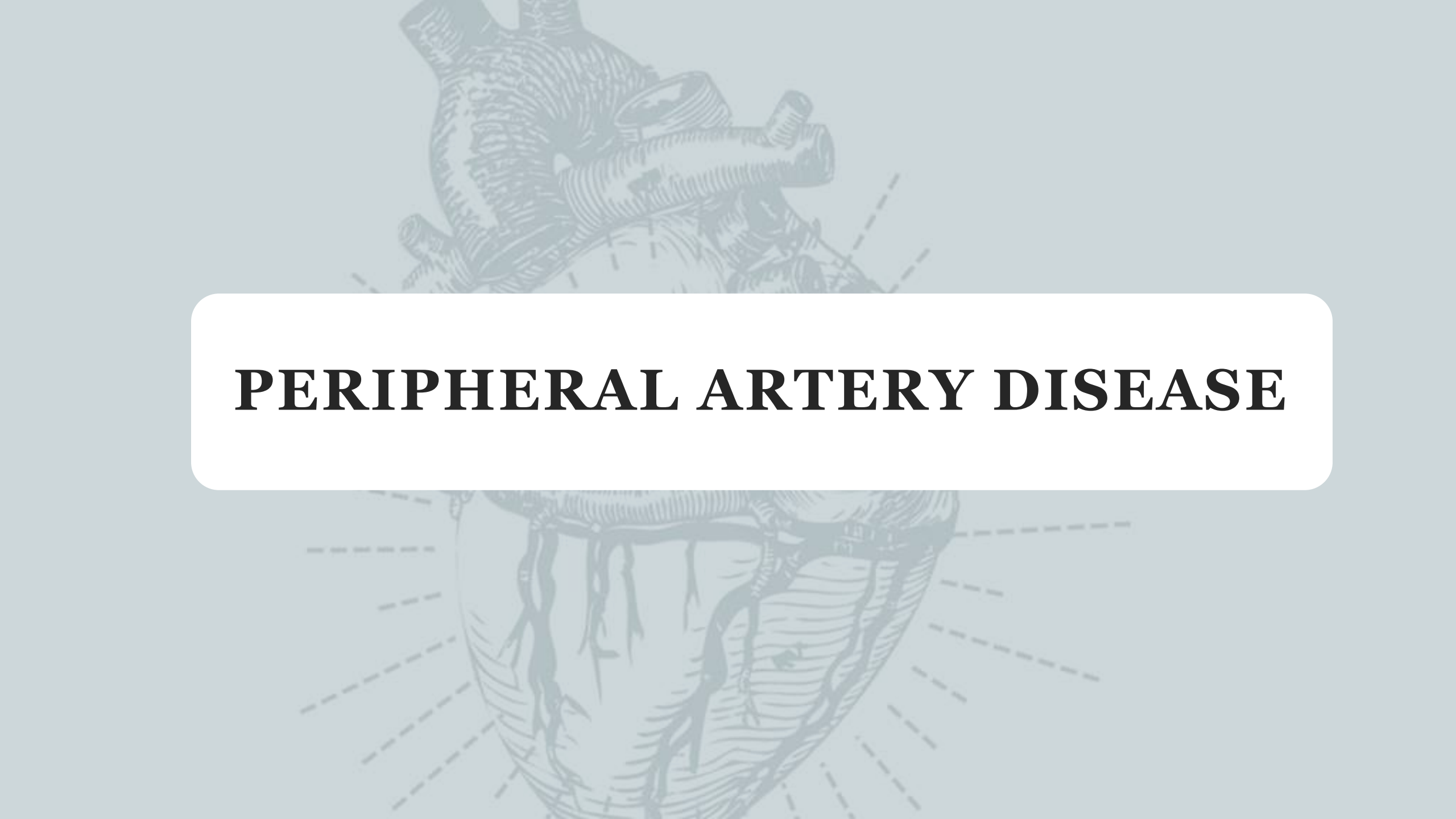


Disclosures

Dr. Angelisse J. Rivera González, faculty for this CE activity, has no financial relationships nor conflicts of interest to disclose relevant to this activity.

Objectives

Review	peripheral artery disease (PAD) and chronic venous insufficiency (CVI), etiology, epidemiology risk factors, clinical presentation and complications.
Discuss	the antithrombotic, statins and symptomatic PAD regimen recommended for affected patients.
Outline	treatment options for chronic venous insufficiency.
List	non-pharmacological management alternatives for patients with PAD and venous insufficiency.
Present	supplements that are categorized as possibly effective for PAD and venous insufficiency.
Illustrate	the role of pharmacists in optimizing the care of patients with PAD and chronic venous insufficiency.



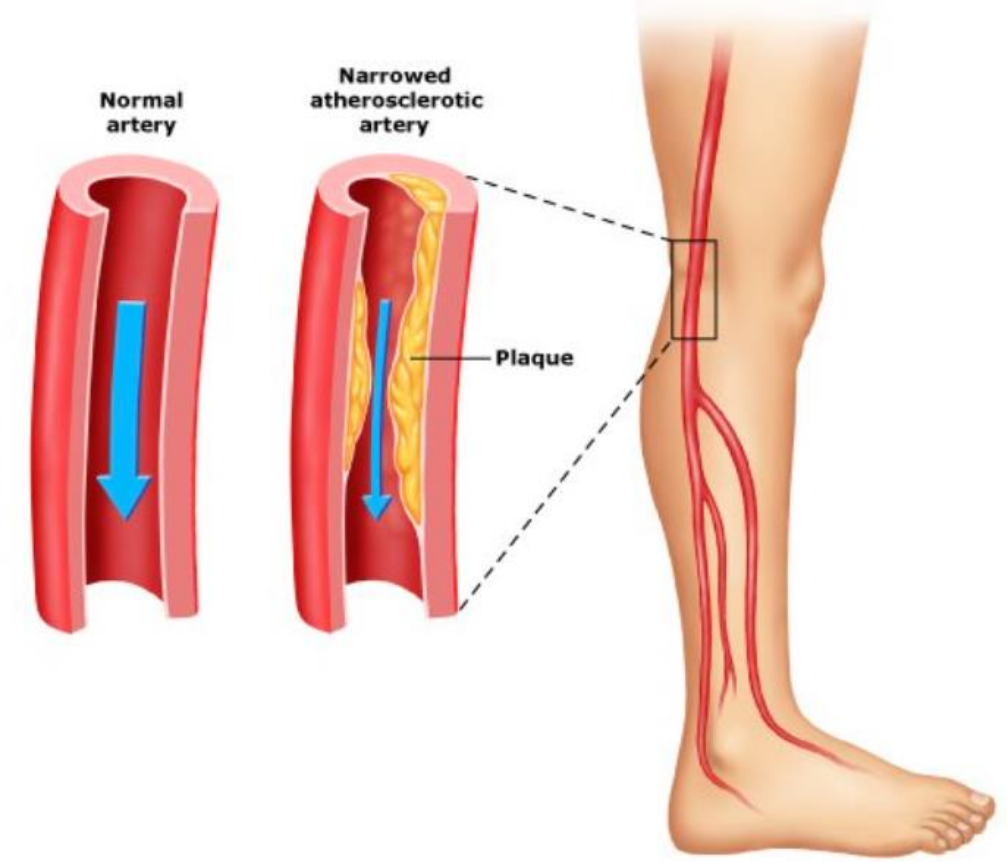
PERIPHERAL ARTERY DISEASE

PAD

- Epidemiology
- Etiology
- Risk factors
- Clinical presentation
- Diagnosis
- Complications

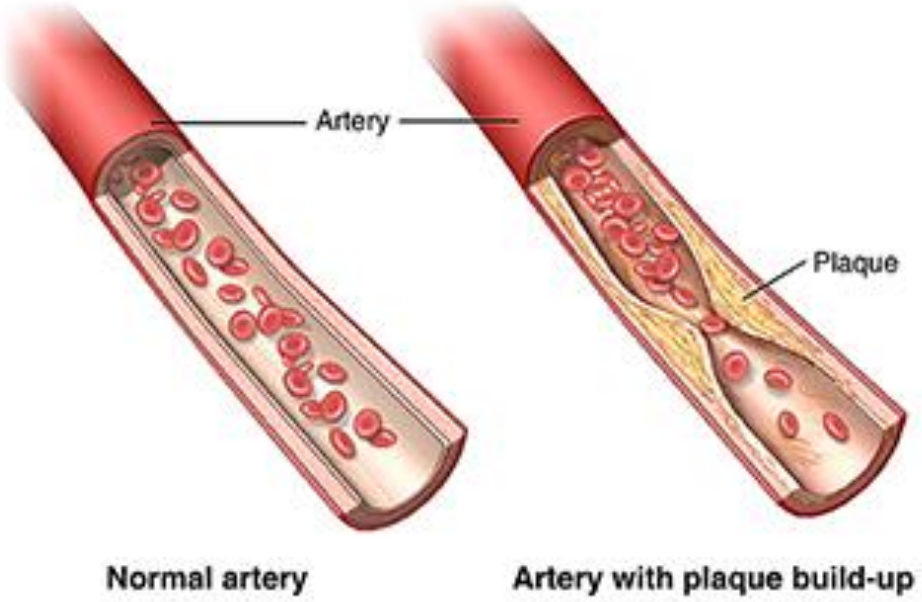
What is PAD?

- Peripheral Artery Disease **(PAD)** is a circulatory condition in which peripheral arteries are narrowed, which reduces blood flow.
  - It may occur in any organ part, but the lower limbs are more commonly affected.



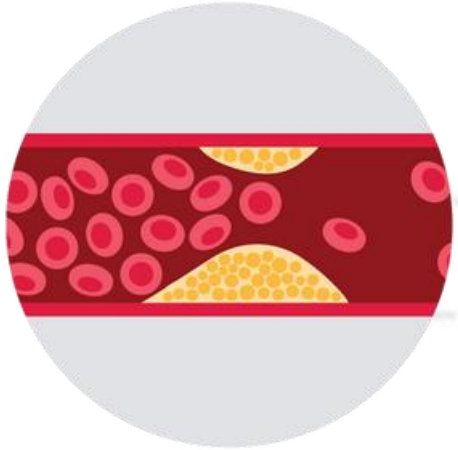
Etiology

- Major cause is atherosclerosis: a systemic condition which causes a thickening or hardening of the arteries caused by a buildup of plaque in the inner lining of an artery.
- Plaque is made up of deposits such as fatty substances, cholesterol and calcium, As it builds up in the arteries, the artery walls become thickened and stiff.

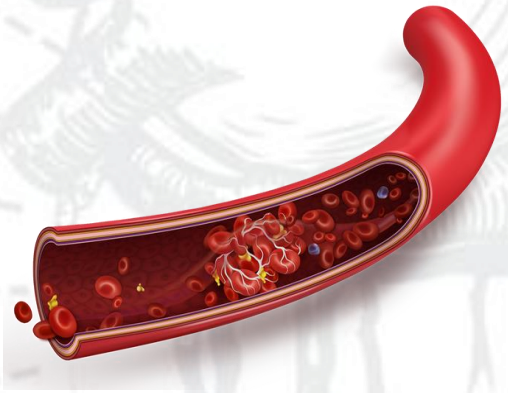


Etiology

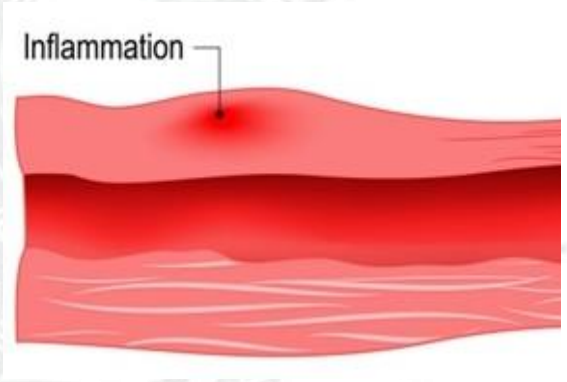
Atherosclerosis



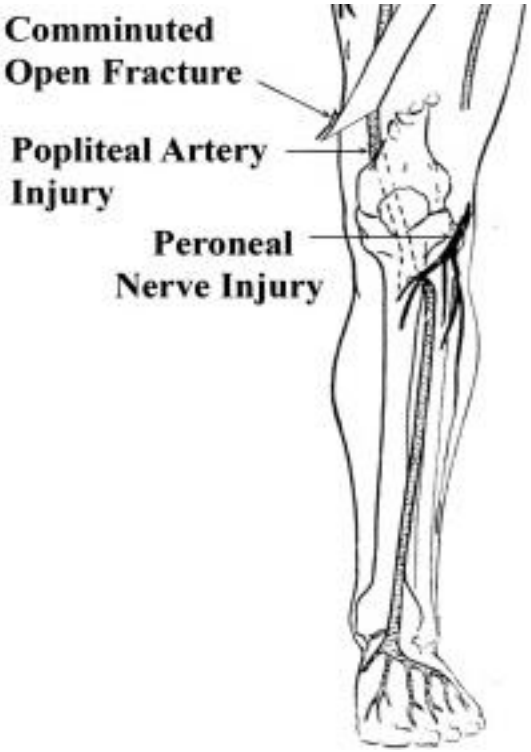
Thrombosis



Blood vessel inflammation



Injury



Epidemiology

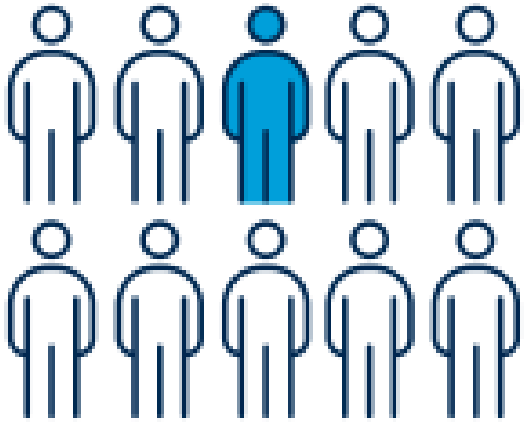
PAD is the third leading cause of atherosclerotic morbidity, following CAD and stroke.

Between the years 2000 and 2010, the number of persons living with PAD defined as an ABI ≤0.9, increased by 13.1% in high-income countries and 28.7% in low- and middle-income countries.

The prevalence of PAD in the US at ≥40 years of age is estimated to be ≈7%, corresponding to **8.5 million adults.**

Data limitations: these studies were conducted in the late 1990s or in the beginning of 2000.

Epidemiology

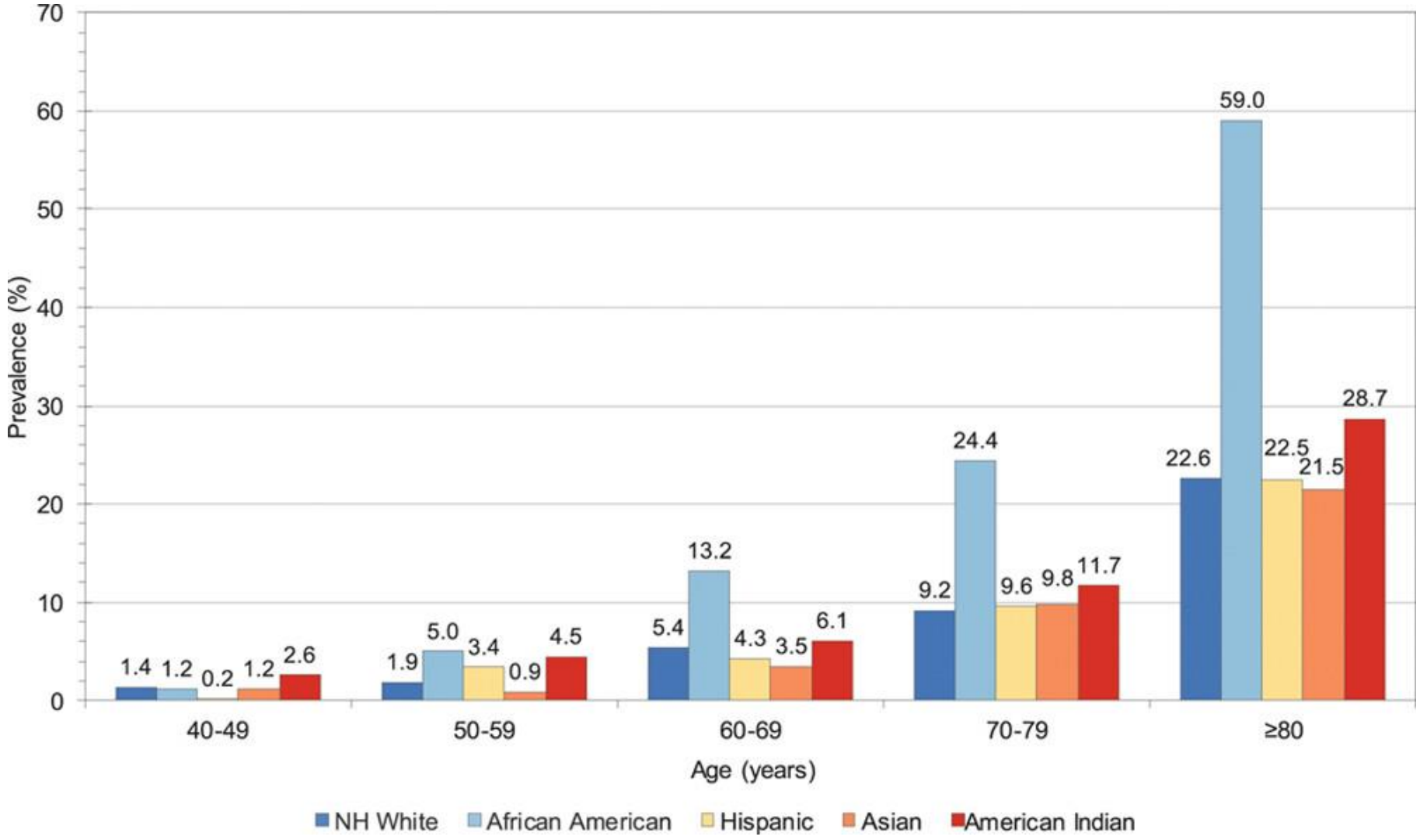


1 out of 10
people over age 40
have PAD in the U.S.

The prevalence of PAD in the US at ≥40 years of age is estimated to be ≈7%, corresponding to **8.5 million adults.**

American College of Cardiologists. (2023, June 7). *What is Pad?*. CardioSmart. https://www.cardiosmart.org/assets/fact-sheet/what-is-peripheral-artery-disease-pad

Estimates of prevalence of PAD in males by age and ethnicity, US, 2000.



NH= non-Hispanic

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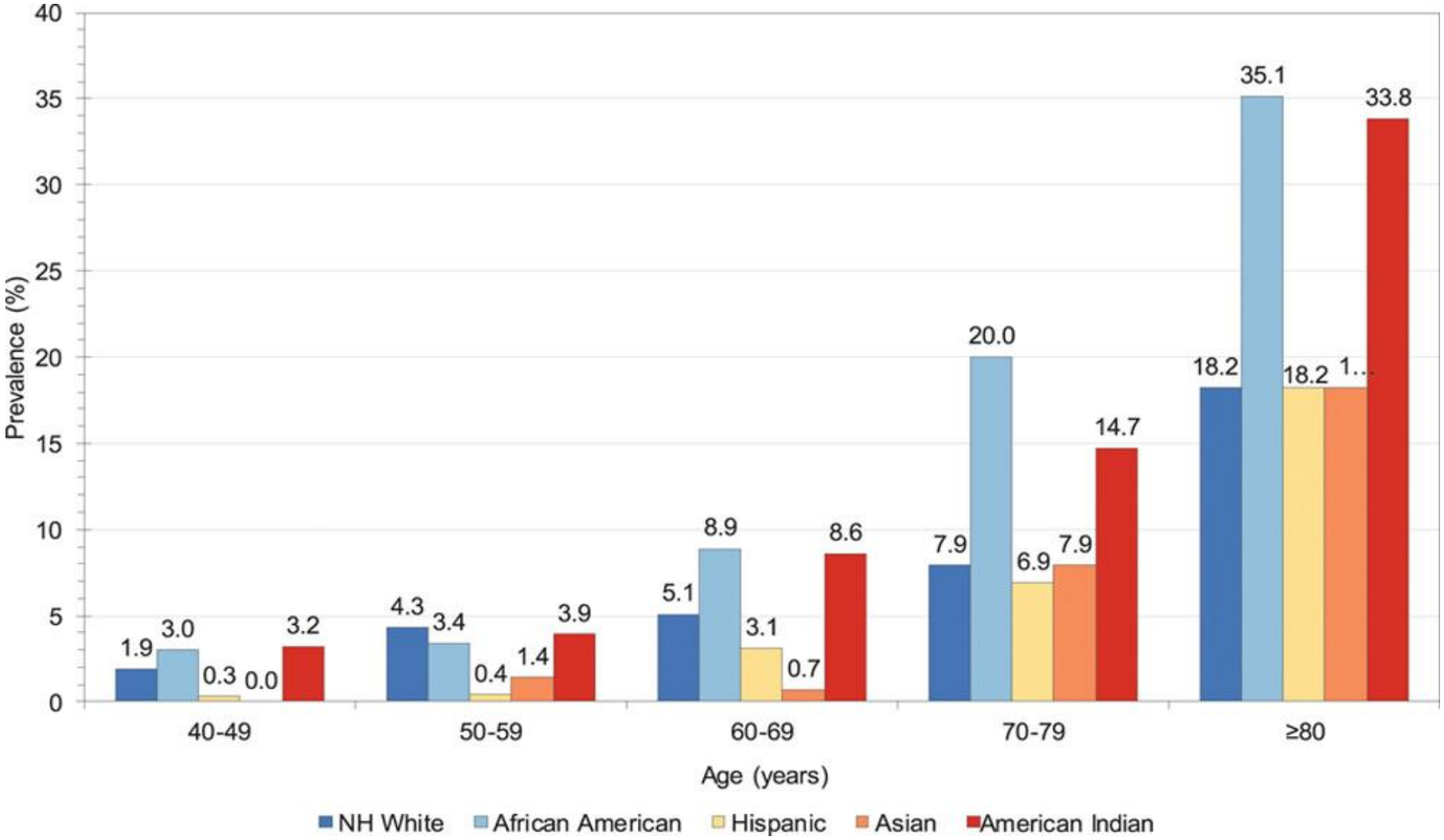
Salim S. Virani. Circulation. Heart Disease and Stroke Statistics—2021 Update, Volume: 143, Issue: 8, Pages: e254-e743, DOI: (10.1161/CIR.0000000000000950)

Estimates of prevalence of PAD in females by age and ethnicity, US, 2000.



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Salim S. Virani. Circulation. Heart Disease and Stroke Statistics—2021 Update, Volume: 143, Issue: 8, Pages: e254-e743, DOI: (10.1161/CIR.0000000000000950)

Epidemiology

Prevalence in females and males varies by age and race/ethnicity.

Prevalence increases with age, beginning after age 40, approximately doubling per decade.

It is a growing clinical problem in the US and other developed countries due to an aging population.

Risk factors

Main

- Smoking
- Hypertension
- Hyperlipidemia
- Increasing age
- Diabetes

Other possible:

- CKD
- Sedentary lifestyle
- Inflammation
- HTN in pregnancy

Risk factors

Main

- Smoking
- Hypertension
- Hyperlipidemia
- Increasing age
- Diabetes

- Appears to be a **stronger risk factor for PAD** compared with CAD.
- Smokers with PAD have shorter life spans and progress more frequently to CLI and amputation as compared to non-smokers.

PAD Awareness

- Awareness of PAD, its risk factors, and complications is relatively **LOW.**
- It is frequently underdiagnosed and undertreated.
- In a US-based survey of 2,500 adults ≥50 years of age in 2006,
  - **25%** of individuals expressed familiarity with **PAD**
  - **67.1%** with **CAD**
  - **73.9%** with **stroke**

- Therefore, the AHA states that screening for PAD with ABI in individuals without a history or physical features suggestive of PAD is reasonable in:

AHA= American Heart Association

Patients at Increased Risk of PAD

- Age ≥65 years
- Age 50-64 y, with risk factors for atherosclerosis (eg, DM, hx of smoking, HLD, HTN) or family hx of PAD
- Age <50 y, with DM and 1 additional risk factor for atherosclerosis
- Individuals with known atherosclerotic disease in another vascular bed (eg, coronary, carotid, subclavian, renal, mesenteric artery stenosis, or AAA)

DM= diabetes mellitus; hx=history; HLD= hyperlipidemia; HTN= hypertension; AAA= abdominal aortic aneurysm

Examination Findings Suggestive of PAD

History

- Claudication
- Impaired walking function
- Ischemic rest pain
- Other non-joint-related exertional lower extremity symptoms

Physical Exam

- Abnormal lower extremity pulse exam
- Lower extremity gangrene
- Non healing lower extremity wound
- Other lower extremity physical findings
- Vascular bruit

Clinical Presentation

- Signs and symptoms of PAD are variable, depending on the severity of the disease.
- Majority of patients with confirmed PAD do not have typical claudication but have other atypical leg symptoms or are asymptomatic.

Clinical Presentation

- Signs and symptoms of PAD are variable, depending on the severity of the disease.
- What do some patients feel?

Peripheral artery disease. CardioSmart - American College of Cardiologists. (2018). https://www.cardiosmart.org/assets/infographic/peripheral-artery-disease

Clinical Presentation

- Reduced blood supply to the extremities may lead to:

				
Leg pain or cramping in the calf, buttock, hip, or thigh	Cuts or sores that don't heal well	Cold or tingling feet or toes	Not much leg hair	Pale or blue-colored skin

Clinical Presentation

- Reduced blood supply to the extremities may lead to:

Leg pain or cramping in the calf, buttock, hip, or thigh

The classic symptom of PAD:
intermittent claudication (IC).

- **Pain** during physical activity (such as walking) that is relieved with rest, typically withing 10 minutes.

Diagnosis

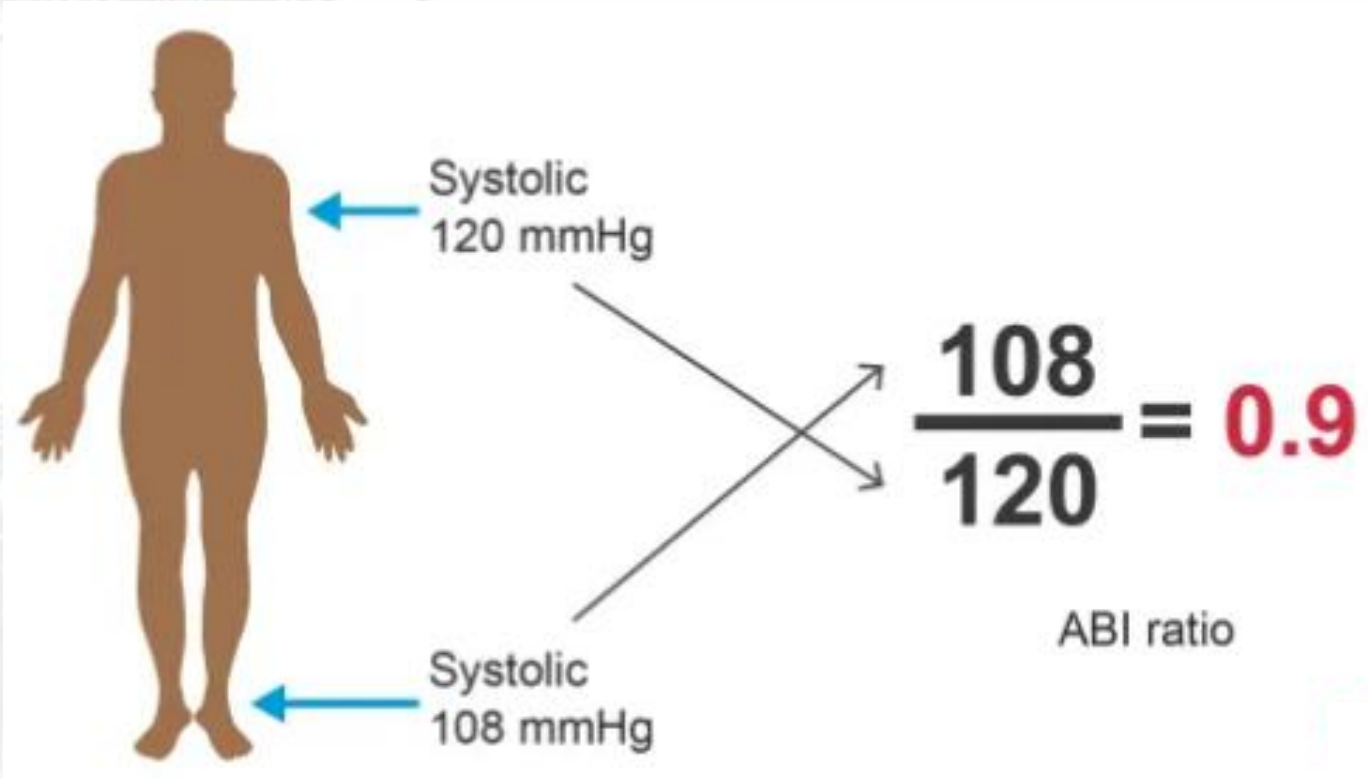
- History or physical exam findings suggestive of PAD need to be confirmed with diagnostic testing, with the ankle-brachial index (ABI) as the initial test.

- It is a noninvasive test performed in the supine position by using a Doppler device, that measures:
  - SBP at the arms → brachial arteries
  - SBP at the ankles → dorsalis pedis and posterior tibial arteries

Diagnosis

- The ABI is calculated by dividing the highest of the ankle pressures by the highest of the right or left arm SBP.

- Results should be reported as:
  - Abnormal (ABI≤0.90)
  - Borderline (ABI 0.91–0.99)
  - Normal (1.00–1.40)
  - Noncompressible (ABI>1.40)



Complications

Gangrene

Tissue death due to insufficient blood supply. Gangrene can lead to the development of blackened and necrotic tissue.

Amputation

Amputation of the affected limb may be necessary to prevent the spread of infection and sepsis.

Critical Limb Ischemia (CLI)

Advanced stage with severe obstruction of the arteries. Leads to chronic pain at rest, non-healing ulcers, and tissue loss.
It increases the risk of amputation and a poor prognosis.

CV events

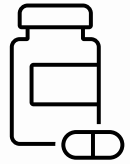
PAD is a marker of systemic atherosclerosis. Therefore, it increases risk of other CV events, including MI and stroke.

2016 AHA/ACC Lower Extremity PAD Guideline

American College of Cardiology. 2016 AHA/ACC guideline on the management of patients with Lower Extremity Peripheral Artery Disease: Executive Summary. https://www.jacc.org/doi/10.1016/j.jacc.2016.11.008

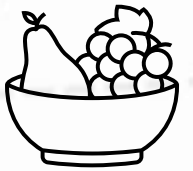
Comprehensive Program which includes:

- Medical Therapy



- Structured Exercise

- Lifestyle Modifications



- Smoking Cessation

GDMT=Guideline-Directed Medical Therapy

Goals of GDMT

1. Decrease cardiovascular ischemic events
2. Decrease limb-related events
3. Improve functional status

GDMT=Guideline-Directed Medical Therapy

Medical Therapy

- Antiplatelet Agents
- Statins
- Antihypertensive Agents
- Oral Anticoagulants
- Cilostazol
- Pentoxifylline
- Glycemic Control

Antiplatelet Agents

Treatment	Patient description	Recommendation
Antiplatelet therapy with aspirin alone (75-325mg/ day) clopidogrel alone (75mg/day)	Patient with symptomatic PAD.	Is recommended to reduce MI, stroke and vascular death
Antiplatelet therapy	Asymptomatic patients with PAD (ABI ≤ 0.90)	Is reasonable to reduce the risk of MI, stroke, or vascular death.
Antiplatelet therapy	Asymptomatic patients with borderline ABI (0.91-0.9)	Usefulness to reduce the risk of MI, stroke, or vascular death is uncertain.
Dual antiplatelet therapy (aspirin & clopidogrel)	Patients with symptomatic PAD	Effectiveness to reduce the risk of CV ischemic events is not well established.
Dual antiplatelet therapy (aspirin & clopidogrel)	patients with symptomatic PAD	may be reasonable to reduce the risk of limb-related events after lower extremity revascularization

Statins

Recommendation
Treatment with a statin medication is indicated for all patients with PAD

Antihypertensive Agents

Treatment	Patient description	Recommendation
Antihypertensive therapy	Patients with HTN and PAD	Should be administered to reduce the risk of MI, stroke, heart failure, and CV death.
Angiotensin-converting enzyme inhibitors (ACEi) and angiotensin-receptor blockers (ARBs)	Patients with HTN and PAD	Can be effective to reduce the risk of CV ischemic events.

Oral Anticoagulants

Treatment	Recommendation
Oral anticoagulants	The usefulness to improve patency after lower extremity autogenous vein or prosthetic bypass is uncertain.
Oral anticoagulants	**Should not be used** to reduce the risk of cardiovascular ischemic events in patients with PAD.

Cilostazol, Pentoxifylline, Chelation Therapy

Treatment	Recommendation
Cilostazol	Is an effective therapy to improve symptoms and increase walking distance in patients with claudication.
Pentoxifylline	Is not effective for treatment of claudication.
Chelation therapy (e.g., ethylenediaminetetraacetic acid)	Is not beneficial for treatment of claudication.

Glycemic Control

Recommendation
Management of diabetes mellitus in the patient with PAD should be coordinated between members of the healthcare team.
Glycemic control can be beneficial for patients with CLI to reduce limb-related outcomes.

NON-PHARMACOLOGICAL MANAGEMENT FOR PAD

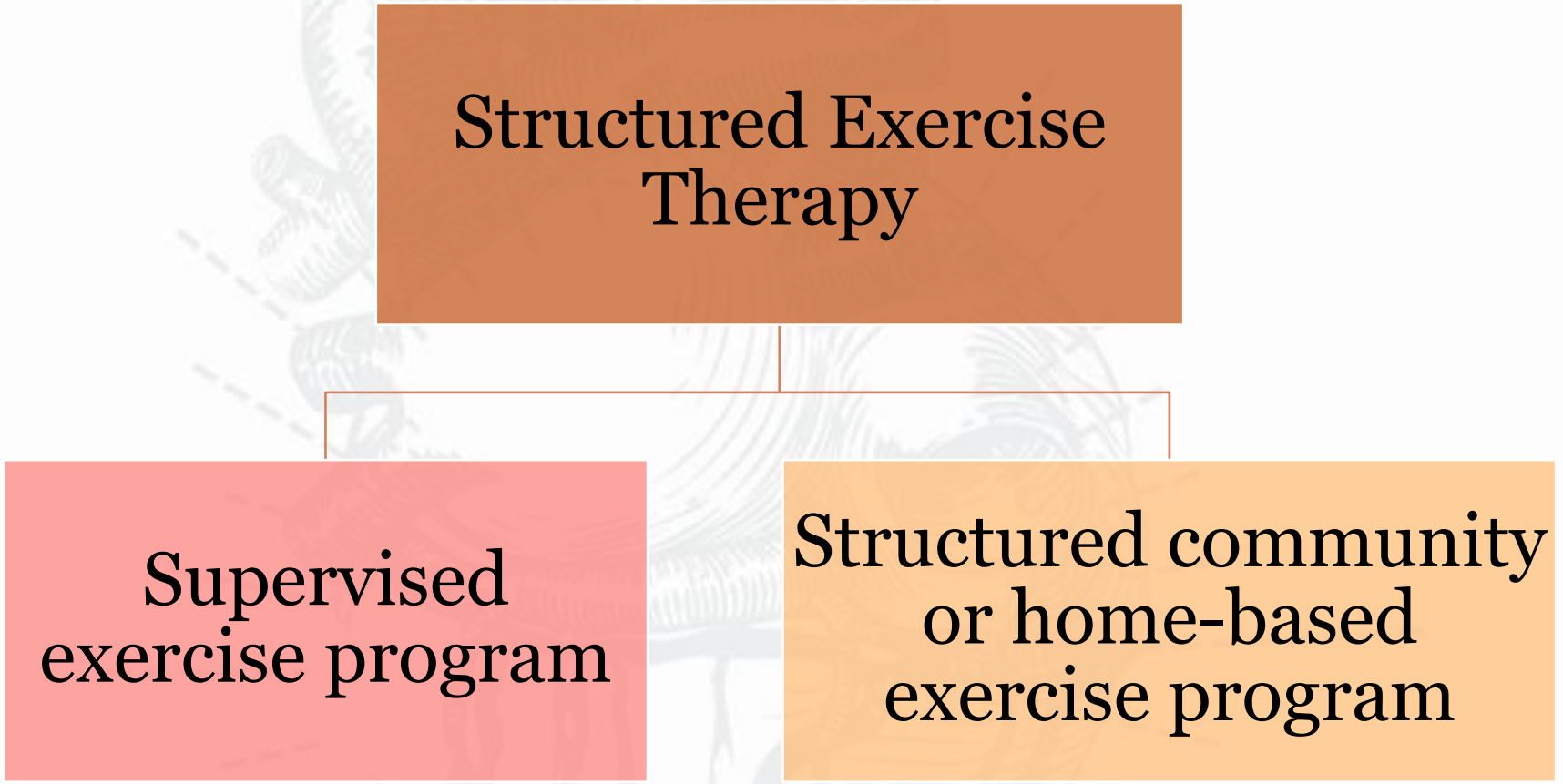
American College of Cardiology. 2016 AHA/ACC guideline on the management of patients with Lower Extremity Peripheral Artery Disease: Executive Summary. https://www.jacc.org/doi/10.1016/j.jacc.2016.11.008

Smoking Cessation

Patient Description	Recommendation
Patients with PAD who smoke cigarettes or use other forms of tobacco	Should be advised at every visit to quit
Patients with PAD who smoke cigarettes	Should be assisted in developing a plan for quitting that includes pharmacotherapy (i.e., varenicline, bupropion, and/or nicotine replacement therapy) and/or referral to a smoking cessation program.
Patients with PAD	Should avoid exposure to environmental tobacco smoke at work, at home, and in public places.

Structured Exercise Therapy

Patient Description	Recommendation
Patients with claudication	A supervised exercise program is recommended to improve functional status and QoL and to reduce leg symptoms.
Patients with claudication	A supervised exercise program should be discussed as a treatment option before revascularization.
Patients with PAD	A structured community- or home-based exercise program with behavioral change techniques can be beneficial to improve walking ability and functional status.
Patients with claudication	Alternative strategies of exercise therapy, including upper-body ergometry, cycling, and pain-free or low-intensity walking that avoids moderate-to-maximum claudication while walking, can be beneficial to improve walking ability and functional status.


Structured Exercise Therapy
Supervised exercise program
Structured community or home-based exercise program

Supervised exercise program

Takes place in a hospital or outpatient facility.

Intermittent walking exercise is the treatment modality.

Can be standalone or within a cardiac rehab program.

Is directly supervised by qualified healthcare provider

Training is performed for a min. of 30–45 min/ session; sessions are at least 3 times/wk for a minimum of 12 wk.

Training involves intermittent bouts of walking to mod-to-max claudication, alternating with periods of rest.

Warm-up and cool-down periods precede and follow each session of walking

Structured community or home-based exercise program

Takes place in the personal setting of the patient rather than in a clinical setting

Is self-directed with guidance of healthcare providers.

Healthcare providers prescribe an exercise regimen similar to that of a supervised program..

Patient counseling ensures understanding of how to begin and maintain the program and how to progress the difficulty of the walking (by increasing distance or speed).

May incorporate behavioral change techniques, such as health coaching or use of activity monitors.

Diet

The 2016 AHA/ACC Guideline Task Force identified the following evidence gap and future direction for PAD-related research:

"Studies to investigate the role of dietary intervention, in addition to statin therapy, to improve outcome and modify the natural history of PAD."

American College of Cardiology. 2016 AHA/ACC guideline on the management of patients with Lower Extremity Peripheral Artery Disease: Executive Summary. https://www.jacc.org/doi/10.1016/j.jacc.2016.11.008

Recommendations for minimizing tissue loss in patients with and at risk for PAD:

Should be counseled about self–foot examination and healthy foot behaviors.

Fast diagnosis and treatment of foot infection are recommended to avoid amputation

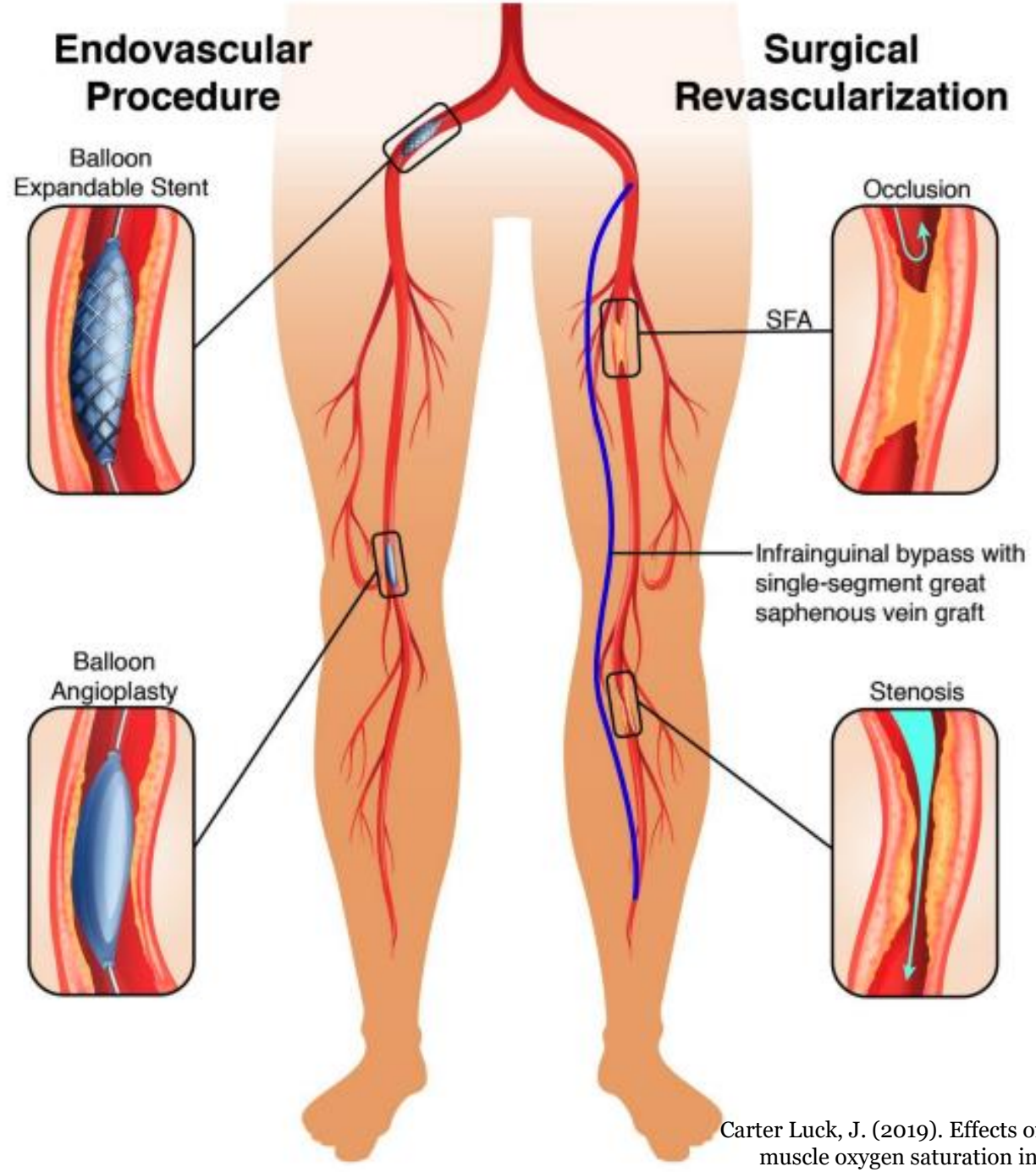
Biannual foot examination by a clinician is reasonable for patients with PAD and diabetes mellitus.

REVASCULARIZATION FOR CLAUDICATION

American College of Cardiology. 2016 AHA/ACC guideline on the management of patients with Lower Extremity Peripheral Artery Disease: Executive Summary. https://www.jacc.org/doi/10.1016/j.jacc.2016.11.008

Revascularization

- A reasonable treatment option for patients with lifestyle-limiting claudication with an inadequate response to GDMT.
- These procedures aim to **restore blood flow** in order to improve claudication symptoms and functional status and consequently, quality of life (QOL).
- There are **two main types** of revascularization procedures:
  - Endovascular interventions (minimally invasive)
  - Open surgical procedures



Carter Luck, J. (2019). Effects of peripheral revascularization on blood pressure and calf muscle oxygen saturation inPAD. https://core.ac.uk/download/pdf/345088588.pdf

Revascularization

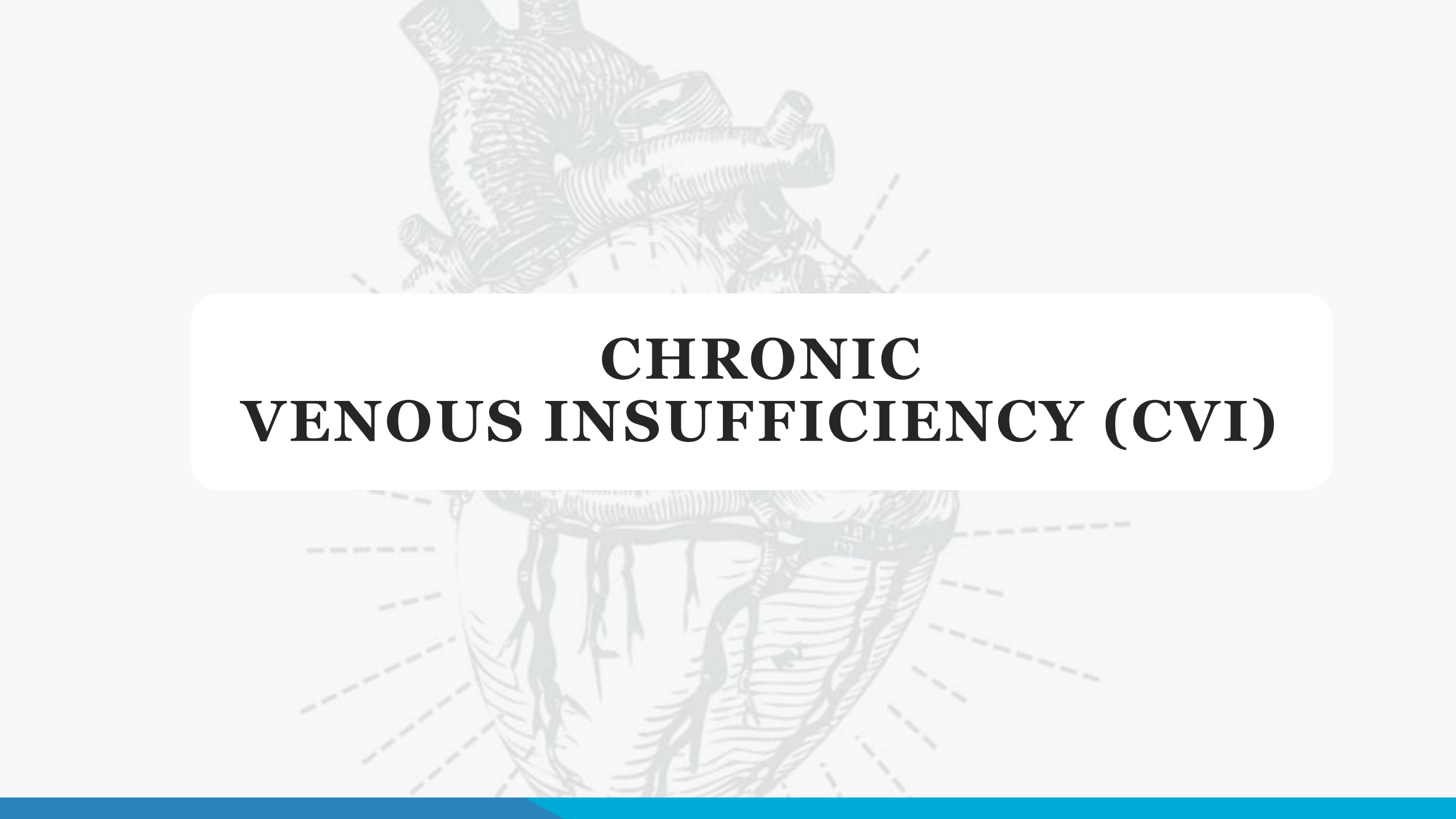
Endovascular Interventions

- Percutaneous Transluminal Angioplasty (PTA)
- Atherectomy
- Stenting

Open Surgical Procedures

- Bypass Surgery
- Endarterectomy
- Thrombectomy/ Embolectomy

Society for Vascular Surgery. (2021). Peripheral Arterial Disease (PAD).



CHRONIC VENOUS INSUFFICIENCY (CVI)

What is CVI?

Lower extremity VI is a condition where the normal one-way return of venous blood back to the heart has been disrupted.

Thin valves in the peripheral veins normally prevent retrograde flow of blood.

Damage to the valves makes it harder for blood in the legs to return to the heart.

Instead, it flows backward, which is known as venous reflux.

CVI causes blood to accumulate in the leg veins, leading to venous hypertension.

What is CVI?

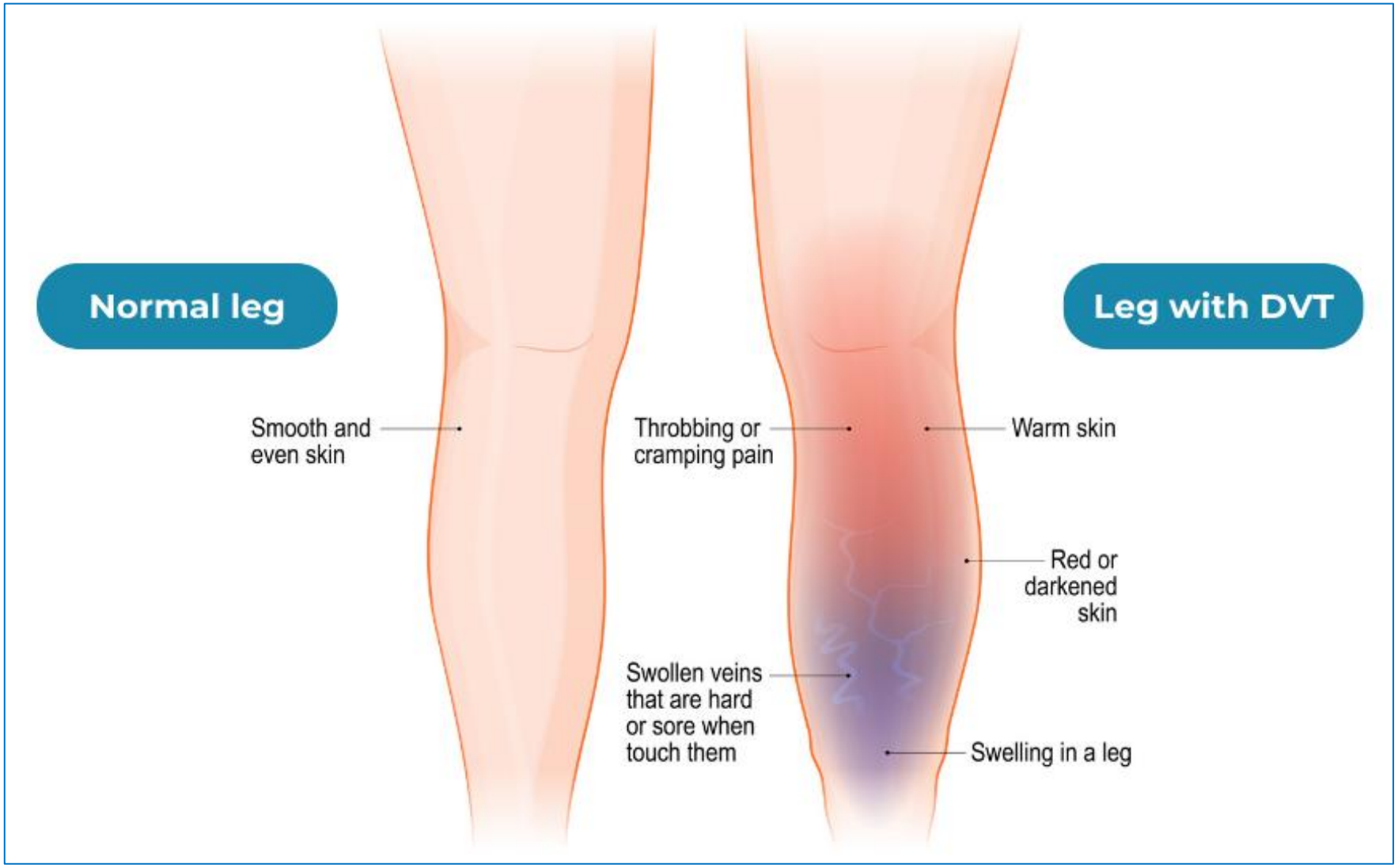
Healthy Veins

Damaged Veins

Etiology

Congenital	Primary	Secondary
• Malformations in leg veins since birth. • Example: person born without valves in leg veins.	• Changes in leg veins that prevent them from working properly. • Example: veins may get too wide, preventing valves from closing fully.	• Other medical issues that may damage leg veins. • Example: deep vein thrombosis (DVT).

DVT



What is a DVT?. The Vascular and Endovascular Clinic. (2023). https://vascularclinic.sg/conditions-managed/deep-vein-thrombosis/

Epidemiology

- An estimated 6 to 7 million people within the US have an existing diagnosis of advanced venous disease and meet diagnostic criteria for CVI.
- Results across studies suggest that in the general population between 1% to 17% of men and 1% to 40% of women may experience CVI.
- The risk increases the older you get.
- Overall, CVI affects about 1 in 20 adults.

Patel SK, Surowiec SM. Venous Insufficiency. [Updated 2022 Aug 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430975/

Epidemiology

Symptoms associated with venous disease (leg pain, swelling, night cramps, skin changes, etc.) have been a topic of interest due to its link to decreased QOL.

The Venous Insufficiency Epidemiological and Economical Study (VEINS) showed that for the most severe cases of venous disease, QOL scores were worse than individuals suffering from chronic lung disease, back pain, and arthritis.

Patel SK, Surowiec SM. Venous Insufficiency. [Updated 2022 Aug 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430975/

Risk factors

- Advanced age
- Female gender
- Hx of DVT
- Hypertension
- Family history of varicose veins
- Obesity
- Pregnancy (hydrostatic and hormonal effects)
- Leg injury

Signs and Symptoms

Persistent ambulatory venous HTN that may cause:

- pain
- edema
- skin changes
- ulcerations

More advanced manifestations:

- hyperpigmentation
- venous eczema
- lipodermatosclerosis
- atrophie blanche
- healed or active ulcers

Clinical manifestations

A. Extensive varicose veins involving the thigh and leg.

B. Hyperpigmentation and severe lipodermatosclerosis with leg edema.
   - Notice healed ulcers in the gaiter region of the medial leg.

American Heart Association. (2014). Chronic venous insufficiency | Circulation - AHA/ASA Journals. https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.113.006898

Clinical manifestations

C. Medial malleolar venous ulcers.

- Notice concomitant eczema and lipodermatosclerotic (subcutaneous tissue fibrosis) skin.

C

Diagnosis

- The diagnosis of CVI is predominately clinical, initially consisting of history and physical examination.
- The CEAP Classification scoring system is used to classify the severity of venous disease and describes contributing pathology.

CEAP Classification of Chronic Venous Disease			
Clinical (C)	Etiologic (E)	Anatomic (A)	Pathophysiologic (P)

American Heart Association. (2014). Chronic venous insufficiency | Circulation - AHA/ASA Journals. https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.113.006898

Diagnosis

Clinical (C)	Etiologic (E)	Anatomic (A)	Pathophysiologic (P)
C_0 No visible sign of venous disease	E_C Congenital (eg, Klippel-Trenaunay syndrome)	A_s Superficial	P_r Reflux
C_1 Telangiectases or reticular veins	E_P Primary	A_D Deep	P_o Obstruction, thrombosis
C_2 Varicose veins	E_S Secondary (eg, post-thrombotic syndrome, trauma)	A_P Perforator	$P_{r,o}$ Reflux and obstruction
C_3 Edema	E_N No venous cause identified	A_N No venous location identified	P_n No venous pathophysiology
C_{4a} Pigmentation or Eczema			
C_{4b} Lipodermatosclerosis or atrophie blanche			
C_5 Healed ulcer			
C_6 Active ulcer			

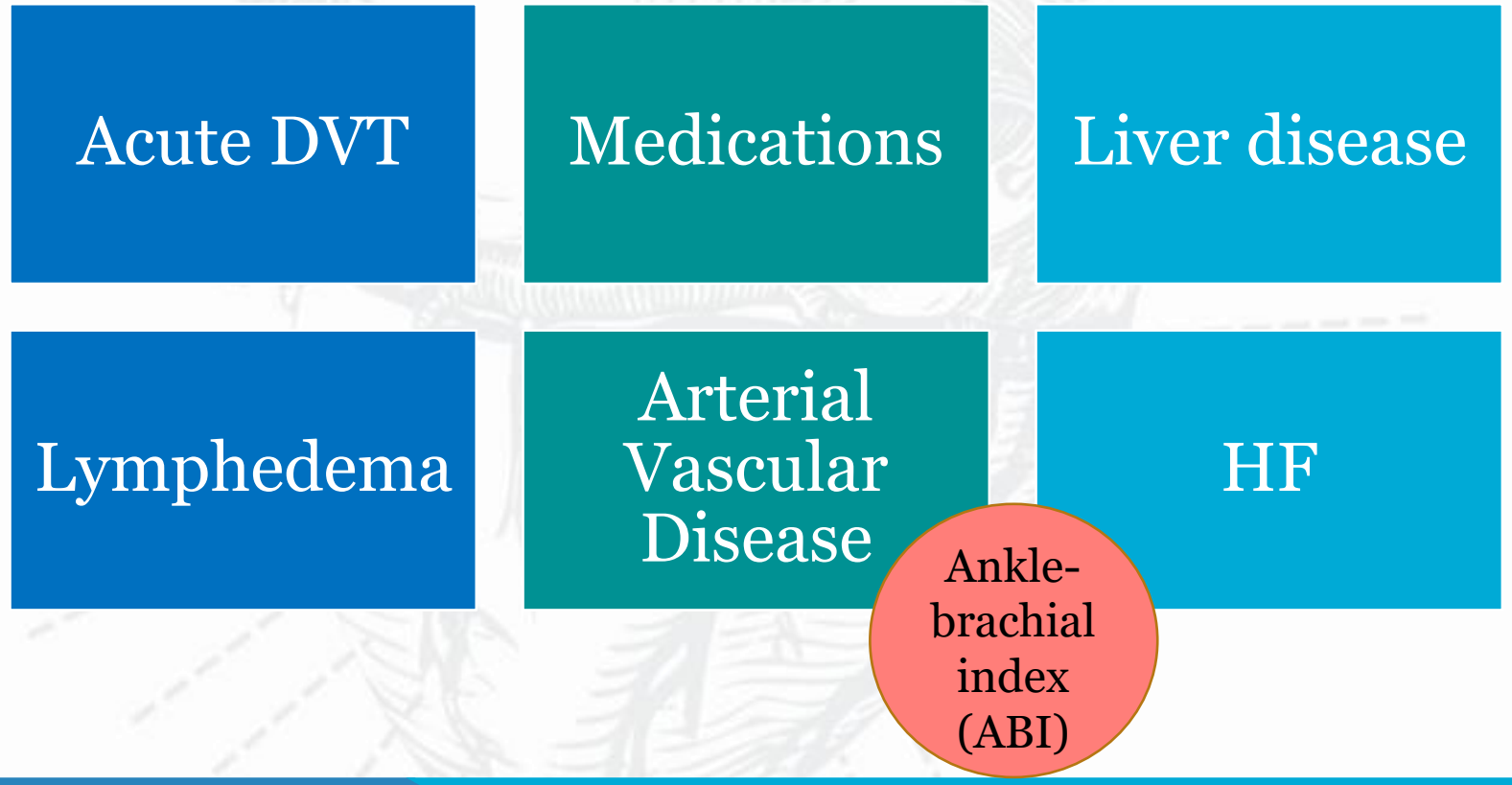
Diagnosis

- Venous clinical severity score: developed to complement the CEAP classification and further define the severity of CVI.
- Consists of 10 attributes, with 4 grades:
  - Absent= 0
  - Mild = 1
  - Moderate = 2
  - Severe = 3

Pain	Induration
Varicose Veins	Ulcer number
Venous edema	Ulcer duration
Skin pigmentation	Ulcer size
Inflammation	Compressive therapy

Differential diagnosis

- The main purpose of the history and physical exam is to make sure the patient symptoms are related to venous disease rather than other causes, such as:



Differential diagnosis

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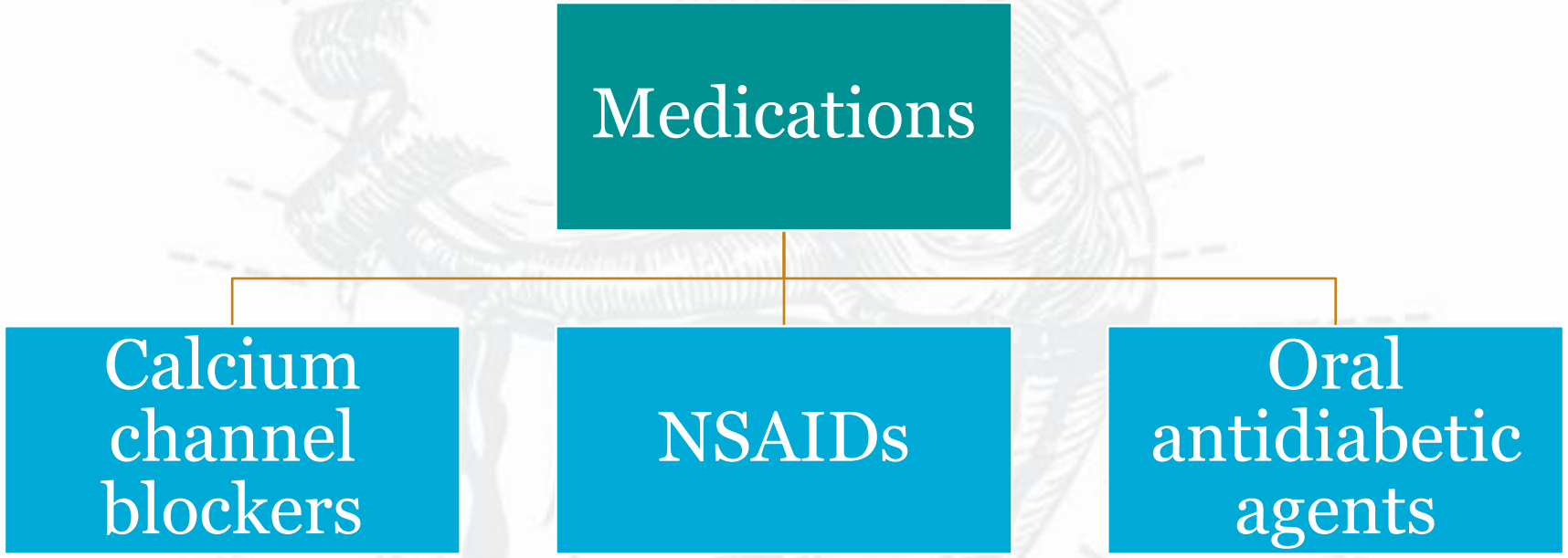
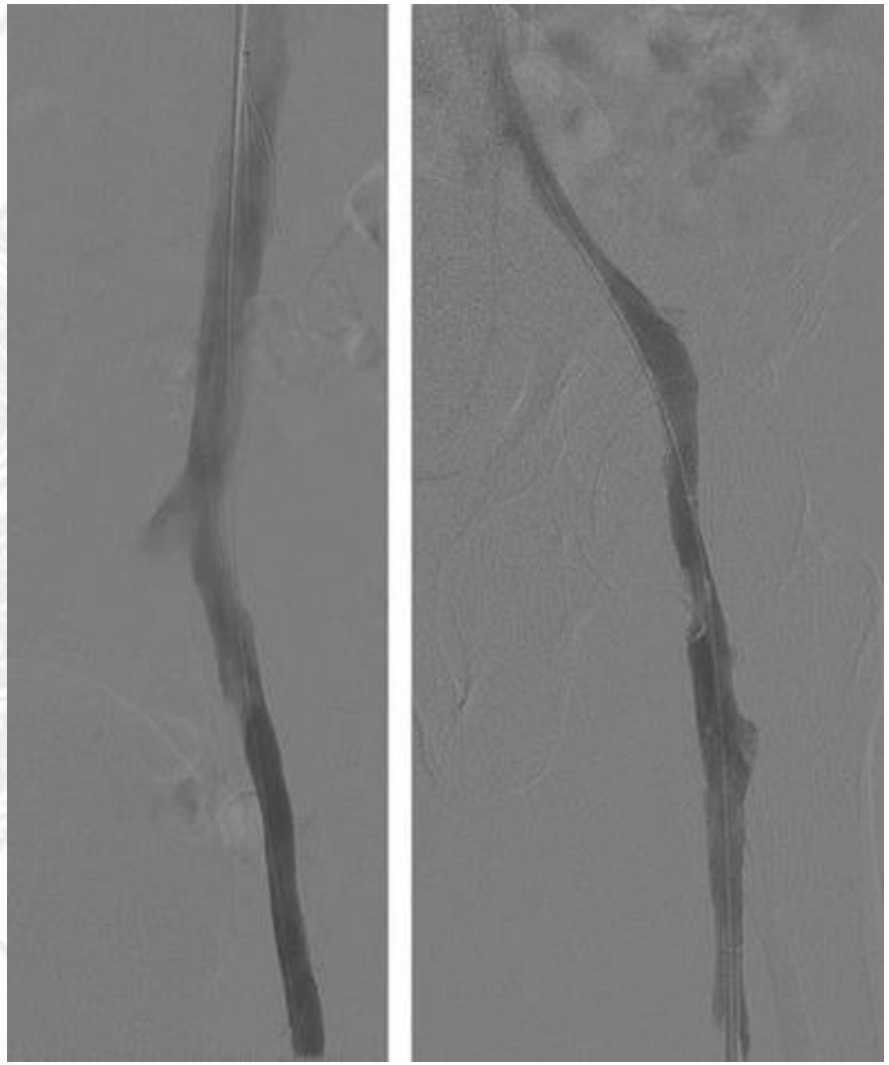


Noninvasive Testing

- **Venous duplex ultrasound imaging**: the most common and recommended technique used to confirm the diagnosis of CVI and assess its etiology.
- **Air plethysmography (APG):** can measure reflux, obstruction, and muscle pump dysfunction.
- **Computed Tomographic or Magnetic Resonance Venography:** useful to evaluate more proximal veins to assess for intrinsic obstruction or extrinsic compression.

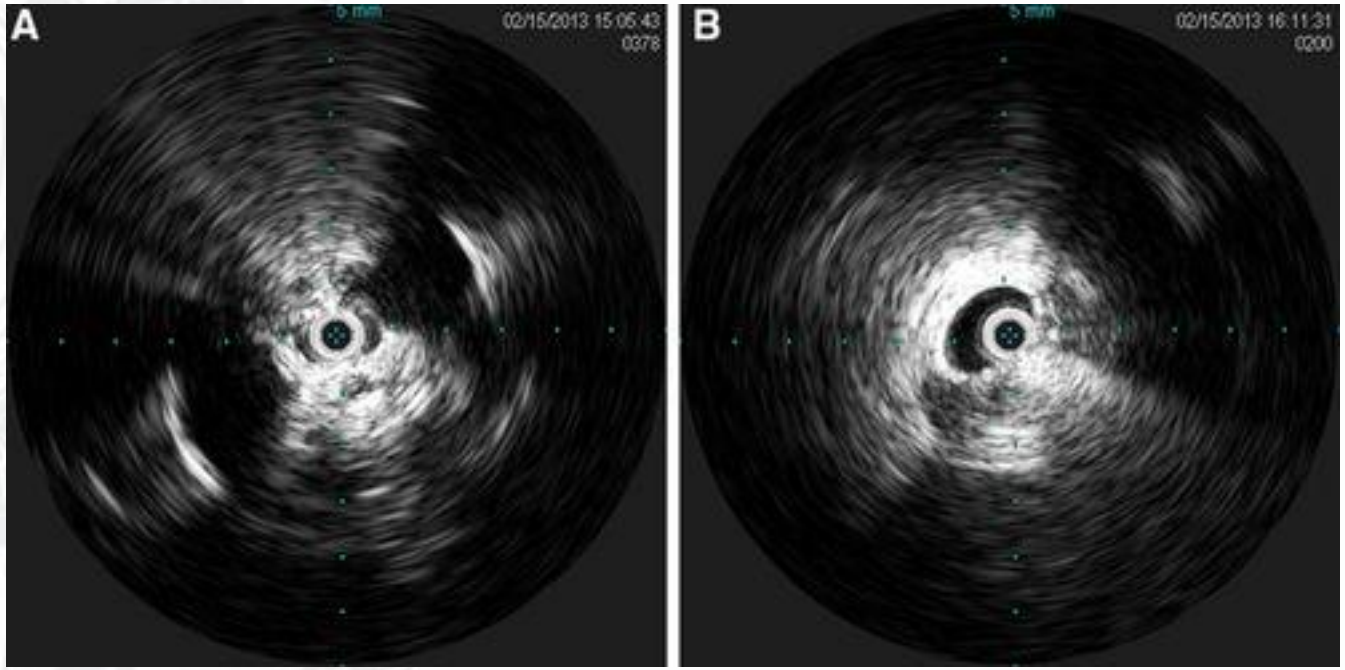
Invasive Testing

- **Contrast Venography** may be used to directly visualize the venous system by either an ascending or descending approach.
- In general, both involve injection of contrast which provides details of venous anatomy that may be useful to classify severity and further management.
  A. Venography of the iliocaval segment to assess for patency.
  B. Descending venography of the left lower extremity demonstrating reflux into the femoral vein in a post-thrombotic vein.



Invasive Testing

- Intravascular ultrasound: uses a catheter-based ultrasound probe to visualize vascular anatomy to assess for obstructive or stenotic disease of the venous system.
  A. Intravascular US of left common iliac vein with minimal lumen diameter.
  B. After angioplasty and stent, notice significant improvement of the lumen.



Medical Therapy

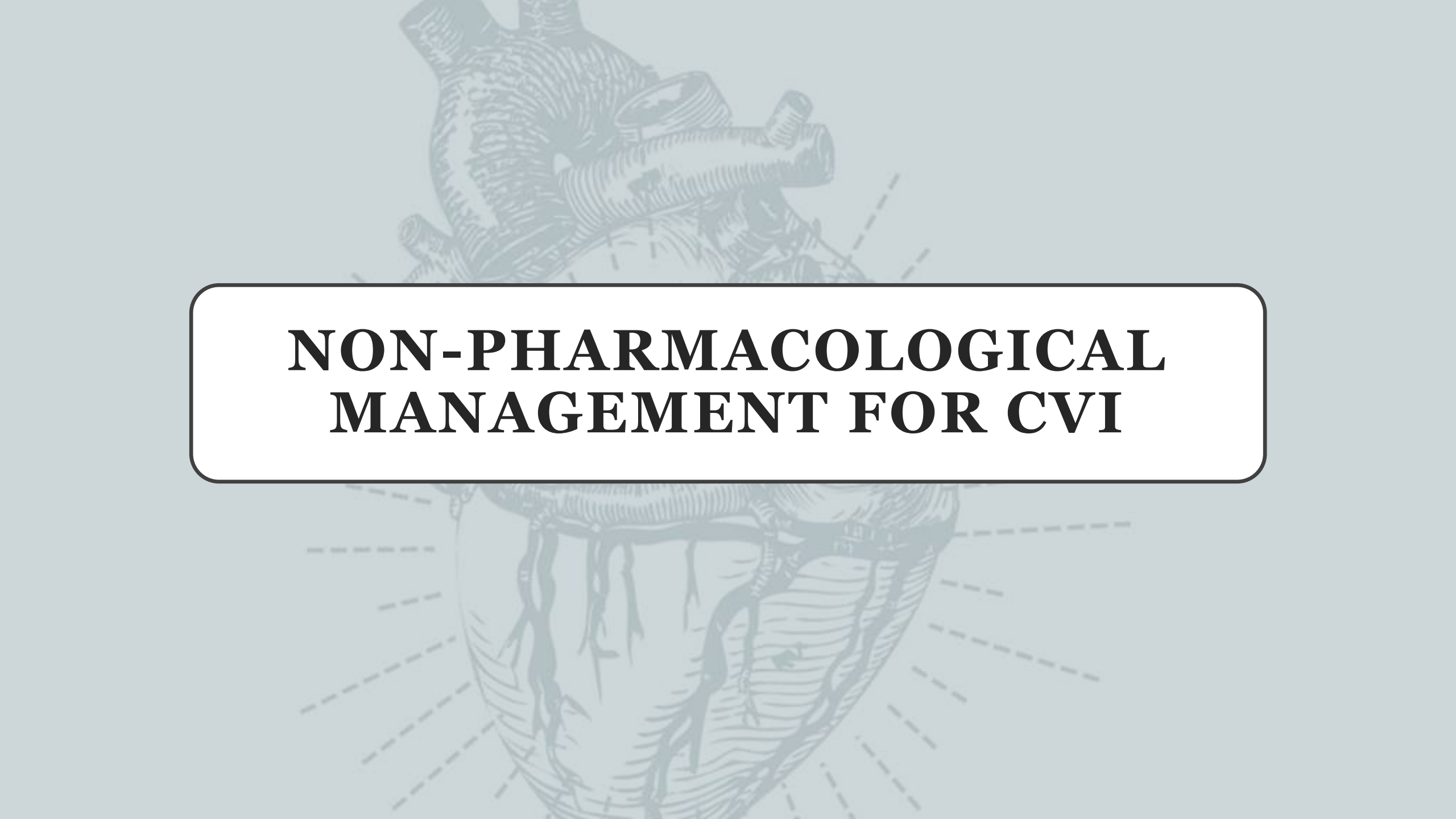
- Four groups of drugs have been evaluated in the treatment of CVI, including:
  - Coumarins (α-benzopyrenes)
  - Flavonoids (γ-benzopyrenes)
  - Saponosides (horse chestnut extracts)
  - Pentoxyfilline

These venoactive drugs are thought to improve venous tone and capillary permeability, which should provide relief of pain and swelling or accelerate venous ulcer healing.

American Heart Association. (2014). Chronic venous insufficiency | Circulation - AHA/ASA Journals. https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.113.006898

Medical Therapy

- However, a precise mechanism of action for these drugs has not been fully determined.
- None have been approved by the US Food and Drug Administration (FDA)



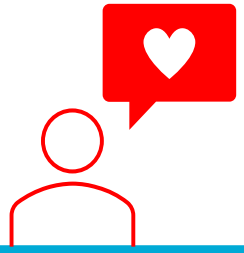
NON-PHARMACOLOGICAL MANAGEMENT FOR CVI

Lifestyle recommendations

Maintain an ideal body weight or weight reduction if overweight may improve manifestations of CVI, including edema and ulcers.

Consider raising legs above the level of the heart at set times throughout the day

Maintain a balanced diet, which limits sodium intake and processed foods.



Compressive Leg Garments

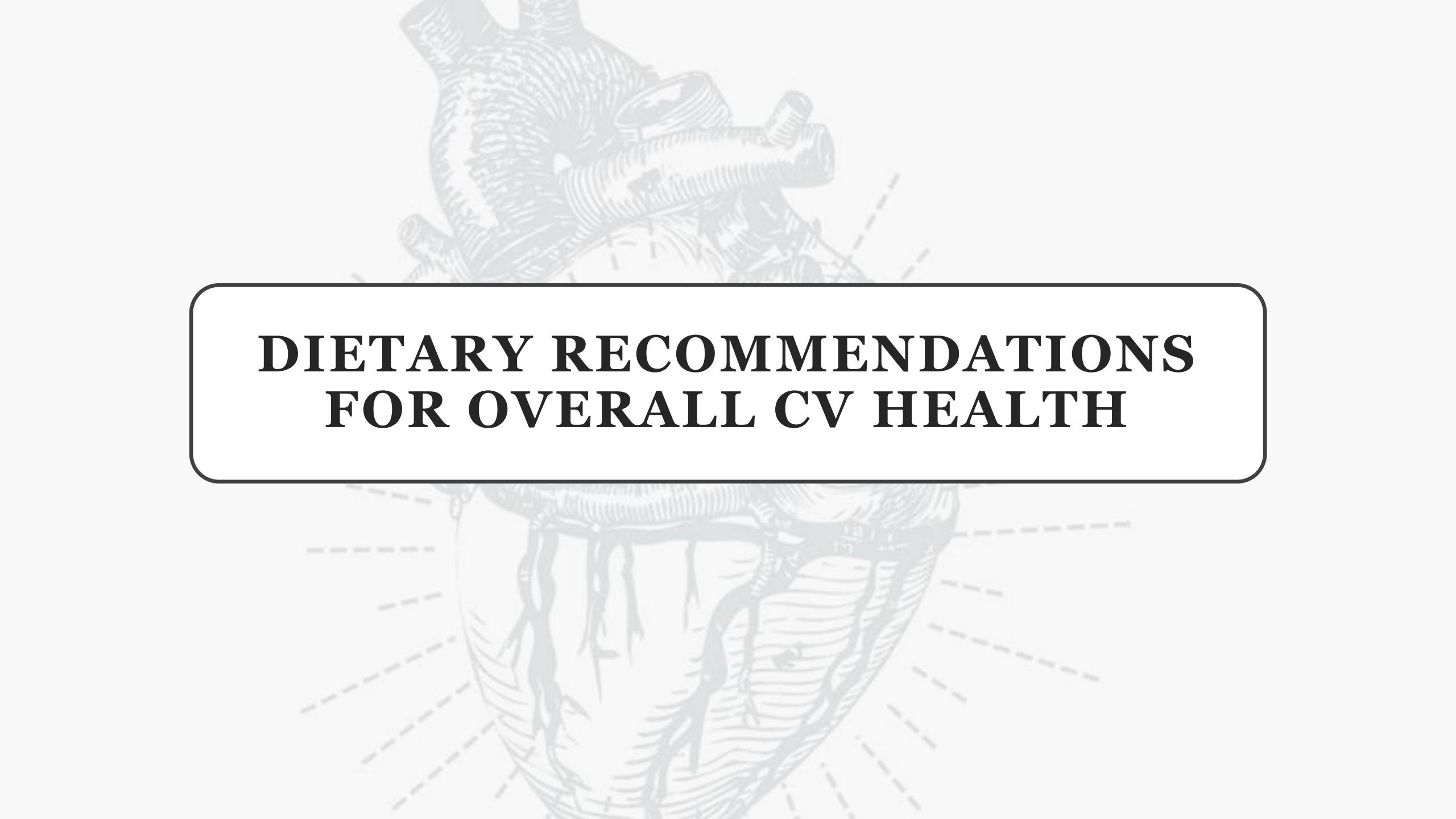
- Considered first-line therapy for patients with symptomatic varicose veins or greater (grade 2C)
  - NOT in candidates for great saphenous ablation.
- Are recommended for both: patients with venous ulcers and as an adjunct to superficial venous ablation to reduce the risk of ulcer recurrence.
- Treatment with a 30- to 40-mm Hg compression stocking seems to result in significant improvement in pain, swelling, skin pigmentation, activity, and well being if compliance of 70% to 80% is achieved.
- Stockings need to be changed every 6 to 9 months if worn daily with an alternate pair to avoid loss of the tension that the stocking exerts.

Compressive Leg Garments

Level of Compression Based on the Clinical Manifestation	
Clinical Manifestation	**Tension, mm Hg**
Varicose veins with or without edema (C_2–C_3)	20–30
Advanced venous skin changes, or ulcers (C_4–C_6)	30–40
Recurrent ulcers	40–50

SUPPLEMENTS/ NATURAL PRODUCTS FOR PAD AND CVI

	Horse Chestnut Seed Oil	Mesoglycan	Diosmin	Butcher's Broom
Medicinal properties	Anti-inflammatory; ↑ venous tone	Antithrombotic effects; ↑ venous tone	Vasodilator; ↑ venous tone	Vasodilator; Anti-inflammatory; ↑ venous tone
Potential benefits in PAD	Improve blood circulation, ↓ leg pain	↓ blood clot formation	↓ leg pain	↓ leg pain and inflammation
Potential benefits in CVI	Improve vein tone = reduce varicose veins; ↓ edema & pain	Improve venous valve function; ↓ blood pooling in the legs	Improve venous valve function; ↓ blood pooling in the legs; ↓ edema	Improve venous valve function; ↓ blood pooling in the legs; ↓ edema



DIETARY RECOMMENDATIONS FOR OVERALL CV HEALTH

Evidence-based dietary guidance to promote CV health

EMPHASIZE

- Fruits and vegetables
- Whole grain foods
- Healthy sources of proteins; fish and seafood, legumes and nuts, low-fat/fat-free dairy, poultry and if desired lean meat
- Liquid plant oils (eg, soybean oil and canola oil)

MINIMIZE

- Beverages and foods with added sugars
- Ultra-processed foods
- Processed meats
- Food high in salt
- Alcoholic beverages
- Tropic oils

- Adjust energy intake to achieve and maintain a healthy body weight
- Follow this guidance regardless of where food is prepared or consumed

2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association.

Evidence-based dietary guidance to promote CV health

The most specific recommendations are for lowering low-density lipoprotein (LDL) cholesterol:

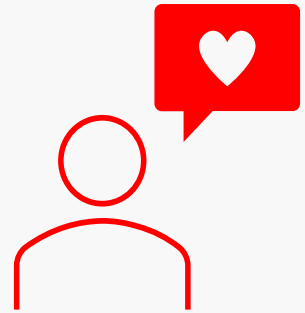
Obtain a maximum of 5% to 6% of total calories from saturated fat.

Reduce dietary monounsaturated fats: eg, oleic acid found in olive oil.

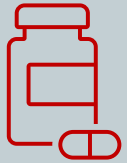
Minimize intake of foods rich in *trans*-fats: found in milk, animal fats, and some vegetable oils.

2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association.

ROLE OF PHARMACISTS IN OPTIMIZING CARE OF PATIENTS WITH PAD AND CVI



Pharmacists Role



Medication Therapy Management (MTM)

Patient Education

Lifestyle Counseling

Collaboration with Healthcare Team

Pharmacists' Patient Care Process

Collect

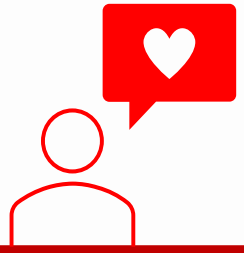
- Collect subjective and objective information about the patient in order to understand the medical/medication history and clinical status of the patient → medication reconciliation
- Overview:

Gather data	Perform brown bag review

Collect

Gather data

- Interview Patient
- Electronic Health Record
- Patient's PCP
- Patient's Pharmacy



Collect

Perform brown bag review

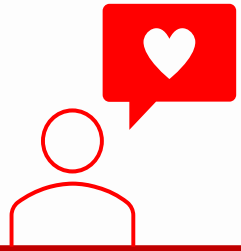
Before

After

Before

After

Assess	Plan
Medication **appropriateness**	Ensure all conditions are treated; monitor signs and symptoms of PAD and CVI.
Medication **effectiveness** monitor BP logs; follow goals and guidelines	Recommend dose adjustments Optimize tx: recommend adding or d/c agents.
Medication **safety** monitor laboratories (ex GFR, CrCl)	Address medication-related problems and any adverse effects
Medication **adherence:** Perform brown bag review; identify barriers	Prepare pill box Engage pt through education, empowerment and self-management



Implement

- Implement the care plan in collaboration with other health care professionals and the patient or caregiver.
- Coordination of care will promote:

Decrease risk of drug interactions

Eliminate duplicity due to multiple prescribers

Safer medication regimens

Decrease healthcare costs

Implement

Help prepare pill box to improve adherence

Implement

Provide medication list

Juan del Pueblo

Nombre de Medicamento	Dosis	¿Cuándo lo tomo?					¿Para qué lo tomo?
		Ayuna	Desayuno	Almuerzo	Cena	Al acostarme	
Atorvastatin (Lipitor)	20mg		X				Colesterol
Hydrochlorothiazide	12.5mg		X				Alta presión/ diurético
Glipizide (Glucotrol)	10mg		X		X		Diabetes
Lisinopril (Zestril)	10mg		X		X		Alta presión
Jentadueto	**2.5-500mg**		X		X		Diabetes
Humalog *administrarse 30 unidades 15 minutos ANTES de cada comida			X	X	X		Diabetes
Lantus *administrarse 60-65 unidades antes de acostarse en la noche						X	Diabetes
Amlodipine (Norvasc)	**5mg**					X	Alta presión

Questions?

Thank you!

Let’s continue working hard to help improve our patient’s overall health and quality of life, for a healthier and happier community!

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Post-Test

1. Peripheral artery disease (PAD) is a problem that happens when the leg veins and valves in the veins lose their ability to carry blood back to the heart.
   A.True
   B.False
2. Which medication should you recommend for most patients with symptomatic peripheral artery disease (PAD) to reduce the risk of MI, stroke, and vascular death?
   A.Aspirin
   B.Cilostazol
   C.Pentoxifylline
   D.None of the above
3. The use of a statin is recommended for all patients with PAD, unless contraindicated.
   A.True
   B.False

Post-Test

4. According to the Natural Medicine Comprehensive Database, diosmin is effective for:
   A.Peripheral artery disease
   B.Chronic venous insufficiency*
   C.Peripheral artery disease and chronic venous insufficiency
   D.None (neither peripheral artery disease, nor venous insufficiency)
5. The following non-pharmacological alternatives can be recommended for a patient with chronic venous insufficiency, EXCEPT:
   A.Compression stockings
   B.Raise legs above the level of the heart at set times throughout the day.
   C.Weight loss for obese and overweight patients.
   D.Sitting and immobilization for extended periods of time. *
6. Pharmacists in the community can be involved with PAD prevention by:
   A.Promoting a healthy lifestyle
   B.Encouraging medication adherence
   C.Promoting smoking cessation
   D.All of the above*