

**ASIA-PACIFIC
CONSENSUS STATEMENT ON
THE MANAGEMENT OF
PERIPHERAL ARTERY DISEASE:**

**POCKET GUIDE
FOR DOCTORS**

2020





Asian Pacific Society of Atherosclerosis and Vascular Diseases

The Asian Pacific Society of Atherosclerosis and Vascular Diseases was established in 1996. The founding chairman was Professor Akira Yamamoto of Japan. The current president is Professor Richard O'Brien of Australia.

The main aim of the APSAVD is to provide a forum for Scientists and Clinicians in the region interested in atherosclerosis to meet regularly and share updates on the subject, as well as highlight similarities and differences of the disease as seen in the region compared to that seen in the western world where studies and guidelines usually originate. Given the changing health and disease patterns in the region, this is an increasingly important area.

In addition, regional collaboration on common research interests is encouraged.



ASIA-PACIFIC CONSENSUS STATEMENT ON THE MANAGEMENT OF PERIPHERAL ARTERY DISEASE: POCKET GUIDE FOR DOCTORS

A Report from the Asian Pacific Society of Atherosclerosis and Vascular Disease

Asia-Pacific Peripheral Artery Disease Consensus Statement Project Committee

Maria Teresa B Abola MD FPCP FPCC FACC FPSVM MSVM (Convenor) • Jonathan Golledge MB BChir MA MChir FRCS FRACS • Tetsuro Miyata MD • Seung-Woon Rha MD PhD FACC FAHA FESC FSCAI FAPSIC • Bryan P Yan MD MBBS FRACP FHKCP FHKAM FACC • Timothy C Dy MD FPCP FPCC FPSCCI • Marie Simonette V Ganzon MD FPCP FPCC FPSVM FSVM RPVI • Pankaj Kumar Handa MD MRCP FRCP FAMS • Salim Harris MD PhD SpS(K) FICA • Jiang Zhisheng MD PhD • Ramakrishna Pinjala MD MBBS MS FRCSEd FICS • Peter Ashley Robless MD MBChB FRCS FEBVS • Hiroyoshi Yokoi MD • Elaine B. Alajar MD FPCP FPCC FPSVM • April Ann Bermudez delos Santos MD FPCP FPCC • Elmer Jasper B. Llanes MD FPCP FPCC • Gay Marjorie Obrado-Nabablit MD FPCP FPCC FPSVM • Noemi S. Pestaño MD FPCP FPCC • Felix Eduardo Punzalan MD FPCP FPCC • Bernadette Tumanan-Mendoza MD MScCE MHE FPCP

Steering Committee

Edward Janus MD (Chair) PhD FRACP FRCPA • Rody G. Sy MD FPCP FPCC FACC • Shizuya Yamashita MD PhD FAHA FJCC • Fatima R. Collado MD FPCP FPCC FPSVM FSVM • Florimond A. Garcia MD FPCS FPATACSI

Consensus Panel

- Maria Teresa B Abola MD FPCP FPCC FACC FPSVM MSVM (Chair)
- Jonathan Golledge MB BChir MA MChir FRCS FRACS
- Iwan Dakota MD PhD, FACC, FESC, FICA, FAPSIC, FAsCC
- Timothy C Dy MD FPCP FPCC FPSCCI
- Marie Simonette V Ganzon MD FPCP FPCC FPSVM FSVM RPVI
- Salim Harris MD PhD SpS(K) FICA
- Yukihito Higashi MD PhD FAHA FJSH FJCS
- Pankaj Kumar Handa MD MRCP FRCP FAMS
- Jiang Zhisheng MD PhD
- Tetsuro Miyata MD
- Ramakrishna Pinjala MD MBBS MS FRCSEd FICS
- Seung-Woon Rha MD PhD FACC FAHA FESC FSCAI FAPSIC
- Peter Ashley Robless MD MBChB FRCS FEBVS
- Raden Suhartono MD SpB (K)V
- Bryan P Yan MD MBBS FRACP FRCP FHKCP FHKAM FESC FACC
- Hiroyoshi Yokoi MD PhD

Technical Working Group

- Bernadette Tumanan-Mendoza MD MScCE, MHE, FPCP (Chair)
- Elaine B Alajar MD FPCP FPCC FPSVM
- April Ann Bermudez delos Santos MD FPCP FPCC
- Elmer Jasper B Llanes MD FPCP FPCC
- Gay Marjorie Obrado-Nabablit MD FPCP FPCC FPSVM
- Noemi S Pestaño MD FPCP FPCC
- Felix Eduardo Punzalan MD FPCP FPCC

Pocket Guide Editorial Staff

- Maria Teresa B. Abola MD
- Elaine B. Alajar MD
- Jaime T. Aherrera MD





Table of Contents

Part One: Overview



[I. How to Use the Pocket Guide](#)



[II. Definition and Prevalence Peripheral Artery Disease](#)

Part Two: Summary of the Recommendations



[I. Clinical Assessment of Peripheral Artery Disease \(PAD\)](#)



[II. Diagnostic Testing for the Patient with Suspected Lower Extremity PAD](#)



[A. Resting Ankle-brachial Index \(ABI\) for Diagnosing PAD](#)



[B. Physiologic Testing](#)



[C. Imaging for Anatomic Assessment](#)



[D. Screening for Atherosclerotic Disease in Other Vascular Beds for the Patient with PAD](#)



[III. Medical Therapy for the Patient with PAD](#)



[IV. Minimizing Tissue Loss in Patients with PAD](#)



[V. Revascularization for Intermittent Claudication](#)



[VI. Management of Critical Limb Ischemia \(CLI\)](#)



[VII. Management of Acute Limb Ischemia \(ALI\)](#)



[VIII. Longitudinal Follow-Up](#)



Part One: Overview

HOW TO USE THE POCKET GUIDE:

The Asia-Pacific Consensus Panel developed this brief, evidence-based pocket guide to help physicians provide quality care to patients with peripheral arterial disease (PAD). This guide includes key recommendations on the diagnosis and management of peripheral artery disease applicable to Asia-Pacific countries after analysis and appraisal of the 2016 AHA PAD Guidelines and pertinent landmark trials thereafter. This pocket guide covers topics such as the clinical assessment of PAD, diagnostic testing for patients with suspected PAD, medical therapy for patients with PAD, minimizing tissue loss, revascularization for claudication, management of critical limb ischemia and the management of acute limb ischemia.

This Consensus Statement provides selected practice recommendations on history and physical examination, diagnosis, and treatment of PAD patients. The Recommendations were based on the best available evidence and expert opinion available at the time of the review. A tabulated Summary of the Recommendations provides users with quick access to the individual practice guideline statements together with the corresponding Class (or strength) of the Recommendation (COR) and the Level of Evidence (LOE) the statement was based on. Recommendations are interpreted based on COR and LOE as follows:

Table 1. Class of Recommendation and Level of Evidence

Class of Recommendation (COR)	Class I (Strong) Benefit >>> Risk	Level A <ul style="list-style-type: none">• High-quality evidence from more than 1 RCT• Meta-analysis of high-quality RCTs• One or more RCTs corroborated by high-quality registry studies	Level (quality) of evidence (LOE)
	Class IIa (Moderate) Benefit >> Risk	Level B-R (Randomized) <ul style="list-style-type: none">• Moderate-quality evidence from one or more RCTs• Meta-analysis of moderate-quality RCTs	
	Class IIb (Weak) Benefit ≥ Risk	Level B-NR (Non-Randomized) <ul style="list-style-type: none">• Moderate-quality evidence from 1 or more well-designed, well-executed non-randomized studies, observational studies, or registry studies• Meta-analysis of such studies	
	Class III: No Benefit (Moderate) Benefit = Risk	Level-C-LD (Limited Data) <ul style="list-style-type: none">• Randomized or non-randomized observational or registry studies with limitations of design or execution• Meta-analysis of such studies• Psychological or mechanistic studies in human subjects	
	Class III: Harm (Strong) Risk > benefit	Level C-EO (Expert Opinion) <ul style="list-style-type: none">• Consensus of expert opinion based on clinical experience	

Adapted from Gerhard-Herman MD, Gornik HL, Barrett C, et al. "2016 AHA/ACC Guidelines on the Management of Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines". Journal of the American College of Cardiology, 2017; 69(11):e71-e126.



Definition and Prevalence of Peripheral Artery Disease

Peripheral artery disease (PAD) is an atherosclerotic vascular disease of the lower extremities. PAD is the most underdiagnosed, underestimated and undertreated of the atherosclerotic vascular diseases despite its poor prognosis. It is frequently due to atherosclerosis of the arterial supply and development of plaques along the arterial walls which may lead to blockage of arterial flow. Patients commonly have associated atherosclerotic disease in other vascular beds, manifesting with signs of active or past history of coronary artery disease and/or cerebrovascular disease. The risk for heart attacks, strokes, and death is high.

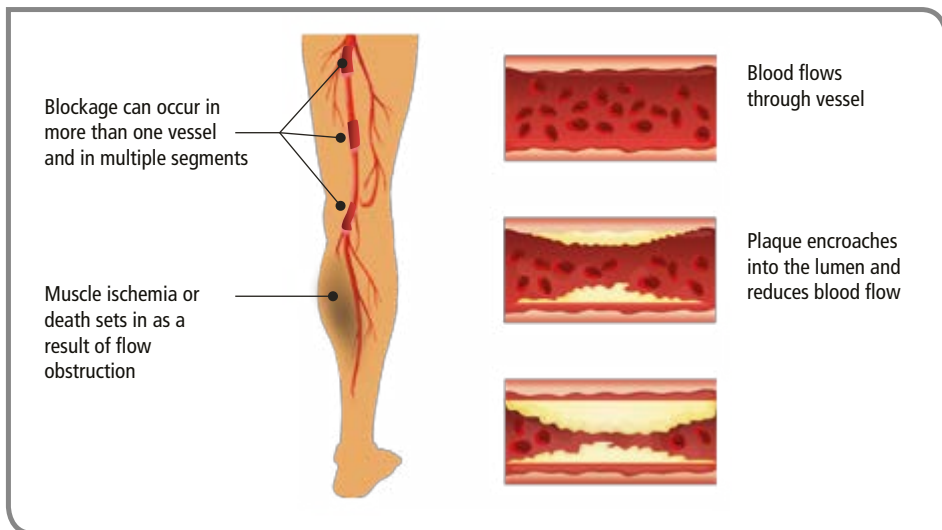


Figure 1. Atherosclerosis of lower extremity arteries

Estimates of global disease burden based on study databases of both high-income countries and low-middle income countries showed an increasing prevalence of PAD, disability and death rates attributable to PAD, with a greater increase observed in women than men, and even in younger age groups.^{1,2} However, variation in reported PAD prevalence rates in the Asia-Pacific region may be accounted for by differences in the method of diagnosis and population sub-groups studied. Figure 2 gives an overview of the prevalence of PAD in some of the countries in the Asia-Pacific region as reported in different populations where the method of detection of PAD used was the measurement of the ankle-brachial index.

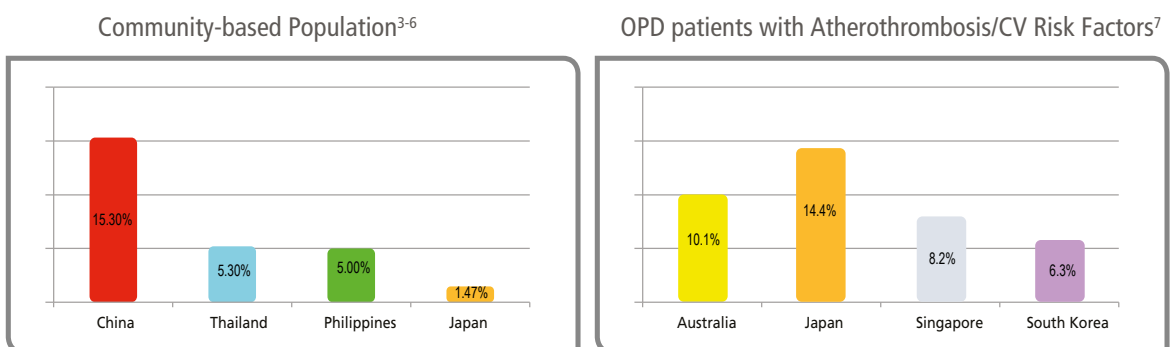


Figure 2. Prevalence of PAD in the Asia-Pacific Region

OPD outpatient departments/clinic, REACH Registry participants

1. Fowkes G, Rudan D, et al., Lancet. 2013
2. Sampson K, Fowkes G, et al. Global Heart. 2014
3. He Y, Jiang Y, et al. J Vasc Surg. 2006
4. Sritara P, Sritara C, Woodward M et al. Angiology. 2007
5. Dans AL, Morales DD, et al. Phil J Internal Medicine. 2005
6. Usui T, Ninomiya T, et al. Journal of Atherosclerosis and Thrombosis. 2011
7. Cacoub P, Abola MT, et al., Atherosclerosis. 2009



PART TWO: SUMMARY OF THE RECOMMENDATIONS

I. CLINICAL ASSESSMENT OF PERIPHERAL ARTERY DISEASE (PAD)

Assessment of PAD begins with a thorough history and physical examination. Oftentimes, more than half of patients with PAD are asymptomatic or have atypical leg pain and are not aware of their disease. About a third complain of intermittent claudication or effort-induced calf or leg pain relieved by rest. Strong predictors of PAD include diminished pulses, and a femoral arterial bruit. Buerger's test, if positive, defined by pallor of the involved leg after elevation from the supine position followed by erythema of the involved leg placed in a dependent or sitting position, often indicates advanced and extensive disease (Figure 3).

Table 1. Risk Factors and Findings Suggestive of PAD

RISK FACTORS FOR PAD	FINDINGS IN THE HISTORY AND PE SUGGESTIVE OF PAD
<ul style="list-style-type: none">• Age > 65 years old• Age 50-64, with risk factors for atherosclerosis (e.g., diabetes, history of smoking, hyperlipidemia, hypertension, and history of albuminuria or chronic kidney disease) or family history of PAD• Age <50 years old, with diabetes and 1 additional risk factor for atherosclerosis• Individuals with known atherosclerotic disease in another vascular bed (e.g., coronary, carotid, subclavian, renal, mesenteric artery stenosis, or AAA)• Indigenous Australian ethnicity	<p>Symptoms</p> <ul style="list-style-type: none">• Intermittent Claudication• Other non-joint-related exertional lower extremity symptoms (not typical of claudication)• Impaired walking function• Ischemic rest pain <p>Signs</p> <ul style="list-style-type: none">• Abnormal lower extremity pulse examination• Vascular bruit• Non-healing lower extremity wound• Lower extremity gangrene• Elevation pallor, dependent rubor• Extremity atrophy• Loss of hair• Brittle nails

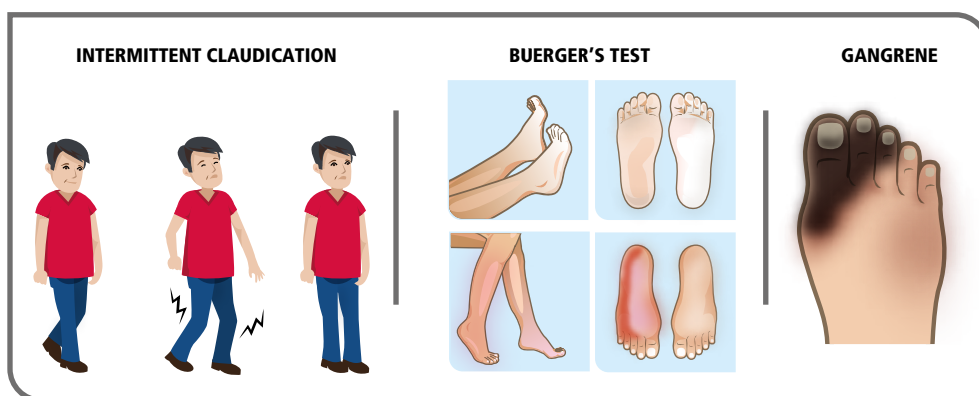


Figure 3. Typical symptom of lower extremity PAD is calf claudication.

For those patients at increased risk of PAD or those with history / examination findings suggestive of PAD (Table 1), an initial ankle-brachial index (ABI) should be done. Figure 4 summarizes the approach to a patient suspected of PAD. ABI has good validity in the diagnosis of PAD, with a cut-off value of ≤ 0.9 for the diagnosis of PAD. ABI values of >1.4 indicate arterial noncompressibility due to medial arterial calcification and additional tests are needed to diagnose PAD such as the toe-brachial pressure index (TBI). A TBI of ≤ 0.70 is considered diagnostic of PAD in patients with noncompressible arteries.

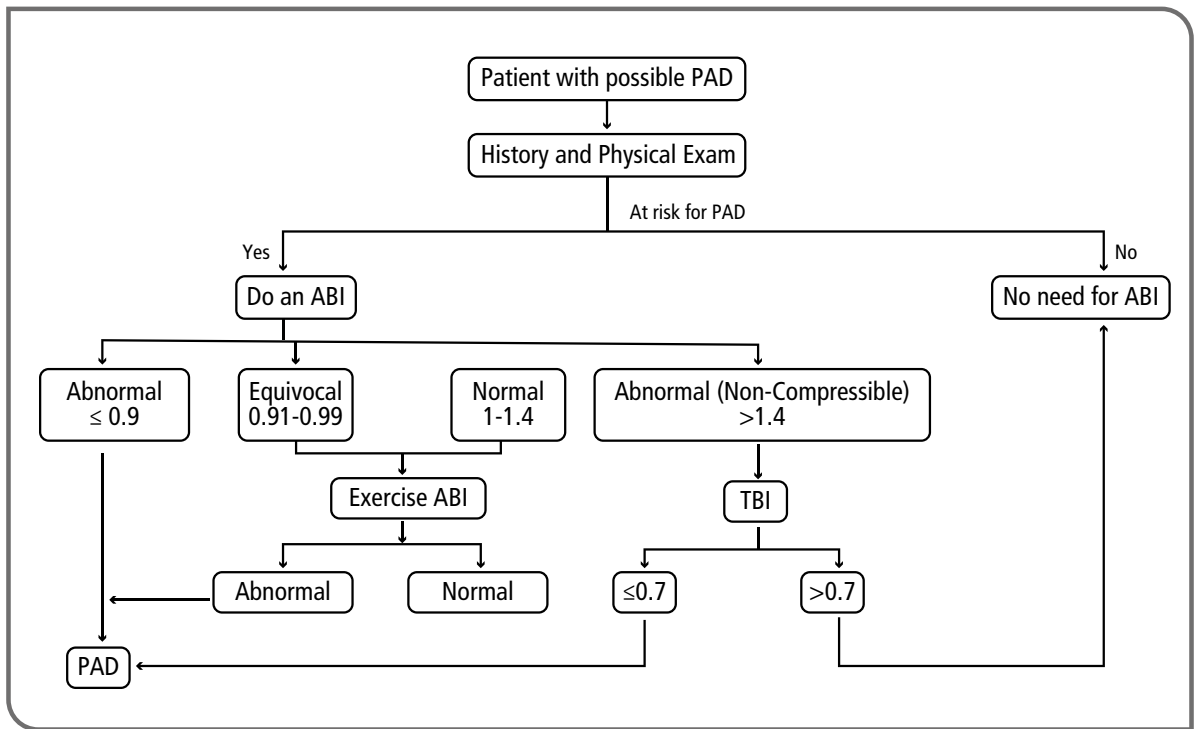


Figure 4. Initial Approach to Patients with PAD

History and examination are the initial steps in approaching patients with possible PAD. For those at risk of PAD, an ABI of less than or equal to 0.9 is suggestive of PAD. An exercise ABI may be useful for those with equivocal (0.91- 0.99) or normal (1-1.4) ABI values. A TBI is recommended for those with noncompressible arteries (ABI >1.4).

RECOMMENDATION	COR	LOE
Patients at increased risk of PAD should undergo a comprehensive medical history and a review of symptoms to assess for symptoms related to PAD.	I	B-NR
Patients at increased risk of PAD should undergo vascular examination, including palpation of lower extremity pulses, auscultation for femoral bruits, and inspection of the legs and feet.	I	B-NR
Patients with PAD should undergo noninvasive BP measurement in both arms at least once during the initial assessment in order to obtain the higher brachial systolic BP for ABI measurement, identify patients with subclavian (or innominate) artery stenosis and accurately measure BP for hypertension treatment.	I	B-NR

II. DIAGNOSTIC TESTING FOR THE PATIENT WITH SUSPECTED LOWER EXTREMITY PAD

A. Resting ABI for Diagnosing PAD

RECOMMENDATION	COR	LOE
In patients with history or physical examination findings suggestive of PAD, the resting ABI is recommended to diagnose PAD.	I	B-NR
Segmental pressures and waveforms are used to localize the anatomic segments of PAD.	I	B-NR
In patients at increased risk of PAD but without examination findings suggestive of PAD, measurement of the resting ABI is reasonable.	Ila	B-NR

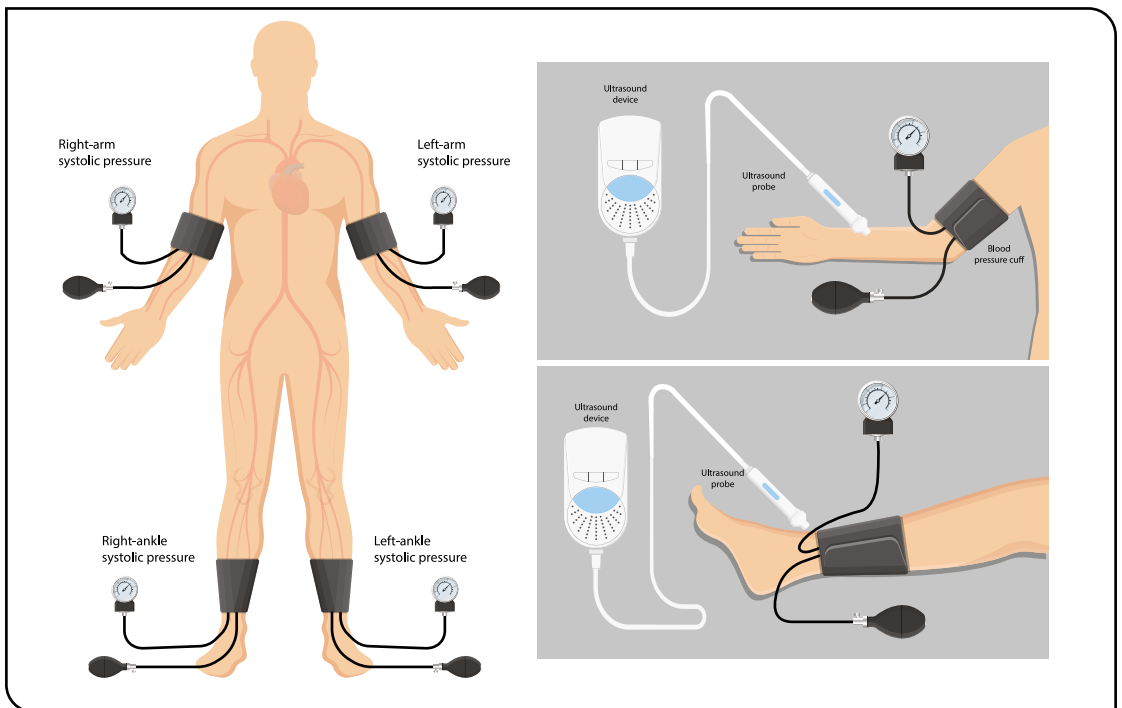
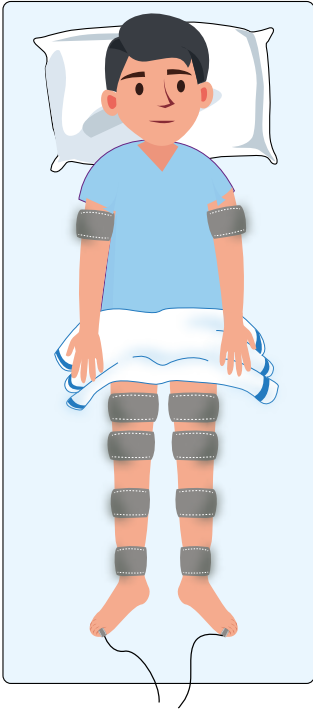


Figure 5. Ankle-Brachial Index measurement

The ankle-brachial index (ABI) is the ratio of the systolic blood pressure at the ankle to the systolic blood pressure in the upper arm (brachial artery), both measured using a doppler device in the supine position. In the ankle, systolic pressures are recorded using the dorsalis pedis and the posterior tibial arteries. The ABI is computed by dividing the higher of the two systolic blood pressures of the ankle by the higher systolic blood pressure of the upper arm. It is recommended that a systematic manner of measuring the arm and ankle pressures be followed—for example, in the supine position, one may start with measuring the right arm pressure, followed by that of the right ankle using the posterior tibial artery, then the dorsalis pedis artery, followed by the left posterior tibial artery and the dorsalis pedis artery, back to the left arm, and, most importantly repeating the pressure measurement in the right arm. Both arm pressures should be averaged but If the pressure difference between the two arm pressures is higher than 10 mm Hg, it will be the second measurement of the right arm that will be accepted. This practice will mitigate the white coat effect on blood pressure measurement. In the diagnostic laboratory, an ABI is reported for each leg. If the ABI is intended to be used to provide cardiovascular prognosis, the lower of the two extremity ankle-brachial indices is used.



The segmental pressures and waveform study is performed by combining Doppler ultrasound with systolic blood pressure measurements at different segments in the arms and legs. In the lower extremities, the systolic pressures are measured at the great toe, ankle, below the knee, above the knee/distal thigh, and at the proximal thigh levels. In the arms, the systolic pressures are measured at the wrist, below the elbow, and mid upper arm. This test is done to help identify the level of arterial flow obstruction and is best associated with doppler and plethysmographic waveforms, to better identify the arterial segments involved. This modality is helpful in patients with noncompressible arteries to help determine the presence of PAD since segmental pressures alone may be unreliable.

Figure 6. Segmental Pressures and Waveform Study (SPWS)

A low ABI not only indicates the presence of peripheral artery disease but also portends poor cardiovascular prognosis. Even a borderline ABI is associated with increased risk of heart failure, coronary heart disease, carotid atherosclerosis, myocardial infarction, all-cause death and cardiovascular death. ABI values greater than 1.4 indicate arterial noncompressibility leading to falsely elevated and unreliable ankle pressures. This finding is common in patients with diabetes and chronic kidney disease due to medial arterial wall calcification and arterial stiffening. Additional tests are needed to diagnose PAD in these patients. The measurement of toe pressures and the toe-brachial index, if available, may be helpful. A $TBI \leq 0.7$ is considered diagnostic of PAD in patients with medial arterial calcification because digital arteries are infrequently calcified. The toe-brachial index (TBI) is the ratio between toe pressure and the higher of the two brachial pressures.

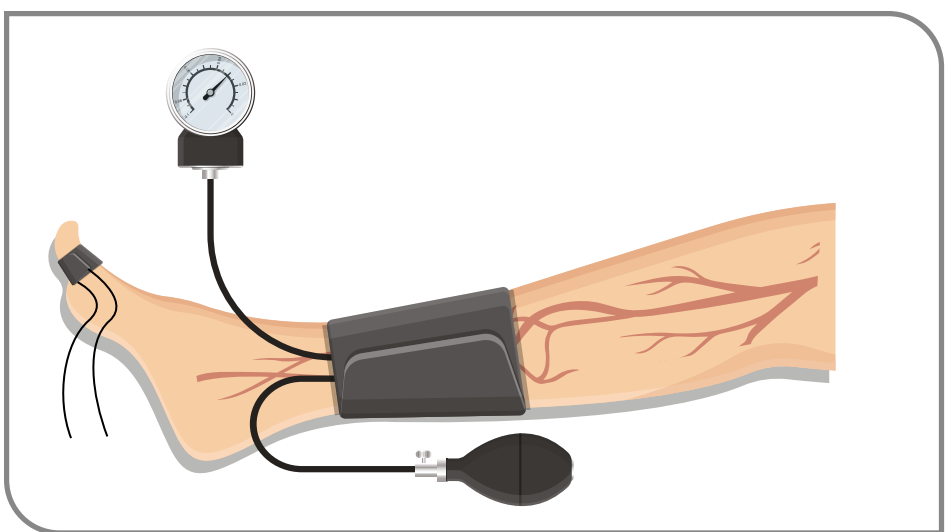


Figure 7. Toe-Brachial Index.

B. Physiologic Testing

RECOMMENDATION	COR	LOE
Toe-brachial index (TBI), where available, should be measured to diagnose patients with suspected PAD when the ABI is > 1.40.	I	B-NR
Patients with exertional non-joint-related leg symptoms and normal or borderline resting ABI (> 0.90 and ≤ 1.40) should undergo exercise treadmill ABI testing to evaluate for PAD.	I	B-NR
In patients with PAD and an abnormal resting ABI (≤ 0.90), exercise treadmill ABI testing can be useful to objectively assess functional status.	IIa	B-NR
In patients with normal (1.00 – 1.40) or borderline (0.91 – 0.99) ABI in the setting of nonhealing wounds or gangrene, it is reasonable to diagnose CLI by using TBI with waveforms, transcutaneous oxygen pressure (TcPO ₂), or skin perfusion pressure (SPP).	IIa	B-NR
In patients with PAD with an abnormal ABI (≤ 0.90) or with noncompressible arteries (ABI > 1.40 and TBI ≤ 0.70) in the setting of nonhealing wound or gangrene, TBI with waveforms, TcPO ₂ , or SPP can be useful to evaluate local perfusion.	IIa	B-NR

C. Imaging for Anatomic Assessment

RECOMMENDATION	COR	LOE
Duplex ultrasound, computed tomography angiography (CTA), or magnetic resonance angiography (MRA) of the lower extremities is useful to assess the anatomic location and severity of stenosis for patients with symptomatic PAD in whom revascularization is considered.	I	B-NR
Invasive angiography is useful for patients with CLI in whom revascularization is being considered.	I	C-EO
Invasive angiography is reasonable for patients with lifestyle-limiting claudication with an inadequate response to guideline-directed medical therapy (GDMT) for whom revascularization is being considered.	IIa	C-EO
Invasive and noninvasive angiography (i.e., CTA, MRA) should not be performed for the anatomic assessment of patients with asymptomatic PAD.	III	B-NR

D. Screening for Atherosclerotic Disease in Other Vascular Beds for the Patient with PAD

RECOMMENDATION	COR	LOE
A screening duplex ultrasound for abdominal aortic aneurysm (AAA) is reasonable in patients with symptomatic PAD.	IIa	B-NR
Patients with PAD should not be routinely screened for asymptomatic atherosclerosis in other arterial beds (coronary, carotid, renal arteries).	III	C-EO

Given the potential economic harm incurred from an intervention that may arise from screening for asymptomatic atherosclerosis in other arterial beds which has been shown to be lacking evidence of benefit, it is not recommended for patients with PAD to undergo routine screening for asymptomatic atherosclerosis.



III. MEDICAL THERAPY FOR THE PATIENT WITH PAD

RECOMMENDATION	COR	LOE
----------------	-----	-----

Antiplatelet Therapy for Reduction of CV Events

Antiplatelet therapy with aspirin alone (range 75 – 325 mg per day) or clopidogrel alone (75 mg per day) is recommended to reduce MI, stroke, and vascular death in patients with symptomatic PAD.	I	A
In asymptomatic patients with PAD (ABI less than or equal to 0.90), suggesting antiplatelet therapy may be considered to reduce the risk of MI, stroke, or vascular death.	IIb	C-EO
The effectiveness of dual antiplatelet therapy (DAPT) (aspirin and clopidogrel) to reduce the risk of cardiovascular ischemic events in patients with symptomatic PAD is not well established.	IIb	B-R
DAPT (aspirin and clopidogrel) may be reasonable to reduce the risk of limb-related events in patients with symptomatic PAD after lower extremity revascularization.	IIb	B-R

Risk Factor Modification and/or Control

Treatment with a statin medication is indicated for all patients with PAD.	I	A
Antihypertensive therapy should be administered to patients with hypertension and PAD to reduce the risk of MI, stroke, heart failure, and cardiovascular death.	I	A
Patients with PAD who smoke cigarettes or use other forms of tobacco should be advised at every visit to quit.	I	A
Management of diabetes mellitus in the patient with PAD should be coordinated between members of the healthcare team.	I	B-NR
The use of angiotensin-converting enzyme inhibitors or angiotensin-receptor blockers can be effective to reduce the risk of cardiovascular ischemic events in patients with PAD.	IIa	A
Glycemic control can be beneficial for patients with CLI to reduce limb-related outcomes.	IIa	B-NR
Annual influenza vaccination can be considered for patients with PAD especially if they have established coronary artery disease.	IIa	C-EO
B-complex vitamin supplementation to lower homocysteine levels for prevention of cardiovascular events in patients with PAD is not recommended.	III	B-R

Oral Anticoagulation

The use of low dose aspirin (100 mg OD) and rivaroxaban (2.5 mg BID) may be considered to reduce the risk of MI, stroke, cardiovascular death and limb-related events in patients with symptomatic PAD, having considered the associated risk of bleeding.	IIb	B-R
The use of anticoagulation to improve patency after lower extremity autogenous vein or prosthetic bypass is of uncertain benefit and potentially harmful.	III	A

Treatment of Claudication

Cilostazol is an effective therapy to improve symptoms and increase walking distance in patients with claudication.	I	A
In patients with intermittent claudication, a supervised exercise program is recommended to improve functional status and quality of life (QoL) and to reduce leg symptoms.	I	A
A supervised exercise program should be discussed as a treatment option for intermittent claudication before possible revascularization.	I	B-R
In 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.	IIa	A
In patients with intermittent 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.	IIa	A
Pentoxifylline is not effective for treatment of claudication.	III	B-R



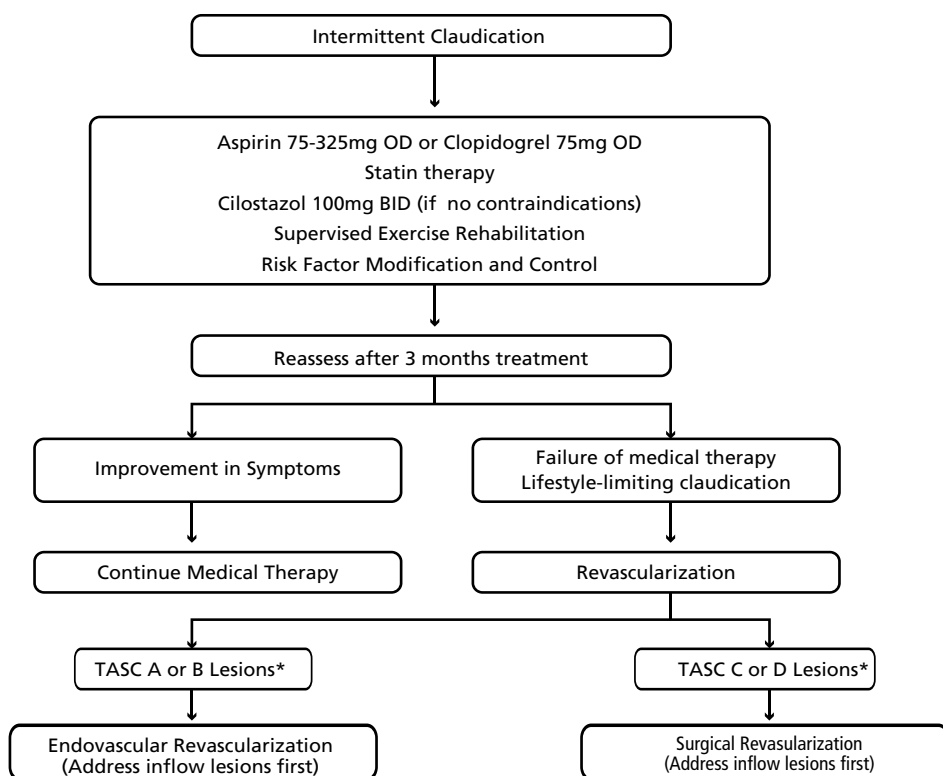


Figure 8. Overview of the Management of Patients with Intermittent Claudication.

*TASC Trans-Atlantic Inter-Society Consensus (Norgren, et al., "Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II)." *Journal of Vascular Surgery*, 2007; 45(1):S5A-S67A.) OD once daily, BID 2x daily

The management of intermittent claudication generally includes antiplatelet and statin therapy for risk modification, cilostazol for pain control, exercise rehabilitation, and risk factor modification & control, and a trial of supervised exercise therapy. Revascularization is generally reserved for those who have lifestyle-limiting claudication despite optimal guideline-directed medical therapy; the long-term benefit of revascularization for patients with intermittent claudication has not been established clearly. The choice for the revascularization procedure will be determined by the extent of the arterial disease which may be classified as either a TASC A or B lesion or a TASC C or D lesion; the former is usually described as short segments of arterial stenosis, often unilateral, while the latter is indicative of a more extensive involvement of arterial occlusive disease.

IV. MINIMIZING TISSUE LOSS IN PATIENTS WITH PAD

RECOMMENDATION	COR	LOE
Patients with PAD and diabetes mellitus should be counseled about self-foot examination and healthy foot behaviors aimed at reducing the risk of foot ulcers or amputation.	I	C-LD
In patients with PAD, prompt diagnosis and treatment of foot infection are recommended to reduce the risk of amputation.	I	C-LD
In patients with PAD and signs of foot infection, prompt referral to an interdisciplinary care team, when available, can be beneficial to reduce the risk of amputation and promote wound healing, in addition to administration of infection control measures.	Ila	C-LD
It is reasonable to counsel patients with PAD without diabetes mellitus about self-foot examination and healthy foot behaviors to prevent amputations and ulcers.	I	C-EO
Among patients with PAD and diabetes mellitus, foot examination should be included in every clinic visit.	I	C-EO

Doing a foot examination in PAD patients with diabetes every clinic visit is essential for identification of early signs of foot wounds and prompt management to help prevent complications of wound infection.



V. REVASCULARIZATION FOR INTERMITTENT CLAUDICATION

RECOMMENDATION	COR	LOE
----------------	-----	-----

Overview for the Revascularization of Intermittent Claudication

Revascularization for intermittent claudication is a reasonable treatment for the patient with lifestyle-limiting intermittent claudication with an inadequate response to optimal GDMT.	IIa	A
--	-----	---

Endovascular Revascularization for Intermittent Claudication

Endovascular procedures are effective as a revascularization option for patients with lifestyle-limiting intermittent claudication and hemodynamically significant aortoiliac occlusive disease, although the long-term benefit of treatment is less clear.	I	A
Endovascular procedures are effective as a revascularization option for patients with lifestyle-limiting intermittent claudication and hemodynamically significant TASC A and B femoropopliteal disease, although the long-term benefit of treatment is less clear.	IIa	B-R
Endovascular procedures should not be performed in patients with asymptomatic PAD or stable intermittent claudication solely to prevent progression to critical limb ischemia.	III	B-NR

Surgical Revascularization for Intermittent Claudication

When surgical revascularization is performed, bypass to the popliteal artery with autogenous vein is recommended in preference to prosthetic graft material.	I	A
Surgical procedures are reasonable as a revascularization option for patients with lifestyle-limiting intermittent claudication with inadequate response to GDMT, acceptable perioperative risk, in whom technical factors do not favor an endovascular-first approach.	IIa	B-R
Femoral-tibial artery bypasses should not be performed for the treatment of intermittent claudication.	III	B-R
Surgical procedures should not be performed in patients with PAD solely to prevent progression to CLI.	III	B-R

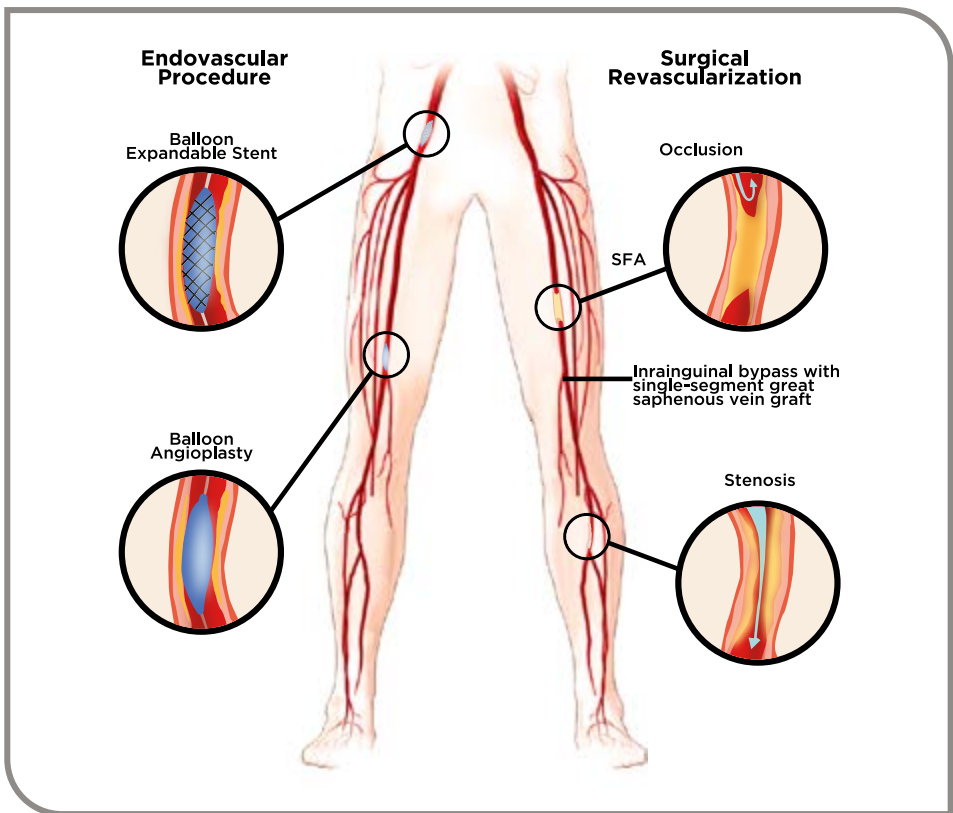


Figure 9. Endovascular and Surgical Revascularization

VI. MANAGEMENT OF CRITICAL LIMB ISCHEMIA (CLI)

Critical limb ischemia is the most advanced stage of peripheral artery disease which manifests as severe pain in the extremity, nonhealing wounds or tissue necrosis called gangrene. The diagnosis of critical limb ischemia is based on an ankle-brachial index less than 0.4, an ankle systolic pressure of less than 50 mm Hg, or a toe-brachial index of 0.7 or less and toe systolic pressure of less than 30 mm Hg. Management of CLI may range from conservative therapy to revascularization.

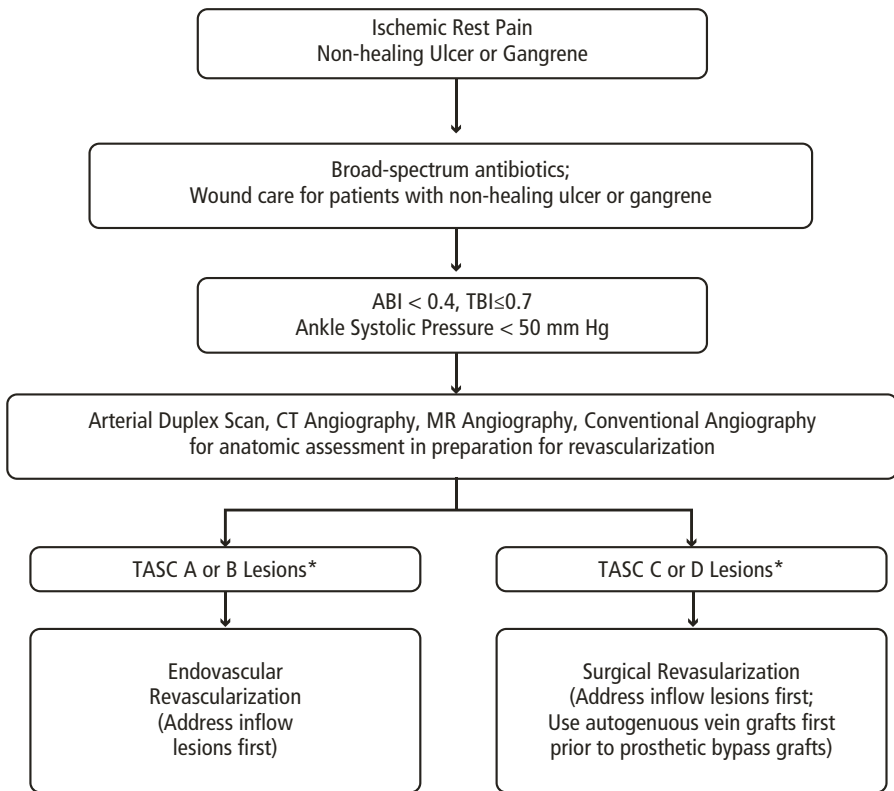


Figure 10. Management of CLI

*TASC Trans-Atlantic Inter-Society Consensus (Norgren, et al., "Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II)." Journal of Vascular Surgery, 2007; 45(1):S5A-S67A.)
CT-computerized tomography MR-magnetic resonance

Recommendation	COR	LOE
Overview for the Revascularization of CLI		
In patients with CLI, revascularization should be performed when possible to minimize tissue loss.	I	B-NR
An evaluation for revascularization options should be performed by an interdisciplinary care team before amputation in the patient with CLI to minimize tissue loss.	I	C-EO
Endovascular Revascularization for CLI		
Endovascular procedures are recommended to establish in-line blood flow to the foot in patients with nonhealing wounds or gangrene.	I	B-R
A staged approach to endovascular procedures is reasonable in patients with ischemic rest pain.	IIa	C-LD
Surgical Revascularization for CLI		
When surgery is performed for CLI, bypass to the popliteal or infrapopliteal arteries (i.e., tibial, pedal) should be constructed with suitable autogenous vein.	I	A
Surgical procedures are recommended to establish in-line blood flow to the foot in patients with nonhealing wounds or gangrene.	I	C-LD
In patients with CLI for whom endovascular revascularization has failed and a suitable autogenous vein is not available, prosthetic material can be effective for bypass to the below-knee popliteal and tibial arteries as a resort in such cases for limb salvage.	IIa	B-NR
A staged approach to surgical procedures is reasonable in patients with ischemic rest pain.	IIa	C-LD



VI. MANAGEMENT OF CRITICAL LIMB ISCHEMIA (CLI)

Recommendation	COR	LOE
Wound Healing Therapies for CLI		
An interdisciplinary care team should evaluate and provide comprehensive care for patients with CLI and tissue loss to achieve complete wound healing and a functional foot.	I	B-NR
In patients with CLI, wound care after revascularization should be performed with the goal of complete wound healing.	I	C-LD
The use of intermittent pneumatic compression (arterial pump) devices to augment wound healing and/or ameliorate severe ischemic rest pain is not well established.	IIb	C-LD
In patients with CLI, the effectiveness of hyperbaric oxygen therapy for wound healing is unknown.	IIb	C-LD
Prostanoids are not indicated in patients with CLI.	III	B-R

VII. MANAGEMENT OF ACUTE LIMB ISCHEMIA (ALI)

Acute limb ischemia is characterized by a sudden decrease in limb perfusion manifesting within the last 14 days that threatens limb viability, constituting a major vascular emergency. The initial clinical evaluation of patients with ALI, if done promptly, can reduce limb loss and mortality. Prompt recognition and management of ALI may prevent adverse outcomes, particularly amputation, major adverse cardiovascular events, and even mortality. Figure 11 illustrates the cardinal signs of ALI which should alert both the patient and physician to seek a prompt evaluation to ensure timely and appropriate management.

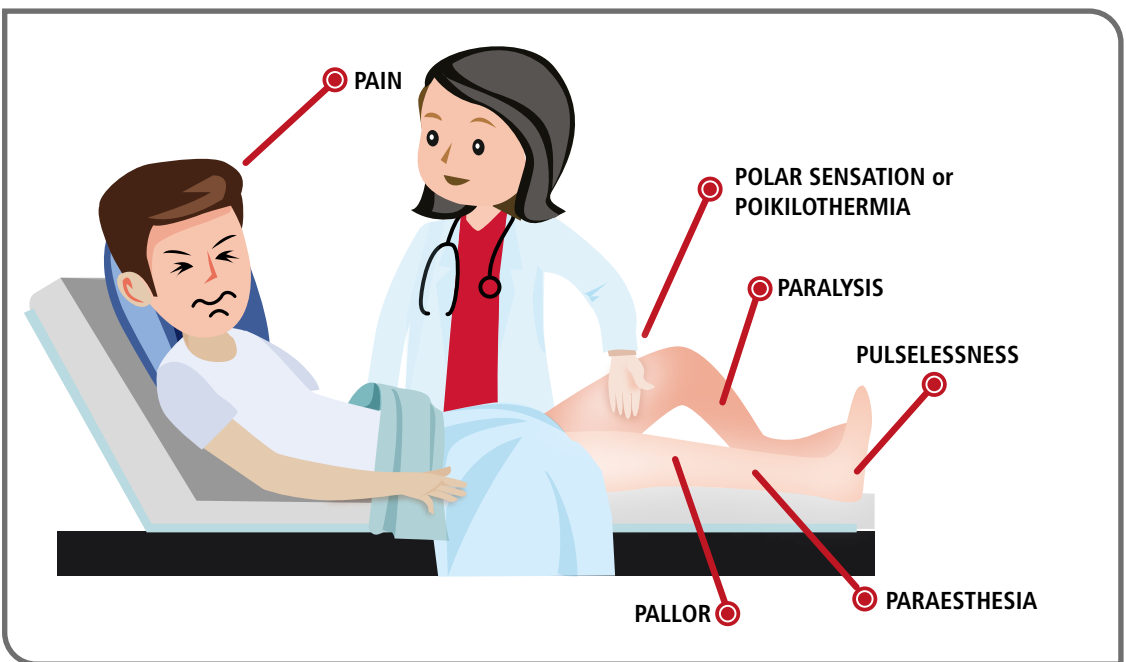


Figure 11. The “6 p’s” of Acute Limb Ischemia

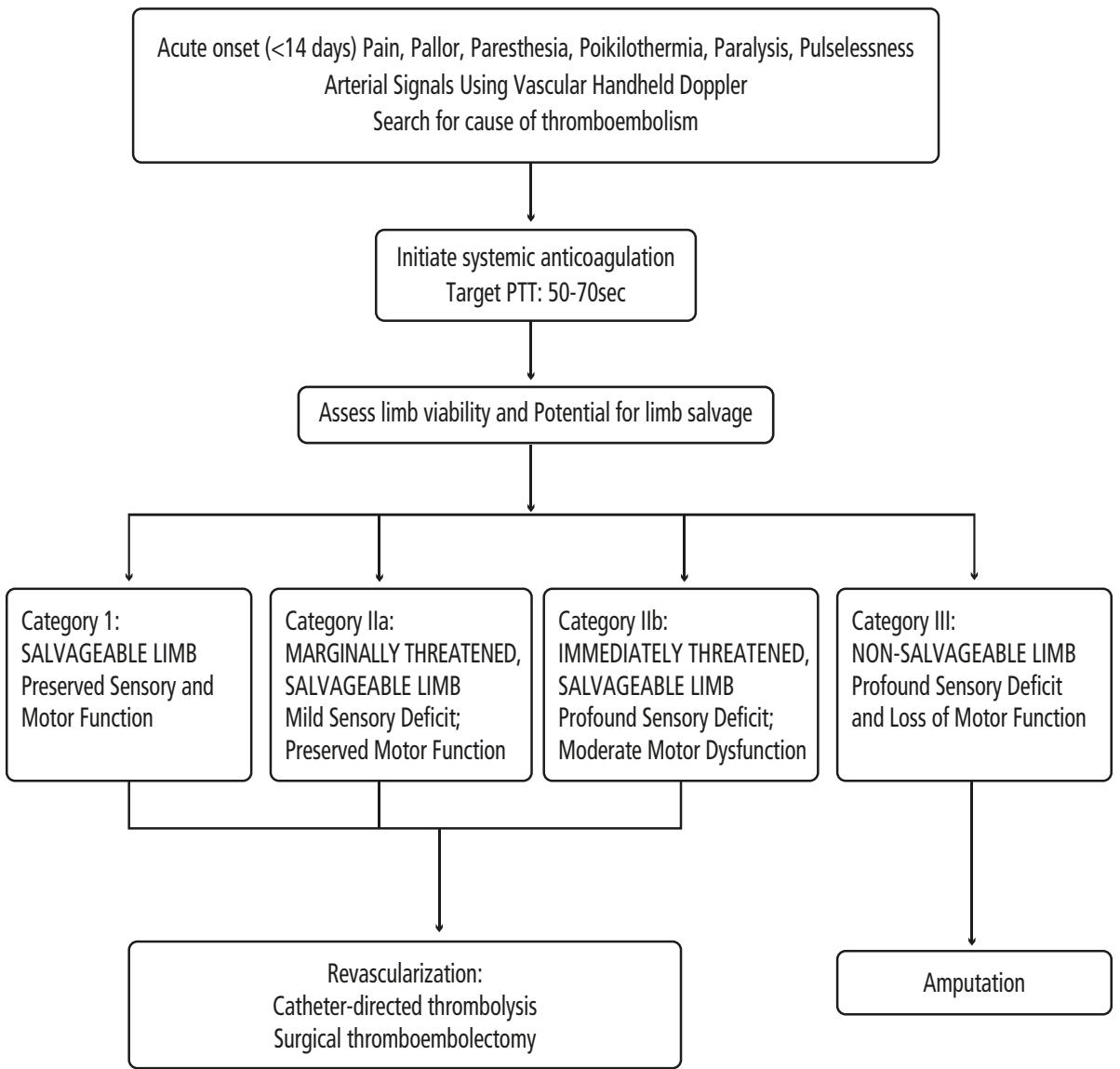


Figure 12. Management of ALI

Adapted from Rutherford, et.al., "Recommended Standards for reports dealing with lower extremity ischemia: Revised version." *Journal of Vascular Surgery*, 1997;26:517-38.

In patients with ALI, the initial intervention is to administer adequate systemic anticoagulation (e.g., intravenous unfractionated heparin). Assessment of limb viability and potential for limb salvage must be done immediately to administer timely intervention, as described above.

RECOMMENDATION	COR	LOE
Clinical Evaluation of ALI		
Patients with ALI should be emergently evaluated by a clinician with sufficient experience to assess limb viability and implement appropriate therapy.	I	C-LD
In patients with suspected ALI, initial clinical evaluation should rapidly assess limb viability and potential for salvage and does not require imaging.	I	C-LD
Medical Therapy for ALI		
In patients with ALI, systemic anticoagulation with heparin should be administered unless contraindicated.	I	C-LD
Revascularization for ALI		
In patients with ALI, the revascularization strategy should be determined by local resources and patient factors (e.g., etiology and degree of ischemia)	I	B-NR
Catheter-based thrombolysis is effective for patients with ALI and a salvageable limb.	I	A
Amputation should be performed as the first procedure in patients with a nonsalvageable limb.	I	C-LD
Patients with ALI should be monitored and treated (e.g., fasciotomy) for compartment syndrome after revascularization.	I	C-LD
In patients with ALI with a salvageable limb, percutaneous mechanical thrombectomy can be useful as adjunctive therapy to thrombolysis.	IIa	B-NR
In patients with ALI due to embolism and with a salvageable limb, surgical thromboembolectomy can be effective.	IIa	B-NR

VIII. LONGITUDINAL FOLLOW-UP

RECOMMENDATION	COR	LOE
Patients with PAD should be followed up with periodic clinical evaluation, including assessment of cardiovascular risk factors, limb symptoms, and functional status.	I	C-EO
Patients with PAD who have undergone lower extremity revascularization (surgical and/or endovascular) should be followed up with periodic clinical evaluation and ABI measurement.	I	C-EO
Duplex ultrasound can be beneficial for routine surveillance of infrainguinal, autogenous vein bypass grafts in patients with PAD.	IIa	B-R
Duplex ultrasound is reasonable for routine surveillance after endovascular procedures in patients with PAD.	IIa	C-LD
The effectiveness of duplex ultrasound for routine surveillance of infrainguinal prosthetic bypass grafts in patients with PAD is uncertain.	IIb	B-R

It is strongly recommended that patients with PAD should be regularly followed up with clinical evaluation and ABI measurement. However, ABI and ankle systolic pressure measurement must not be done on those with bypass graft that involve the distal anterior or posterior tibial arteries as anastomotic sites. Furthermore, patients who have undergone revascularization are still at risk for major adverse cardiovascular events and should be maintained on optimal medical therapy and adequate risk factor control.



ASIAN PACIFIC SOCIETY OF ATHEROSCLEROSIS AND VASCULAR DISEASES

The following material was adapted from the
**Asia-Pacific Consensus Statement
on the Management of Peripheral Artery Disease***

2020 © APSAVD All Rights Reserved

The content of this Pocket Guide has been published for personal and educational use only. No commercial use is authorized. No part of this Pocket Guide may be translated or reproduced in any form without written permission from the Asian Pacific Society of Atherosclerosis and Vascular Diseases. Permission can be obtained upon submission of a written request to the APSAVD email address: admin@yoursecretariat.com.au

Disclaimer:

This consensus statement represents the views of APSAVD and is produced after consideration of the scientific knowledge and evidence available at the time of writing. Since the time of writing, newer evidence from recent literature and landmark trials may have added additional management options for patients with PAD. The APSAVD is not responsible in the event of any contradiction, discrepancy, and/or ambiguity between the APSAVD consensus statement and any other recommendations issued by public health authorities. Healthcare professionals are encouraged to exercise their clinical judgement in applying these recommendations in actual practice. Guidelines do not override in any way whatsoever the individual responsibility of health professionals to make appropriate decisions in consideration of each patient's health condition.

*Abola, et.al. "Asia-Pacific Consensus Statement on the Management of Peripheral Artery Disease: A Report from the Asian Pacific Society of Atherosclerosis and Vascular Diseases Asia-Pacific Peripheral Artery Disease Consensus Statement Project." J Atherosclerol Thromb. 27:809-907, 2020.



PUBLISHED and DISTRIBUTED

through an educational grant from

Asian Pacific Society of Atherosclerosis and Vascular Diseases
Philippine Heart Association
Philippine Society of Vascular Medicine
Philippine Lipid and Atherosclerosis Society
Department of Health of the Philippines

