

Disease Management: PAD

Evaluation:

Evaluation of claudication: pain brought on by exertion and relieved by a few minutes of rest; typically in a calf, thigh, or buttocks; exacerbated by walking; often starts after the same distance/time of walking; chronic, consistent and reproducible.

Differentiate from other conditions: arthritis involves joint pain and pain is variable; chronic venous insufficiency is characterized by leg and ankle edema, aggravated by sitting/standing for long periods, and is typically worse at end of day.

Physical assessment: peripheral pulses are diminished or absent; color changes include pallor of extremity especially if elevated above heart level; a bright reddish color occurring in the affected limb when it's placed in the dependent position; cooler extremity when compared to unaffected leg.

Severe symptoms: feels like burning pain in the toes; may occur most often when patient is in bed or limb elevated; may result in paralysis/amputation.

Questionnaires: Walking Impairment Questionnaire; PAD Physical Activity Recall Questionnaire.

Before beginning exercise program: Doppler arterial testing

Follow-up testing: resting ankle brachial index (ABI); treadmill walk compared to baseline evaluation; post-exercise ankle pressures with recovery time

Maintain treatment goals:

- Nutrition/Diabetes
Eat a heart-healthy diet. Specific dietary recommendations are based on the patient risk profile for heart disease, hypercholesterolemia, hypertension, and/or diabetes. If diabetic, achieve HbA1C <7.0. One in every three people over the age of 50 with diabetes is likely to have PAD
- Exercise
Warm-up: 5-10 minutes including low-intensity exercise on a seated modality such as NuStep followed by 2-3 minutes of slow, low-level walking
Modality: Treadmill/track walking are the most effective approaches.
Intensity: Initial workloads should be set to elicit claudication symptoms within 3-5 minutes. Patients should walk at this workload until they reach claudication of moderate severity (level 4 on pain scale below). This is followed by a brief period of standing or sitting to allow symptoms to resolve. If patient is able, they should try to keep lower limbs moving by performing ankle circles while resting. This exercise-rest-exercise pattern is repeated throughout the exercise session.
Duration: Initial duration is a total of 35 minutes of intermittent walking and increased by 5 minutes each session until 50 minutes of intermittent walking can be completed. Ultimately, 35-50 minutes of continuous walking is desired.
Frequency: 3-5 days/week

The above guidelines are based on ACSM recommendations. Other protocols include:

CLEVER: Begin at 2 mph and grade that causes pain 2 on claudication scale. Stop exercise when pain 3-4 is reached. Resume exercise when 1 on claudication scale. Progress if patient can walk 8 minutes or longer at a workload. Increase grade by 2% up to 10% over time, then increase speed by 0.2 mph up to 3 mph over time. Then increase grade to 12% and 14% and maximum 15% over time. Then increase speed by 0.2 as tolerated.

Gardner-Skinner protocol: increases grade by 2% every 2 minutes

Hiatt protocol: increases grade by 3.5% every 3 minutes

PAIN SCALE

1 NO PAIN

2 ONSET OF PAIN - First signs of pain

3 MILD PAIN - Pain that is easy to forget about

4 MODERATE PAIN - Significant pain, but you are able to distract yourself and keep walking

5 MAXIMUM PAIN - Severe pain that cannot be walked through

- Cardiac Status Assessment
Risk of CAD is 3-10 times greater in patients with PAD. Patients should undergo appropriate cardiac stress evaluations. A bicycle instead of a treadmill may permit increased myocardial work before peripheral limitation occurs and, therefore, allow more accurate assessment of cardiac risk.
- Labs

Make sure labs are current and review with patient: lipids, metabolic panel, etc. Help arrange f/u if needed; make sure labs are current if medication/health status changes. Excess cholesterol and fat in the blood contribute to the formation of plaque in the arteries, reducing or blocking blood flow to the heart, brain, or limbs.

- Alcohol and tobacco use
Address need for limitation or cessation. Those who smoke or have a history of smoking have up to four times greater risk of developing PAD.
- Blood pressure
Monitor BP each session. High blood pressure raises the risk of developing plaque in the arteries.
- Race
African Americans are more than twice as likely to have PAD as their white counterparts.
- Psychosocial
Intervention when needed.
- Medications
Lipid-lowering agents, anti-hypertensives, antithrombotic agents
Pentoxifylline for treatment of claudication – used to increase red cell flexibility and reduce blood viscosity
Cilastazol has been shown to improve pain-free walking distance and increase maximum walking distance in claudication patients
- Skin and foot assessment
Foot care should follow diabetes recommendations: page 169 AACVPR book Figure 9.18.
- Post-revascularization considerations
Generally ready for rehab within 1-2 weeks if angioplasty; abdominal aortic surgery 6-8 weeks; lower-extremity bypass recover quickly but limited by groin/knee incision soreness – avoid rowing machines shortly after intervention.
- Other education
Behavior change, lifestyle characteristics associated with increased risk of arterial disease, peripheral arterial anatomy and pathophysiology of their disease, safe and efficient home exercise training procedures.

Annual assessment of complications: (Should verify that patient is having these done yearly)

- Targeted annual history and physical exam
- Cardiovascular and cerebrovascular complication assessment
- Special considerations

Treatment and referral for complications: (Contact physician if problems arise that need attention)

- Cardiovascular and cerebrovascular disease
- Tobacco cessation
- Behavioral health

Treatment goals not met:

- Consider referral to specialists
- Assess patient adherence
- Evaluate for depression

*Also see PAD – Program Development section on MNACVPR website

References

American Association of Cardiovascular and Pulmonary Rehabilitation (2004). Guidelines for cardiac rehabilitation and secondary prevention programs (4th ed.). Champaign, IL: Human Kinetics.

American College of Cardiology Foundation/American Heart Association (ACCF/AHA) PAD Practice Guidelines 2013.

American College of Sports Medicine (2010). *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription* (6th ed.). Baltimore, MD: American College of Sports Medicine.

Bronas, U.G., et al. (2009). Design of the multicenter standardized supervised exercise training intervention for the 'CLaudication: Exercise Vs Endoluminal Revascularization (CLEVER) study.' *Vascular Medicine*, 14(4), 313-321. doi: 10.1177/1358863X09102295

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