

your guide to

Peripheral Arterial Disease



For heart- or risk-related information, call 1-800-AHA-USA1 (1-800-242-8721) or contact your nearest office. You can also visit us online at americanheart.org.

For stroke information, call our American Stroke Association at 1-888-4-STROKE (1-888-478-7653), or visit StrokeAssociation.org.

For information on life after stroke, call and ask for the Stroke Family Support Network.

Your contributions will support research and educational programs that help reduce disability and death from America's No. 1 and No. 3 killers.

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What Is Peripheral Arterial Disease?



Peripheral arterial disease (P.A.D.) is a form of atherosclerosis—the hardening and narrowing of the arteries, caused by the gradual buildup of fatty deposits and other substances. The term “P.A.D.” includes all disorders that affect the arteries outside the heart. This pamphlet, however, will focus on the most common form of P.A.D., in which the flow of blood is restricted mainly in the arteries that lead to the legs.

Many people with P.A.D. (often called P.V.D., or peripheral vascular disease) have no symptoms, but others have pain, for instance, in their legs while they walk. The pain goes away when they rest. Whether or not they have symptoms, people with clogged arteries often have damaged blood vessels in other parts of their bodies, too, putting them at a higher risk for heart attack and stroke.

By working with your healthcare professional, you can learn about your risks, how to reduce them through lifestyle changes and what to do when you have symptoms of P.A.D. Read on to learn more.

Talk to your healthcare professional, use this guide, call **1-800-AHA-USA1** or go to www.americanheart.org/pad, www.vdf.org or www.padcoalition.org to learn more about peripheral arterial disease.

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Knowing the risks

Who Is Likely to Get It?



The risks for peripheral arterial disease are similar to those associated with other cardiovascular diseases.

P.A.D. affects 8 million to 12 million people in the United States, including 12 percent to 20 percent of those over age 65. More than 20 percent of the population over age 75 has P.A.D. It occurs in both men and women.

Answering the questions below will help you know if you are at risk. The more “yes” answers you have, the more important it is to see your healthcare professional.

Are you at risk for P.A.D.?

- Do you smoke?
- Do you have diabetes?
- Do you have high cholesterol?
- Do you have high blood pressure?
- Are you over age 50, with a history of smoking and/or diabetes?
- Are you over age 70?
- Do you have a family history of P.A.D., cardiovascular disease or stroke (immediate family, such as parent, sister or brother)?
- Do you have muscle discomfort, cramping or pain in your legs when you walk, which is always relieved by rest?
- Do you have any ulcers or sores on your legs or feet that are slow to heal?
- Do you have a history of coronary artery disease (a heart attack, angina, angioplasty or bypass surgery) or stroke?

What are the signs?

Looking for Symptoms and Signs



Lack of symptoms can keep P.A.D. victims in the dark while the disease develops.

Leg Pain or Discomfort

Common symptoms in people who have early-stage peripheral arterial disease are cramping, fatigue, heaviness, pain or discomfort in the thighs, calves or hips during activity. Such leg muscle cramping is called “intermittent claudication” and always subsides when the activity stops.

But many people with the disease have no symptoms at all, and only about a third have any leg symptoms. The disease often goes undiagnosed because of a lack of symptoms, especially during the early stages, or because people mistakenly think the symptoms are a normal part of aging or related to arthritis.

By the time many people feel leg discomfort or pain, the arteries may already be severely blocked. If you believe you may have P.A.D. symptoms, ask your healthcare professional to check your leg arteries.

Signs of Severe P.A.D.

- **Foot pain at rest**
- **Non-healing foot or toe wounds**
- **Gangrene**

Diagnosing P.A.D.

Diagnosis of P.A.D. begins with a medical history and physical exam. The healthcare professional may detect weak pulses in the legs with a special “stethoscope” called a Doppler device. The healthcare professional may order a simple blood pressure test, known as ABI (ankle-brachial index), which measures the blood pressure in your arms and legs; or a duplex ultrasound, magnetic resonance angiogram, CT angiogram or regular catheter-based angiogram, which can determine how narrow the artery is.

Stemming the Flow

When arteries narrow, lack of blood can starve the tissues surrounding them.

Arteries Thicken

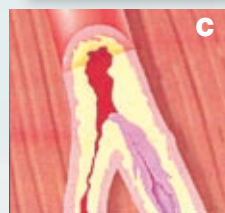
P.A.D. is caused by a thickening of the walls of the arteries. These thickened areas, called plaques, create a condition called atherosclerosis, or hardening of the arteries. The space through which blood can flow becomes smaller, decreasing the supply of oxygen and nutrients to the leg muscles. This condition can cause damage to the tissues around the arteries.

Atherosclerosis

Atherosclerosis occurs most commonly when a person has any combination of a family history of artery disease, high blood levels of cholesterol (a fat-like substance), smoking, diabetes, or high blood pressure. When the cholesterol level is high, the chance that it will be deposited onto artery walls is higher. This build up (referred to as plaque) reduces blood flow through the affected arteries. However, atherosclerosis can occur despite normal blood cholesterol levels, especially in patients with other risk factors.

Tissue Death

Over time, a healthy artery (A) can become so narrow the person has pain at rest (B). When the artery becomes narrow enough or blocked (C), too little oxygen gets through and tissue death can set in, resulting in infection or gangrene, and possibly amputation.



Gaining Control

As in other artery-related diseases, lifestyle changes can go a long way toward preventing and treating P.A.D.

Not surprisingly, the steps taken to help prevent P.A.D. are the same as those taken to control it.

Smoking

Smoking tobacco is a major risk factor for P.A.D. Smokers, on average, are diagnosed with P.A.D. up to 10 years earlier than are non-smokers. Quitting smoking—or never starting—is the most important thing you can do to prevent P.A.D. or slow it down.

Diabetes

People with diabetes may be more likely to develop vascular diseases. If you are diabetic, you should be under medical care to keep your glucose levels under control. You also need to keep your blood pressure and cholesterol under tight control to avoid cardiovascular complications.

High Blood Pressure

High blood pressure is another condition that can

Talk to your healthcare professional

before undertaking any exercise or treatment program.

damage the arteries. Blood pressure can often be reduced enough by diet and exercise. If this does not lower it adequately, medication can also be added. It is important to lower blood pressure if it is too high.

Exercise

Studies have shown that exercise produces significant increases in the distances P.A.D. patients can walk without pain. Walking and regular leg exercises using a motorized treadmill three to four times a week, ideally in a program of supervised rehabilitation, are proven to be effective to decrease claudication symptoms.

Diet

Since people who have P.A.D. usually have high cholesterol as well, a diet low in saturated fat, trans fat and cholesterol is recommended. Other strategies to lower cholesterol should also be adopted.



Taking Action

Most people with P.A.D. will be able to be managed with risk factor modification, exercise and claudication medications.

Lifestyle, Medication

Your healthcare professional may create a program that includes an exercise program and a diet low in saturated fat, trans fat and cholesterol. For those with claudication, a program of supervised exercise training typically consists of 30- to 45-minute sessions three to four times a week. This will help to increase the distance they can walk without discomfort or pain. A lifestyle that encourages daily exercise should be promoted. Medications prescribed to help improve walking distance in patients with claudication include cilostazol and pentoxifylline. Other medications that may be prescribed include antiplatelet agents (including aspirin and clopidogrel) to reduce the risk of heart attack or stroke, and medicines to lower cholesterol or reduce high blood pressure.

For the minority of patients for whom lifestyle modification, an exercise program and medications are not enough, angioplasty or surgery may be warranted.

Angioplasty and Stents

Angioplasty is a procedure in which a thin tube—a

catheter—with a balloon on the tip is inserted through the skin into the blocked artery and the balloon is inflated. The reopening of the artery allows the blood to flow. A stent is a tiny wire mesh cylinder that can be implanted into the clogged artery at the time of angioplasty using the catheter. The stent acts like a scaffolding and holds the artery open.

Surgery

Surgery may be necessary to treat severe narrowing of the arteries. Generally, a vein from another part of the body is used to bypass the narrowed area of the artery. If a suitable vein is unavailable, a synthetic blood vessel may be needed.

For most people, exercise, medication and changes in lifestyle are enough to slow the progression and even improve the symptoms of P.A.D.





The American Heart Association spent about \$474 million during fiscal year 2004-05 on research support, public and professional education and community programs. The organization includes more than 22.5 million volunteers and supporters who carry out its mission in communities across the country. The association is the largest nonprofit voluntary health organization fighting heart disease, stroke and other cardiovascular diseases, which annually kill more than 910,000 Americans. For more information about heart disease and stroke, call 1-800-AHA-USA1 or visit www.americanheart.org.