



CVEC

Cardiology Vascular & Endocrinology Center

PAD

AWARENESS, PREVENTION, TREATMENT

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Cardiology Vascular & Endocrinology Center

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About Us

Cardiology Vascular & Endocrinology Center

- CVEC, is an interventional cardiologist practice.
- Interventional Cardiologists at CVEC, perform diagnostic exams and scans like angiograms, ultrasound imaging, peripheral vascular testing, Treat extremity PAD.

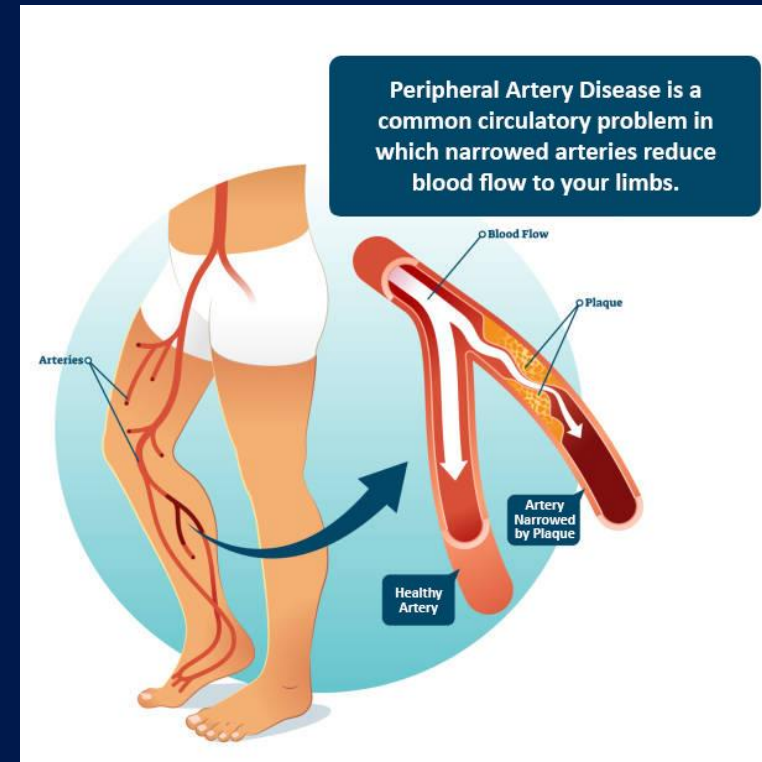
What We Do & How We Do It

Cardiology Vascular & Endocrinology Center

Tests, Procedures & Therapies

Medical tests, procedures and therapies provided by Interventional Cardiology practices include:

- Peripheral artery disease
- Angioplasty and stenting
- Atherectomy
- Embolic protection
- Percutaneous valve repair
- Balloon angioplasty



Stats

Peripheral Artery Disease affects over 8.5 million U.S. adults and over 113 million people worldwide.

Approximately 8 to 12 million people in the United States have PAD, including 12% to 20% of older than age 60. In the U.S., general population awareness of PAD is estimated at 25%, and many people with PAD are undiagnosed.

PAD	DIAGNOSED
GLOBAL	113 million
UNITED STATES	8 - 12 million

Peripheral Vascular Disease Statistics

- Approximately 8.5 million people have PVD worldwide
- Men and women are equally affected by PVD
- Between 12 and 20 percent of those with PVD are over the age of 65
- 40 percent of those with PVD do not experience leg pain, which delays diagnosis
- Smoking increases your risk for PVD by 2 to 6 times

Mortality rate of individuals that received amputations as a result of PAD:

13%-40% mortality in 12 months

35%-65% mortality in 3 years

39%-85% mortality in 5 years

Why does peripheral artery disease matter?

Peripheral artery disease happens when fatty deposits build up in arteries outside the heart, usually the arteries supplying fresh oxygen and blood to the arms, legs and feet.

Is PAD dangerous or life threatening?

Yes, PAD can be dangerous because these blockages can restrict circulation to your limbs and organs. Without adequate blood flow, your vital organs, arms, legs and feet can suffer damage. Left untreated, the tissue can become infected or die, a condition called gangrene.



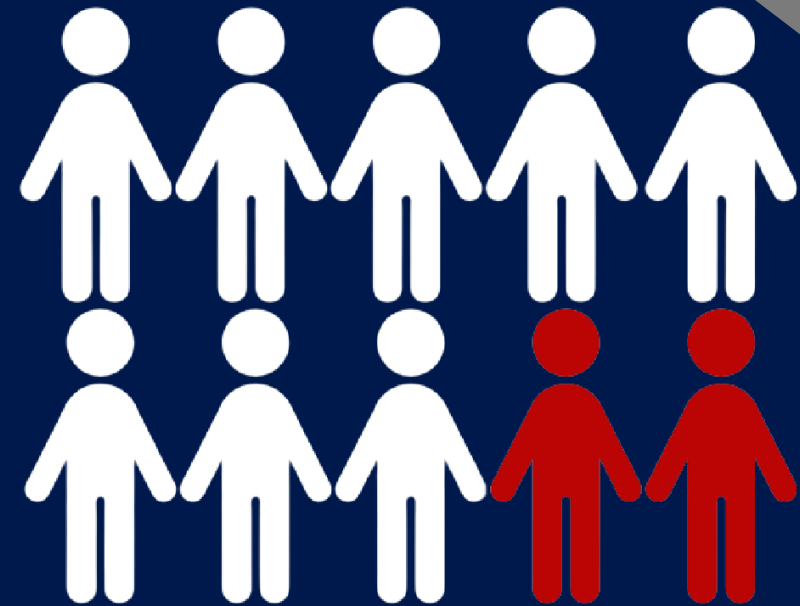
PAD Does PAD cause additional health problems?

PAD may be the first warning sign of atherosclerosis – the buildup of fatty plaque in the arteries that narrows and blocks them throughout the body, including in the heart, brain, arms, legs, pelvis and kidneys. Fatty deposits also increase the risk for vascular inflammation and blood clots that can block the blood supply and cause tissue death.

PAD is potentially a life-threatening condition that can be managed.

Why Is Peripheral Artery Disease Dangerous?

In the most common type of PAD, lower extremity PAD, blood flow is reduced to the legs and feet. Left untreated, PAD can lead to gangrene and limb amputation. Patients with PAD are at heightened risk for death from both heart attack and stroke. PAD can result in poor kidney circulation, leading to high blood pressure, or blood pressure that is difficult to control with lifestyle changes and medications. In some cases, blockage of the kidney arteries may progress to loss of kidney function or kidney failure.

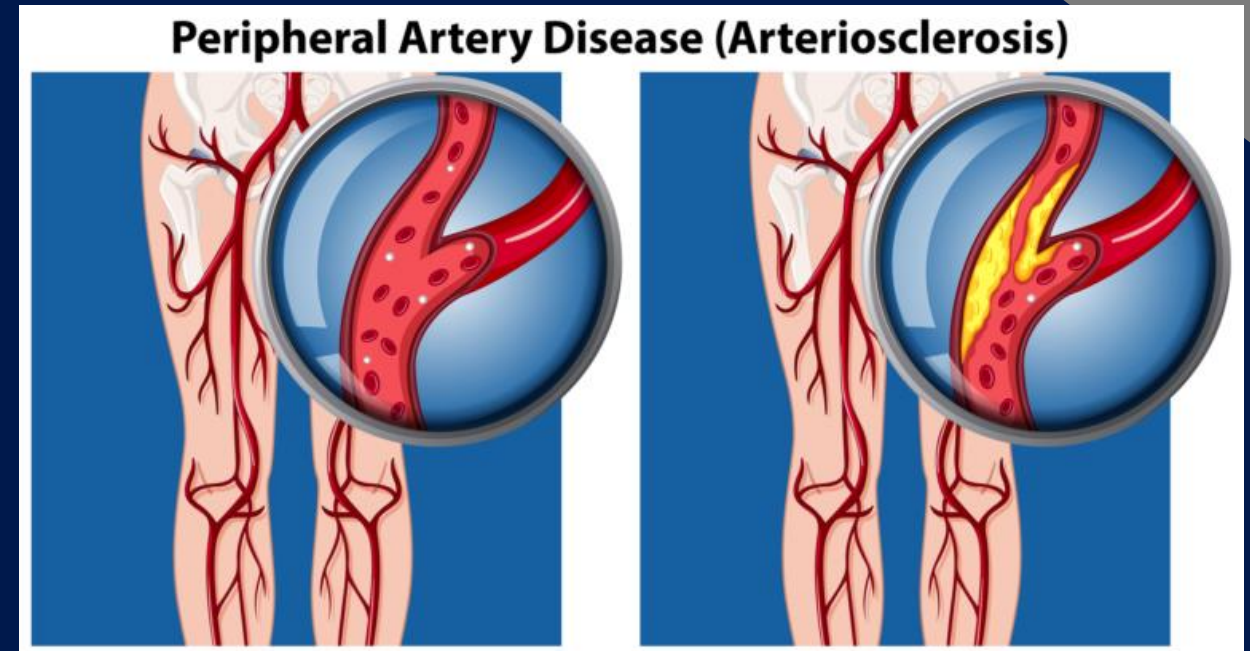


8 Out Of 10

Amputations Are Preventable

Understanding The Differences Between PAD vs. PVD

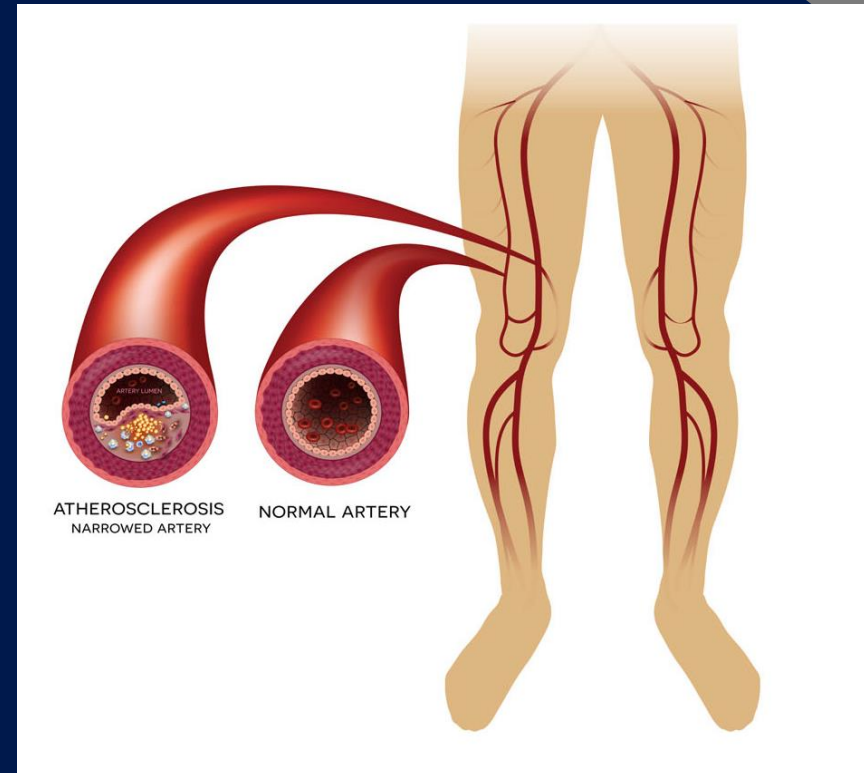
There are subtle differences between the terms, *PAD* and *PVD*. Peripheral Arterial Disease (*PAD*) afflicts the arteries alone while Peripheral Vascular Disease (*PVD*) is a broader term which includes any blood vessel including, veins and lymphatic vessels. Both are progressive disorders that narrow or block blood vessels, limiting the amount of oxygen and nutrients circulating in your body. *PVD* doesn't have tissue damage on the structure of the vessel, where *PAD* does. This tissue damage on the walls of the arteries is caused by the accumulation of fat. These blockages can cause major health concerns if they break off and travel to another part of the body. Plaque buildup in the arteries is caused by increased LDL (low-density lipoproteins, also known as "bad cholesterol") which can cause cells to stop processing this fat, allowing it to accumulate in the bloodstream.



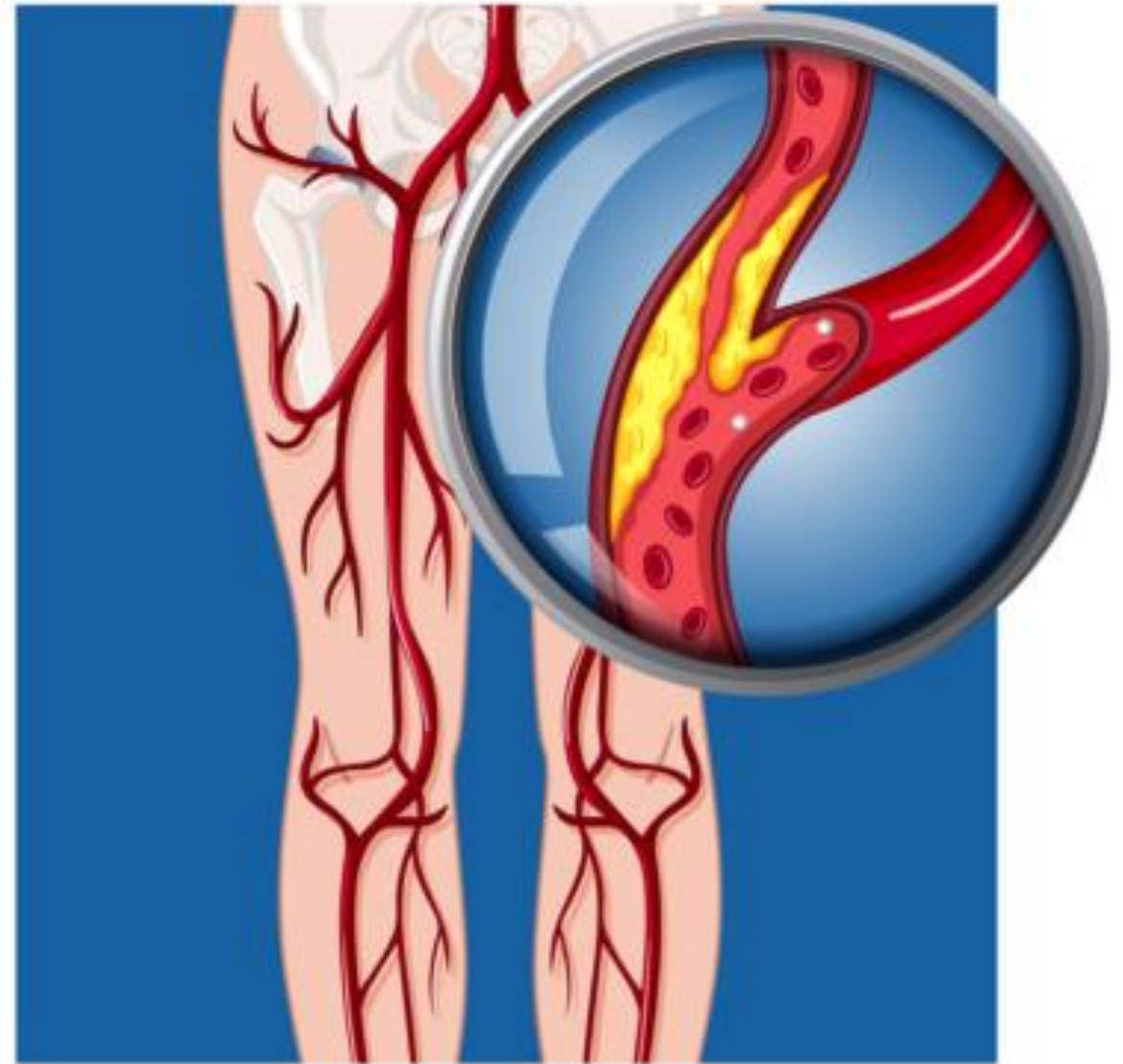
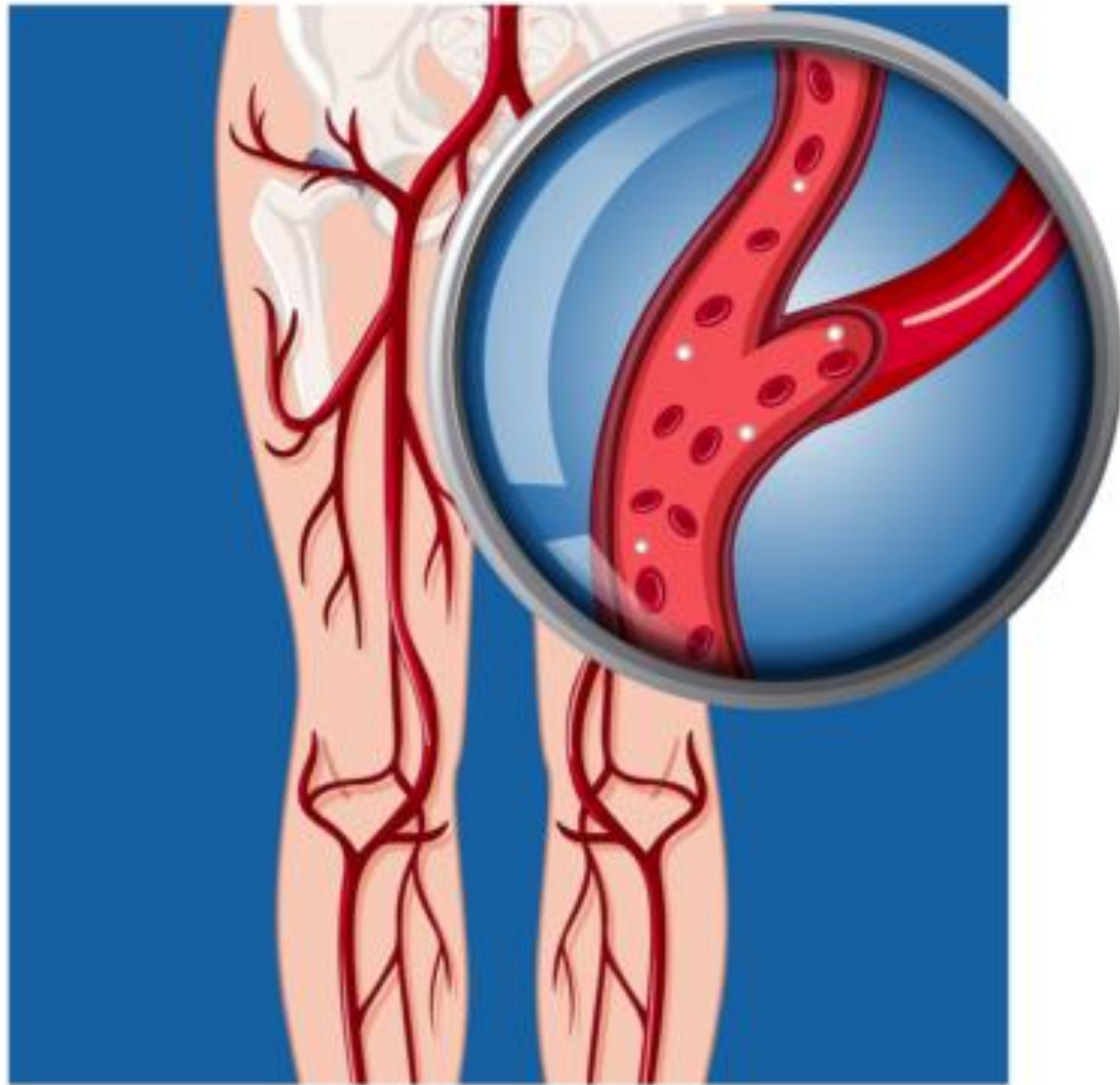
Peripheral Artery Disease (PAD)

What is Peripheral Artery Disease?

- Peripheral artery disease is a narrowing of the peripheral arteries that carry blood away from the heart to other parts of the body. The most common type is lower-extremity PAD, in which blood flow is reduced to the legs and feet.



Peripheral Artery Disease (Arteriosclerosis)



Medical evaluation and effective treatment are recommended to prevent further damage and more drastic events such as heart attack, stroke, or amputation. Early diagnosis of PAD will respond well to lifestyle changes such as diet, exercise, lowering cholesterol and blood pressure, controlling your blood sugar and quitting smoking. If your PAD has progressed, our vascular specialists will create a customized treatment plan that is right for you.

PAD

Pain or cramping in legs (muscles calf, thigh, or buttocks) during activity and disappears at rest	Dull cramping and pain that comes and goes in the legs
Numbness and tingling	Heaviness or tightness in the leg muscles
Slow healing or non-healing sores on toes, feet, or legs	Leg or foot that feels cool or cold to the touch compared to the other leg
Skin color changes	Burning sensation
Poor nail growth	Leg fatigue Leg or foot feeling cool or cold to the touch
Thinning of skin on legs	Skin color changes
Some people do not experience ANY symptoms	Loss of leg hair

What is PAD

Blood Flow

PAD and Leg Pain

Common Locations

The ABI Test

At Rest

(60-100 beats per minute)

A slower heart beat delivers enough oxygen and nutrients to the muscle.

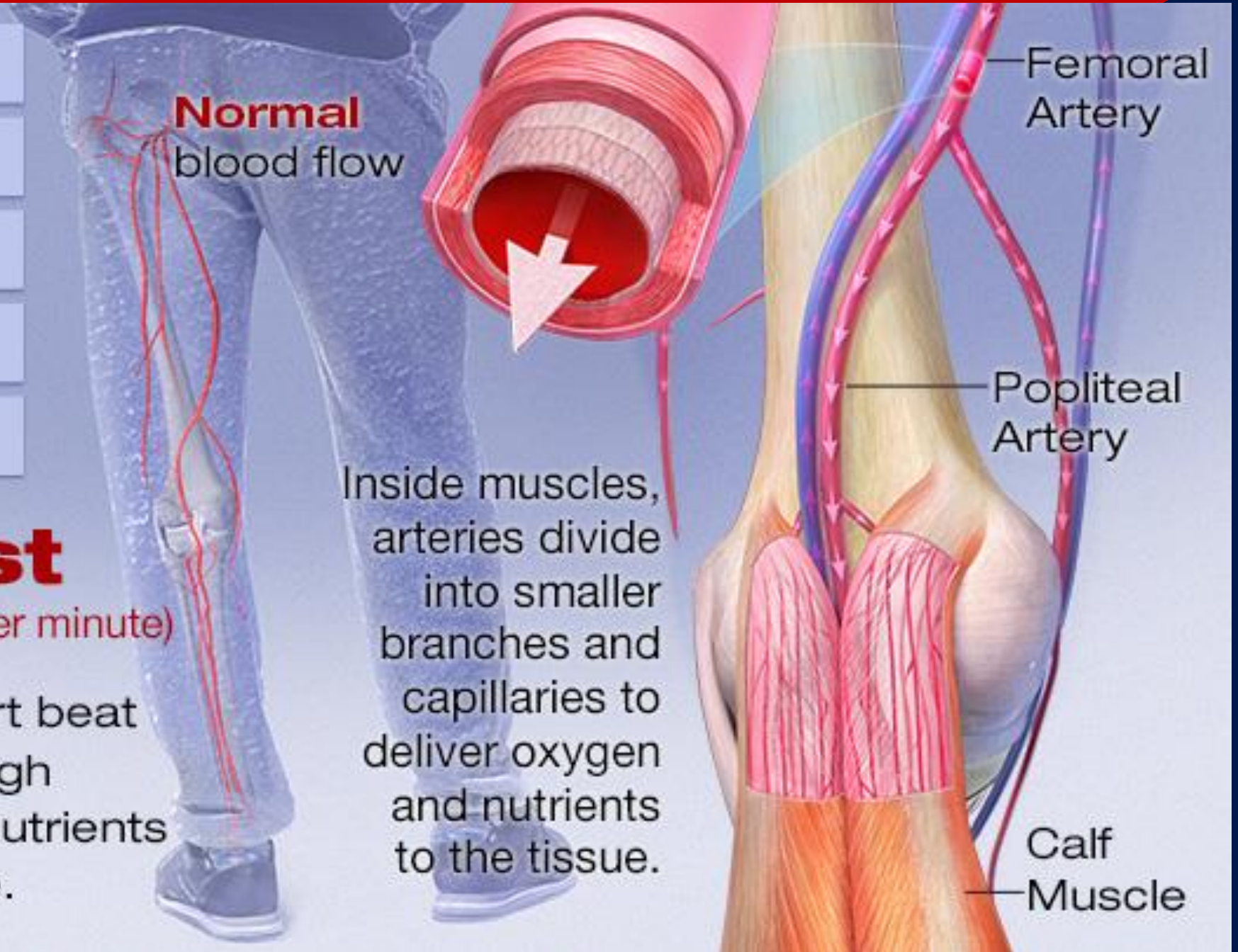
Normal
blood flow

Inside muscles, arteries divide into smaller branches and capillaries to deliver oxygen and nutrients to the tissue.

Femoral Artery

Popliteal Artery

Calf Muscle



What is PAD

Blood Flow

PAD and Leg Pain

Common Locations

The ABI Test

With Activity

the heart pumps harder and faster to deliver more blood to the muscles.

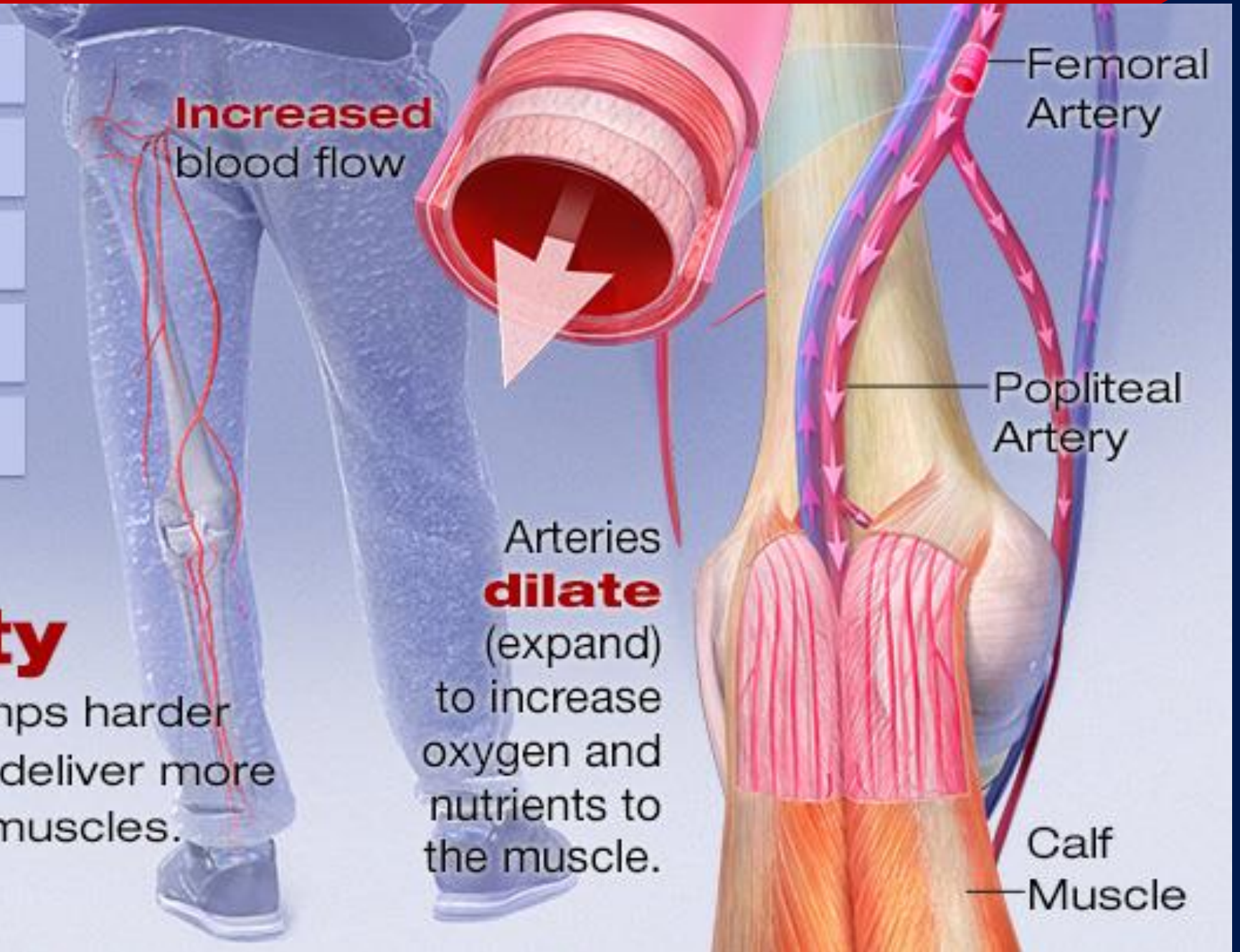
Increased
blood flow

Arteries **dilate** (expand) to increase oxygen and nutrients to the muscle.

Femoral Artery

Popliteal Artery

Calf Muscle



What is PAD

Blood Flow

PAD and Leg Pain

Common Locations

The ABI Test

No Pain at Rest

Muscles do not demand as much oxygen and nutrients.

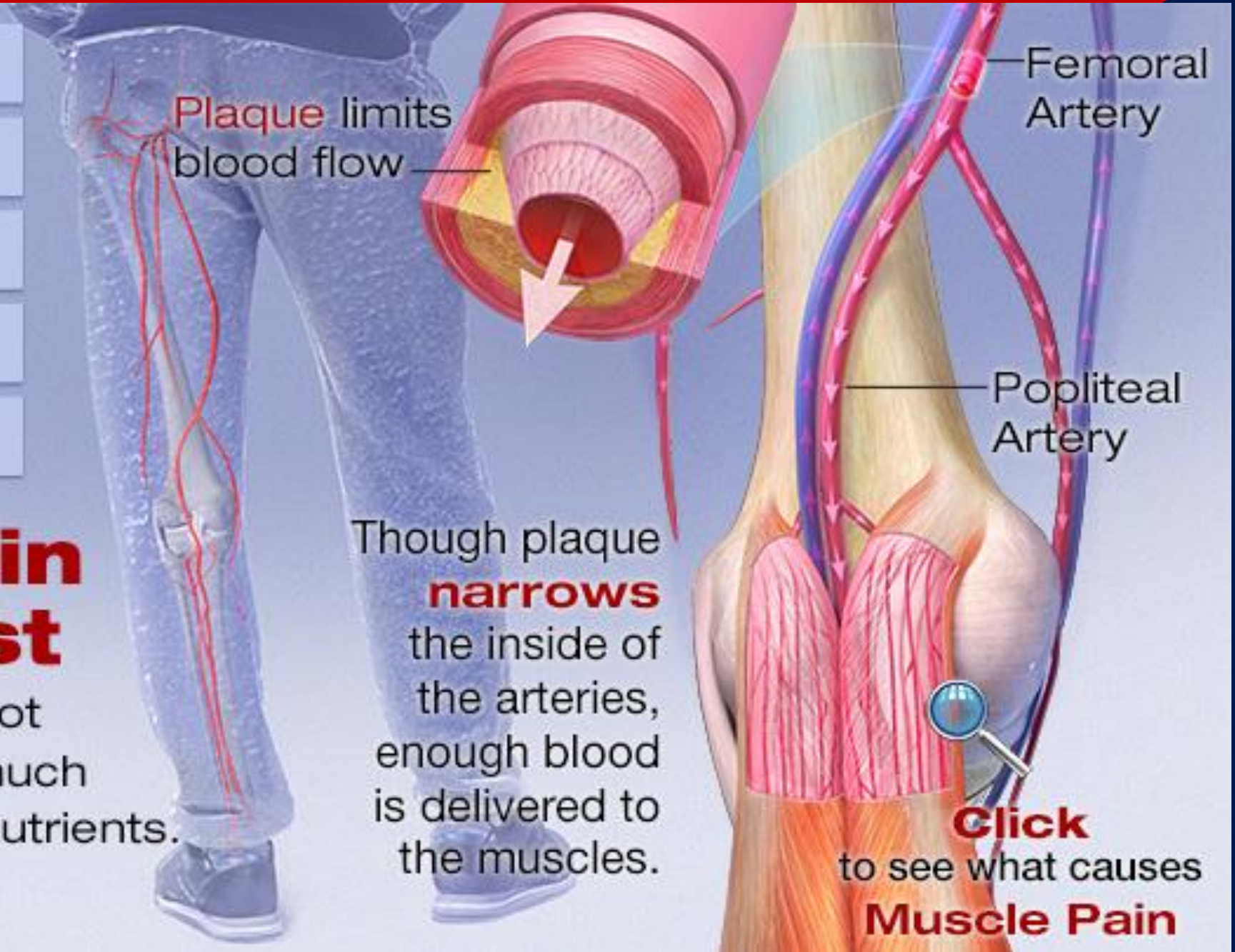
Plaque limits blood flow

Though plaque **narrows** the inside of the arteries, enough blood is delivered to the muscles.

Femoral Artery

Popliteal Artery

Click to see what causes **Muscle Pain**



What is PAD

Blood Flow

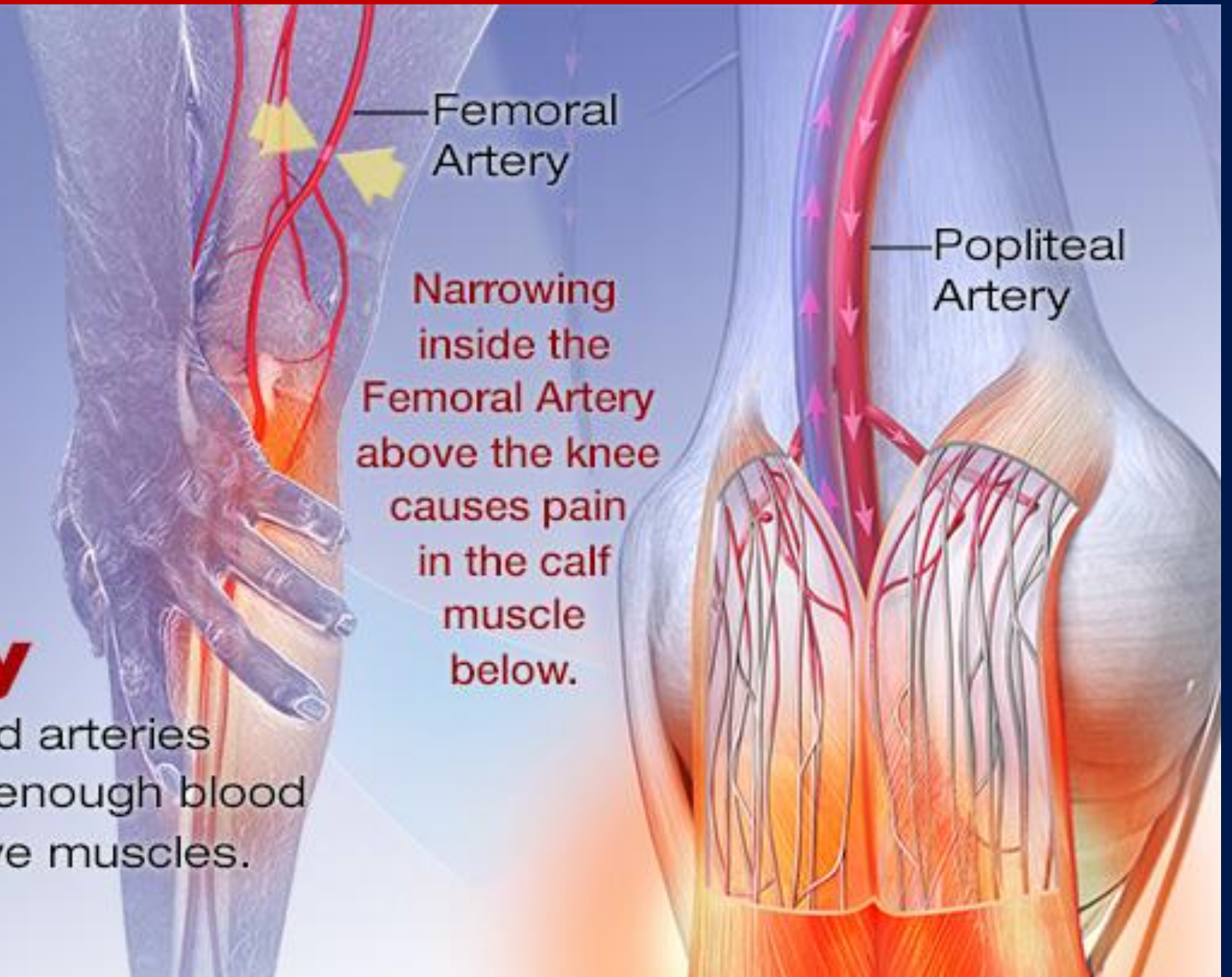
PAD and Leg Pain

Common Locations

The ABI Test

With Activity

partially blocked arteries cannot deliver enough blood to fuel the active muscles.



What is PAD

Blood Flow

PAD and Leg Pain

Common Locations

The ABI Test

Aorta

Iliac

Femoral

Popliteal

Posterior Tibial

Anterior Tibial

Peroneal

**Arteries
Most Commonly
Affected by
PAD**



Understand Your Risk For PAD

PAD Risk Factors You Can't Control



Certain risk factors for PAD can't be controlled, including:

- Increasing age
 - Age 65 and older
 - Age 50 to 64 with risk factors for atherosclerosis
 - Less than 50 with Type 2 diabetes and at least one other risk factor for atherosclerosis
 - Smoking
 - Diet/High Cholesterol
- Personal or family history of PAD, cardiovascular disease or stroke.

Understand Your Risk For PAD

PAD Risk Factors You Can Control

You can manage or control the following risk factors:

- Cigarette smoking - Smokers may have almost three times the risk of PAD than nonsmokers.
- Type 2 diabetes - Having diabetes puts you at greater risk of developing PAD as well as other cardiovascular diseases.
- High blood pressure - It's called "the silent killer" because it has no symptoms. Work with your health care professionals to monitor and control your blood pressure.
- High blood cholesterol - High cholesterol contributes to the build-up of plaque in the arteries (atherosclerosis), which can significantly reduce the blood's flow. Managing your cholesterol levels is essential to prevent or treat PAD.
- Physical activity - It increases the distance that people with PAD can walk without pain and helps decrease the risk of heart attack and stroke. Supervised exercise programs are one of the treatments for PAD patients.



Patients Can Help Control PAD

The uncontrollable risk factors for PAD include being age 65 or older, having a personal or family history of PAD, or a previous history of cardiovascular disease and stroke. As a health care professional, you should discuss with your patients the controllable risk factors for PAD that they can modify with simple steps, such as:



- **Cigarette smoking**—Smokers have 2.7 times the risk for PAD. A plan for quitting smoking should include pharmacotherapy (varenicline, bupropion, or nicotine replacement therapy) and/or a smoking cessation program.



- **Diabetes mellitus**—Regularly monitoring blood sugar levels and managing diabetes are important ways to avoid PAD, wound complications and other cardiovascular diseases.



- **Hypertension**—Monitoring and controlling hypertension with medications and heart-healthy lifestyle changes can significantly decrease the risk for PAD and its progression.



- **High blood cholesterol**—High blood cholesterol contributes to the buildup of plaque in the arteries that causes PAD. Managing high cholesterol with medications, diet and physical activity is key for preventing and controlling PAD.

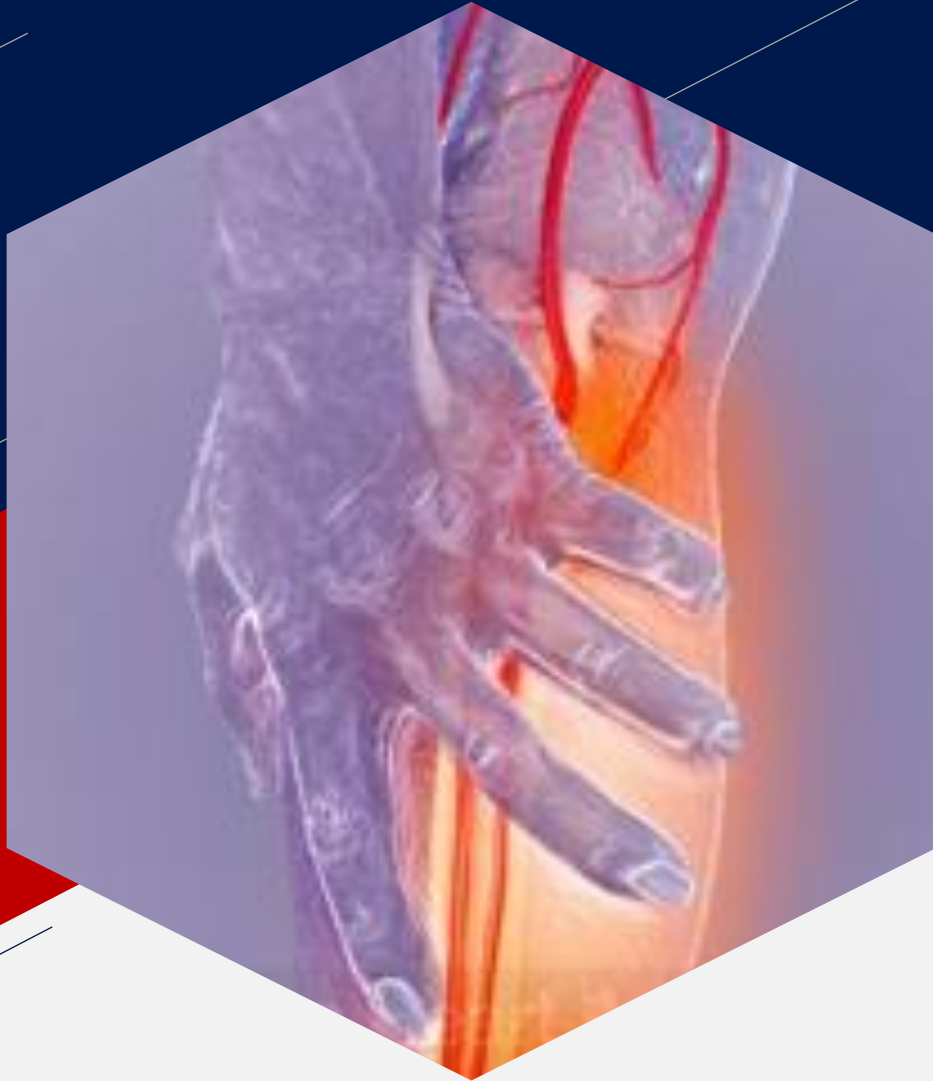


- **Physical inactivity**—Physical inactivity is a major risk factor for cardiovascular disease and stroke. Physical activity helps control cholesterol, blood pressure, diabetes and weight. For patients with claudication, structured exercise therapy programs can increase the distance they can walk without pain. Patients can work with their health care professional to follow an exercise program at home or in the community, and clinicians can also refer patients to structured PAD exercise programs at clinics or hospitals.

Understanding Leg Pain

- Many people dismiss leg pain as a normal sign of aging. You may think it's arthritis, sciatica or just "stiffness" from getting older. For an accurate diagnosis, consider the source of your pain. PAD leg pain occurs in the muscles, not the joints.
- Those with diabetes might confuse PAD pain with a neuropathy, a common diabetic symptom that's a burning or painful discomfort of the feet or thighs. If you're having any kind of recurring pain, talk to your health care professional and describe the pain as accurately as you can.





Symptoms & Diagnosis Of PAD

- The most common symptom of lower-extremity peripheral artery disease is painful muscle cramping in the hips, thighs or calves when walking, climbing stairs or exercising.
- The pain of PAD often goes away when you stop exercising, although this may take a few minutes. Working muscles need more blood flow. Resting muscles can get by with less.
- If blood flow is blocked due to plaque buildup, the muscles won't get enough blood during exercise to meet the needs. The cramping pain (called intermittent claudication) is the muscles' way of warning the body that it isn't receiving enough blood during exercise to meet the increased demand.
- Many people with PAD have no symptoms or mistake their symptoms for something else.

Other Symptoms of PAD



- **Leg pain** that doesn't go away when you stop exercising
- Foot or toe **wounds** that won't heal or heal very slowly
- Gangrene, or dead tissue
- A marked **decrease in the temperature** of your lower leg or foot compared to the other leg or the rest of your body
- Poor nail growth on the toes or **hair growth** on the legs
- Erectile dysfunction, especially in men with diabetes

Diagnosing PAD

PAD diagnosis begins with a medical history and physical examination. Your health care professional will also ask about your symptoms and check the pulses in your legs.

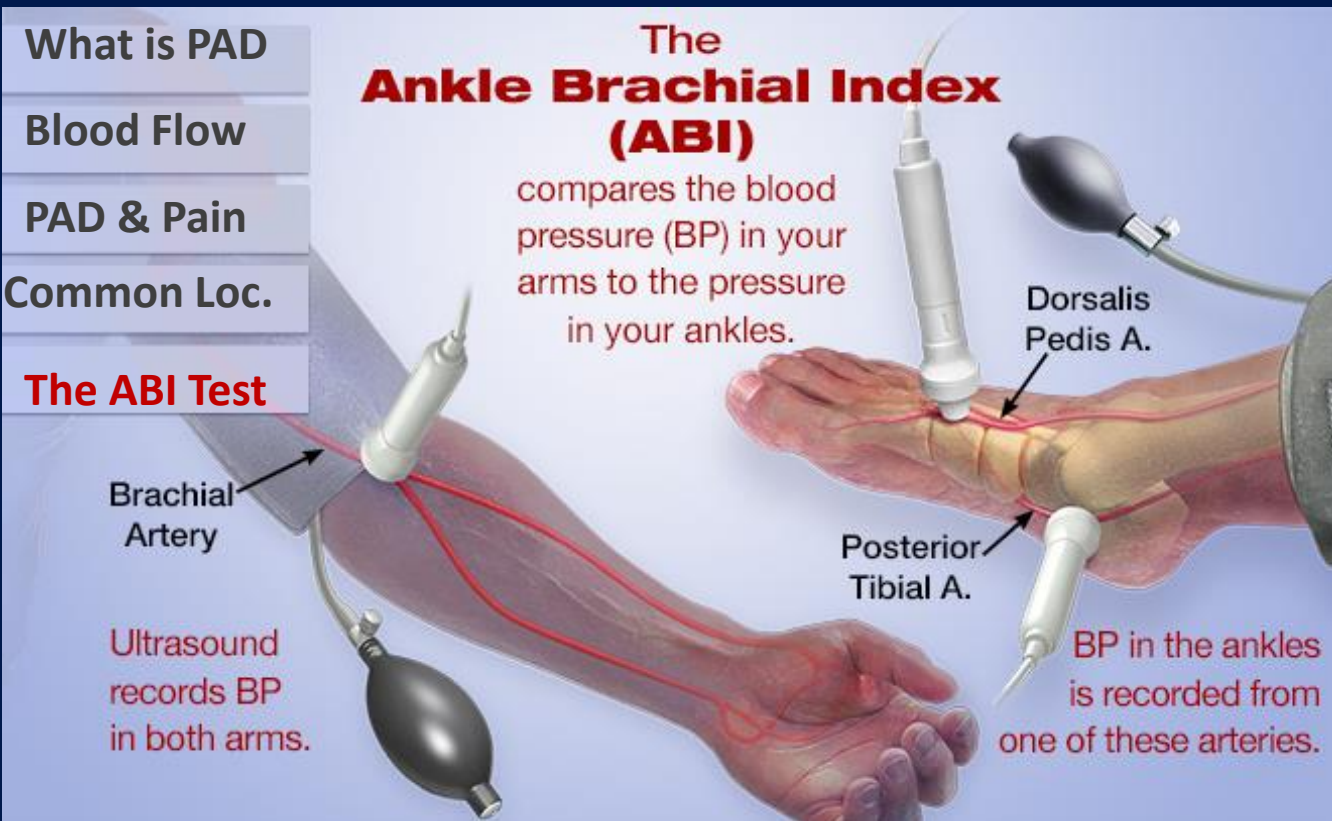
Your physical exam may include:

- **Ankle-brachial index (ABI):** This painless exam compares the blood pressure in your lower legs to the blood pressure in your arms. It takes only a few minutes and can be performed by your health care professional as part of a routine exam. A normal ABI is 1.00 to 1.40. A value less than or equal to 0.90 is considered abnormal, and, in severe disease, it's less than 0.5. If your ABI results are normal or borderline (.91 to .99), an exercise treadmill ABI and/or a toe-brachial index (TBI) test also may be done.



Diagnosing PAD

If your ABI is abnormal, you may need more testing. Your doctor may recommend one of these tests:



- **Duplex Ultrasonography:** The non-invasive test visualizes the artery with sound waves and measures the blood flow in an artery to indicate the presence of a blockage.
- **Computed Tomographic (CT) Angiography:** The non-invasive test uses X-ray and contrast agent (dye) to create pictures of blood vessels in the arteries in your abdomen, pelvis and legs. This test is particularly useful in patients with pacemakers or stents.
- **Magnetic Resonance Angiography (MRA):** The test provides cross-sectional images like a CT without using X-rays.
- **Angiography:** During an angiogram, also called an arteriogram, a contrast dye is injected into the artery and X-rays are taken to show blood flow in the leg arteries to locate any blockages. Learn more about peripheral angiogram.
- Remember, PAD often goes undiagnosed. Untreated PAD can lead to painful symptoms or loss of a leg, and people with PAD have an increased risk of coronary artery disease, stroke and heart attack. This is why we encourages people at risk to discuss PAD with their health care professional to ensure early diagnosis and treatment.

Procedures

Minimally invasive treatment or surgery may be needed to treat PAD

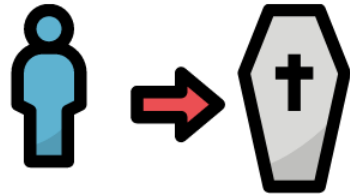
- An **atherectomy** The Primary means of treatment designed to debulk amount of Atherosclerosis burden the artery has and remove plaque from blood vessel. This is a minimally invasive procedure to remove plaque from the artery. Similar to angioplasty, a catheter is inserted into the blocked artery. The catheter has a sharp blade (cutter) on the end to cut, collect and remove the plaque from the blood vessel
- **Angioplasty** or **stent placement** are procedures performed by making a small incision through which a catheter is inserted to reach the blocked artery. A tiny balloon is inflated inside the artery to open the clog. A tiny wire mesh cylinder called a stent may also be inserted at this time to help hold the artery open. Sometimes a medicine can be administered through the catheter, or a special device can be inserted through it to remove a clot that's blocking the artery.
- If a long portion of artery in your leg is completely blocked and you're having severe symptoms, **bypass surgery** may be needed. A vein from another part of the body is used to "bypass" and reroute blood flow around the closed artery.

Recovery Time

Here we can talk about procedure and recovery time.

PAD Risk Recap

Mortality rate of individuals that received amputations as a result of PAD



13%-40% mortality in 12 months
35%-65% mortality in 3 years
39%-85% mortality in 5 years

What is PAD?

PAD, or peripheral artery disease, is the narrowing of the arteries that carry blood away from the heart to other parts of the body. The most common type is lower-extremity PAD, in which blood flow is reduced to the legs and feet. Left untreated, it may increase your risk of coronary artery disease, heart attack and stroke.

PAD affects about **8.5 million U.S. adults over the age of 40.**

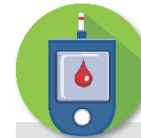
Who is most at risk for PAD?



African Americans

2x more likely to screen positive for PAD than non-Hispanic whites

African Americans with PAD are at **an increased risk to lose a limb.**



People with Type 2 diabetes

Higher risk of developing **atherosclerosis**, the buildup of fatty deposits in the arteries

People with Type 2 diabetes and PAD are up to **four times more likely to lose a limb.**



People who smoke

3x higher risk for PAD than non-smokers

Smokers with PAD tend to **report a lower quality of life** than non-smokers with PAD.

Other factors that may increase your chances of developing PAD include:



Income Level



Education Level



Access to Care

What can you do to decrease your risk of PAD?

- **Manage your diabetes** and blood sugar levels.
- **Stop smoking** and maintain a healthy lifestyle, including eating healthy and exercising regularly.
- **Reach and maintain** a healthy weight.
- **Make regular appointments** with your health care professionals.
- **Take off your socks** at your next checkup and let your doctor examine your feet.
- **Find support.** If you don't have access to health care, free resources and places in your community may be available.

PAD

Symptom Checklist

- Are you 50 years old or older? _____
- Do you smoke or have you ever smoked? _____
- Have you been diagnosed with any of the following? _____
 - Diabetes? _____
 - Chronic kidney disease? _____
 - High blood pressure? _____
 - High cholesterol? _____
- Do you have a family history of PAD? _____
- Have you ever been diagnosed with PAD, cardiac disease or stroke? _____
- Do you ever experience tiredness, heaviness or cramping in the leg muscles, especially during activity? _____
- When you inspect your toes and feet, do they look pale, discolored or bluish? _____
- If you have leg pain, does it disturb your sleep? _____
- Have you experienced sores or wounds on the toes, feet or legs that heal slowly or not at all? _____
- Does one leg or foot regularly feel colder than the other? _____
- Have you noticed poor nail growth and decreased hair growth over time on the toes and legs? _____



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If you have any of the risk factors for **PAD**, you should ask your health care professional and request an examination.



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Thank You.



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Sources:

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[Peripheral Vascular Disease | Johns Hopkins Medicine](#)

[PAD: Millions Undiagnosed or Untreated \(uspharmacist.com\)](#)

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[Vascular Protection Overview from Anticoagulation Forum on Vimeo](#)