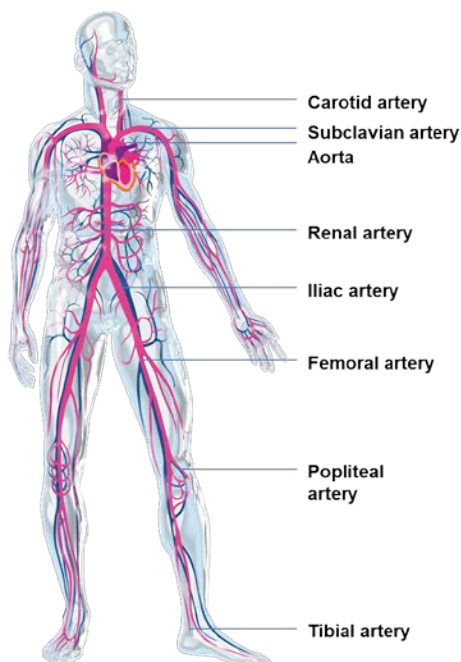


Peripheral Artery Disease - Backgrounder

What is peripheral artery disease?



Peripheral artery disease (PAD) is a serious circulation problem caused by the **obstruction of large arteries in areas outside the heart**, often those that carry blood to the legs and arms. PAD is also referred to as peripheral vascular disease (PVD).

People who have PAD are six to seven times more at **risk of heart attack and stroke**, which turns fatal for one third of cases.

Developing severe PAD can cause serious infections resulting in **amputations**. People with PAD are also at **greater risk of abdominal aortic aneurysm**. This is when a balloon-like swelling forms and expands in a section of the aorta (the main blood vessel that supplies the rest of the body with oxygenated blood from the heart). It may burst causing internal bleeding, a life-threatening situation that requires emergency surgery.

Overall, PAD is a **chronic, progressive disease, detrimental to patient quality of life**.

Facts and Figures

In 2010, **202 million people** were recorded living with peripheral artery disease.¹ An estimated 4-8% of 40 year olds and over in Western Europe have PAD. **Lower limb PAD is the third main cause of atherosclerotic vascular morbidity, after coronary heart disease and stroke.**² The prevalence of peripheral vascular disease in the general population is 12–14%, affecting up to 20% of those over 70.¹

According to the British Heart Foundation, 1 in 5 people aged 60 and over have a form of PAD in the UK.³ In 2013-14, there were 446,000 patients suffering from PAD in the UK.⁴

Causes and Risk Factors

PAD is caused by atherosclerosis, inflammatory processes leading to stenosis, an embolism, or thrombus formation.

The build-up of plaque, such as cholesterol, fatty deposits, calcium, and other substances in the blood, causes the arteries to narrow resulting in PAD. Blocked arteries can inhibit oxygen-rich blood from reaching the muscles. This lack of oxygen causes pain.

The chances of PAD are increased by the following **risk factors**: consuming high-fat foods, lack of exercise, smoking, excess alcohol consumption, diabetes, and excess weight. Other risk factors, which cannot be avoided, include: menopause, ageing, or having a family history of heart disease. Males are at greater risk of developing PAD than women.

It is important to treat PAD to prevent symptoms from getting worse.

Symptoms

Initially, PAD may not cause symptoms, but as the disease progresses people with PAD can experience a **dull cramping pain in the legs, hips or buttocks during exercise**. This pain stops when resting, known as **intermittent claudication**. However, some people experience pain even when not exercising, a sign that PAD is becoming more severe.⁵

Other **symptoms** include:

- Numbness or tingling in the legs, feet, or toes
- Changes in skin colour (pale, bluish, or reddish coloration)
- Cool skin (for example, in the legs, feet, arms, or hands)
- Impotence
- Infections/sores that do not heal

Diagnosis

The most common test for PAD is the ankle-brachial index (ABI). The ABI compares the blood pressure in your legs and arms (brachial means "of the arm") using a blood pressure cuff. If the pressures are different, it may be an indication of PAD.

Further tests can be conducted to identify the location of the blocked artery and the severity:

- **Duplex Doppler ultrasound** — This test uses sound waves to form a picture of the arteries to assess where the narrowing or blockage is occurring. It can also show if blood is flowing smoothly through the arteries.
- **Magnetic resonance imaging (MRI)** — Radio waves in a magnetic field are used to create flat or three-dimensional pictures of the arteries.
- **Angiography** — Conducted under anesthetic, a special dye is injected into the artery of the leg through a catheter. The dye shows up on x-rays and helps determine which arteries are narrowed or blocked.
- **Computerized tomography angiography (CTA)** — For CTA, a dye is injected into a blood vessel and x-rays are taken from different angles. A computer analyzes the x-rays to form a three-dimensional picture of the arteries.

Treatment

Treatment for PAD depends on the severity of the disease. Early diagnosis is important as the solution is often simple. For example, **exercise** can encourage new blood vessels to grow and bring oxygen to problem areas. **Medicines** may be prescribed to reduce pain, prevent blood clots, or **control risk factors** such as diabetes, high blood pressure or high cholesterol. Controlling weight and quitting smoking may also help to reduce the risk of developing PAD.

Overall, it is important to approach PAD in a **multidisciplinary manner**, following the ESC guidelines.⁶

Blocked arteries may need to be treated using the following **procedures**:

- **Angioplasty** — a catheter with a balloon is passed through the blocked artery. Once inflated, the balloon compresses the plaque against the wall of the artery.
- **Stent implantation** — during angioplasty, a stent may be placed in the artery to help hold it open.
- **Atherectomy** — a special catheter is used to gently shave and remove plaque from the arteries.
- **Endarterectomy** — a special catheter is used to open blocked blood vessels by removing plaque buildup from inside the artery wall.
- **Bypass surgery** — a healthy blood vessel taken from another part of the body, or a small special plastic tube, is used to create a detour to allow blood to flow around a blocked artery. This is usually only conducted when the leg circulation is significantly impacted and angioplasty has not been viable or has been unsuccessful.

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References

¹ Comparison of global estimates of prevalence and risk factors for peripheral artery disease in 2000 and 2010: a systematic review and analysis F Gerald R Fowkes, Diana Rudan, Igor Rudan, Victor Aboyans, Julie O Denenberg, Mary M McDermott, Paul E Norman, Uchechukwe K A Sampson, Linda J Williams, George A Mensah, Michael H Criqui.

² Burden of peripheral arterial disease in Europe and the United States: a patient survey Elizabeth Marrett, Marco daCosta DiBonaventura and Qiaoyi Zhang.

³ The British Heart Foundation (BHF) <https://www.bhf.org.uk/heart-matters-magazine/medical/peripheral-arterial-disease> (Accessed: September 5, 2016).

⁴ Cardiovascular Disease Statistics 2015, British Heart Foundation Centre on Population Approaches for Non-Communicable Disease Prevention. Nuffield Department of Population Health, University of Oxford <https://www.bhf.org.uk/publications/statistics/cvd-stats-2015> (Accessed: September 5, 2016).

⁵ The British Heart Foundation (BHF) <https://www.bhf.org.uk/publications/heart-conditions/peripheral-arterial-disease> (Accessed: September 5, 2016).

⁶ The Task Force on the diagnosis and treatment of peripheral artery diseases of the European society of cardiology (ESC). European Heart Journal 2011 ; 32 : 2851-2906.