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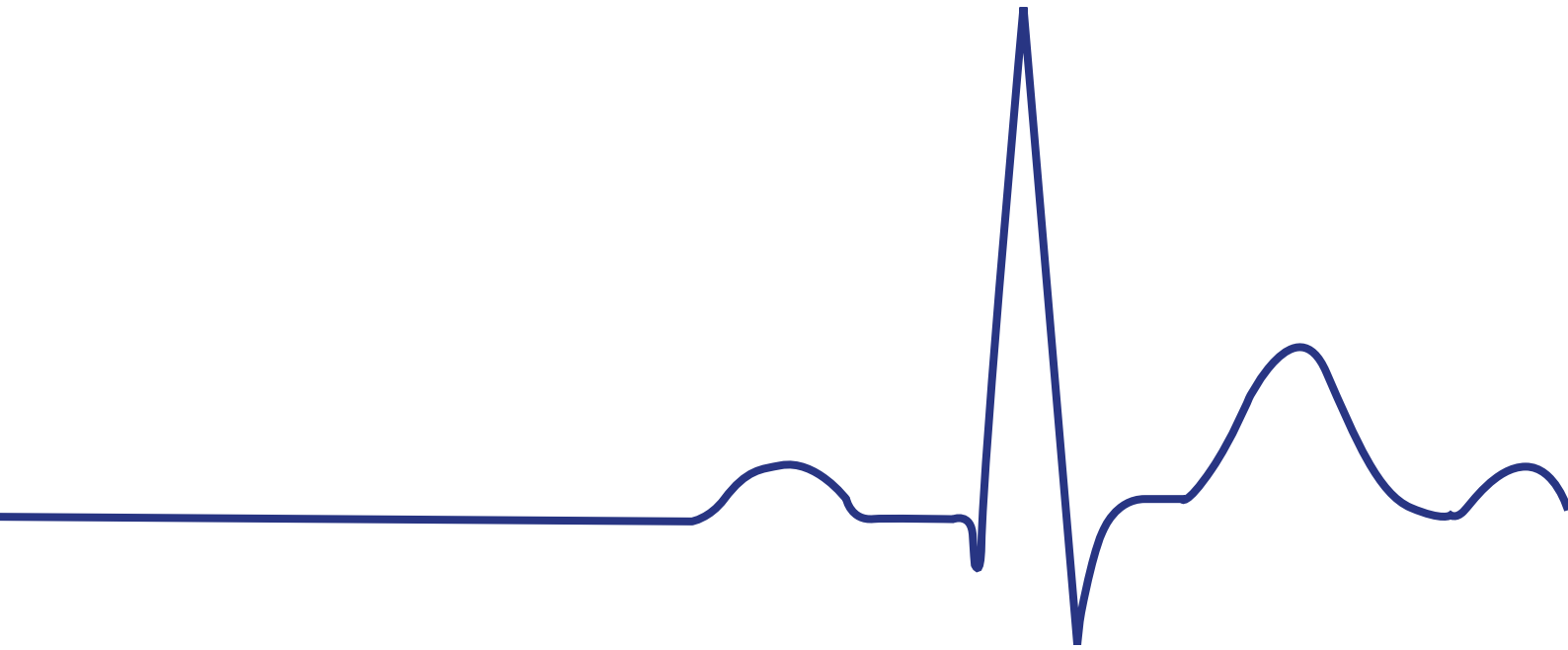
Podiatry-led detection, diagnosis and management of peripheral arterial disease



Working in partnership with Primary Care and Vascular teams

Podiatrists are clinically effective in improving early diagnosis, ensuring appropriate treatment and focusing on best outcomes for people with peripheral arterial disease (PAD), as well as reducing healthcare cost burdens. Podiatry-led early diagnosis and treatment services for PAD have been established in some NHS organisations to work closely with GP Practices and hospital vascular teams. They have been recognised and endorsed by the National Institute for Health and Care Excellence (NICE) as best practice models, demonstrating both quality and cost-effectiveness, delivering NICE recommendations and quality standards.

- **Vascular disease is the collective term for diseases of the arteries**
- **PAD is a common vascular disease in the UK that affects the arteries which carry blood to the limbs**
- **PAD is known to be underdiagnosed and undertreated, resulting in avoidable amputations and five-year mortality rates comparable to those of many cancers**
- **Over 11,500 major lower-limb amputations are carried out every year in the UK, the vast majority of which are as a direct result of PAD, diabetes or a combination of the two**
- **A very significant number of people die just one year after major amputation**
- **Podiatry-led early diagnosis and treatment programmes, set up in partnership with Vascular Teams and GPs, can help improve detection, diagnosis, treatment and timely referrals. As well saving more limbs and lives, these services are accessible, cost-effective and quality focused, implementing best national and international guidance on PAD.**

What is PAD?

Peripheral arterial disease (PAD) is the name given to vascular disease that occurs in the peripheral or outer arteries of the body, such as the legs.[1] It is a circulatory problem that results from fatty plaque accumulation in peripheral arteries. These plaques, which consist of cholesterol, calcium and low-density lipoproteins, thicken and harden over time causing narrowing of the arteries.

The narrowed arteries reduce blood flow to the limbs, meaning that the extremities – usually the legs – have a reduced blood supply. PAD can also indicate a more widespread accumulation of fatty deposits in the arteries (atherosclerosis), which may be reducing blood flow to the heart and brain as well as the legs, increasing the risk of a heart attack or stroke.

- 20% of people aged 60+ in the UK are affected by PAD[3]
- This is about 9% of the total population[2]
- Poor management can result in poor quality of life, heart attacks, strokes or amputations
- A third of people with PAD can die within five years – a mortality rate similar to many cancers[3]

Key risk factors for PAD are the same those for other cardiovascular diseases (CVD) and include smoking, hypertension, hyperlipidaemia, increasing age, obesity, diabetes mellitus and a lack of cardiovascular exercise.

Detection/diagnosis

PAD is known to be generally under-diagnosed and under-treated, resulting in avoidable heart attacks, strokes, amputation and early death.[2] One of the first symptoms of PAD is an ache, cramp or tightness in the leg muscles when walking, which is relieved by rest. This is known as intermittent claudication (angina of the leg). Most commonly this occurs in the calf muscle but it can also occur in the thigh or buttock muscles. If people are not very active they may have no symptoms but still have severe arterial disease. If the condition has progressed, pain may be felt in the feet, even when not walking. This is known as rest pain or ischaemic pain and is an indicator for critical limb ischaemia (CLI), which can result in necrosis/gangrene, limb loss and early death.[4,5]

A podiatrist will carry out a complete medical and surgical history, including current medication and key personal information, such as activity types and levels, and review presenting CVD risk factors such as smoking status, diet and nutrition. Patients will be asked about their symptoms and how these impact their day-to-day activities.

This will help to establish any potential risks, and determine the effect of this history on lower-limb health, function and performance.
An initial examination by a podiatrist can reveal indicators of PAD such as non-healing wounds and non-palpable pulses. The diagnosis and extent of disease is confirmed by a full, non-invasive assessment, which includes palpation of pulses (foot to femoral pulses), a Doppler waveform and Ankle Brachial Pressure Index (ABPI) assessment at rest and after exercise if indicated, toe pressure assessment and opportunistic palpation of the abdominal aorta.[6] Podiatrists can carry out these tests to help confirm or exclude significant PAD, and associated problems, and to help enable appropriate clinical decision-making and referrals.

The podiatrist will investigate the possibility of PAD in any patient with any of the following characteristics, lifestyle traits or medical conditions:

- Non-palpable foot pulses
- Calf or thigh pain on walking, relieved by rest
- Smoking or smoking history
- Diabetes mellitus
- Hypertension
- Hyperlipidaemia
- Chronic kidney disease
- Elevated inflammatory markers
- Thrombophilia
- Aged 60+
- History of coronary artery disease
- History of cerebrovascular disease
- Family history of PAD

Management

In the case of severe PAD with CLI or deteriorating symptoms, immediate onward referral for a vascular surgical opinion is appropriate. Most people with mild-to moderate-severity PAD can be managed with conservative treatment, focused on cardiovascular risk reduction, provided by primary care and public health teams in the community.[6] Periodic reviews by podiatrists or GPs will help to establish whether the disease is stable or deteriorating. For these people with non-severe PAD, an initial individual tailored management plan is agreed. This should include a structured exercise programme to increase their walking distance, along with a cardiovascular medicines review/GP recommendations for drug therapy (such as antihypertensives, lipid regulators or antiplatelet therapy) plus referrals to smoking cessation and weight management support as necessary, in line with NICE guidelines for PAD.[5,7]

There is evidence that supervised exercise improves walking capacity and quality of life to a greater extent than independent exercise[8,9] and also results in longer term benefits and sustained improvements.[10] A structured PAD-specific exercise programme can be provided by a local cardiac rehabilitation team, which can give access for people with symptomatic PAD to the team's existing exercise programme for cardiac patients, thus using facilities, skills and manpower already in place.[6] An alternative is referral to a health improvement team, as long as they provide PAD-specific exercise support such as structured cardiovascular and leg exercise.

Vascular surgical opinion for intervention should be considered when supervised exercise has not led to a satisfactory stabilisation or improvement in claudication symptoms, or if the person has developed signs of deteriorating or severe PAD or critical limb ischaemia.

Cost savings

PAD is a major contributor to healthcare costs due to the high rates of morbidity and impairment in quality of life which require treatment to reduce symptoms and prevent or treat ischaemic events.[11] Ulceration and amputation, which can result from untreated PAD, significantly reduce quality of life and are associated with high mortality, with many patients dying just one year after major amputation.[12,13] Studies have shown that 30% of CLI patients who require a below-the-knee amputation will die within the first two years of amputation.[13,14]

Supervised PAD-specific exercise programmes have been highlighted as the primary evidence-based and cost-efficient intervention for symptomatic PAD.[6] While surgical interventions can improve claudication symptoms, they do not address cardiovascular risks. Supervised exercise programmes with a cardiovascular element can improve claudication comparably and provide an additional cardio-protective intervention, at a lower cost.[3]

Podiatry-led management of PAD, which includes a supervised PAD-specific exercise programme, has been shown

Following a diagnosis of mild-to-moderate PAD, a tailored management programme should include:

- A weekly two-hour supervised exercise class for all PAD patients for a three-month period in a community location, as close to home as possible
- PAD education for patients with intermittent claudication
- Encouragement for PAD patients with intermittent claudication to exercise to the point of maximal pain to stimulate the development of the collateral circulation [NICE recommendation 1.5.2])
- Chair-based exercise for patients with a diabetic foot ulcer/ amputation
- Individual care packages, to motivate and support patients, including information and advice on cardiovascular risk factors and the importance of lifestyle changes
- Exercise advice with specific relevance to PAD
- On discharge, patients are referred into community programmes for ongoing exercise.[3]

to provide cash savings for commissioners in acute care and improved productivity in secondary care resulting from reduced, unnecessary referrals from GPs.

As many as 50% of people referred with suspected PAD will not have classic signs or symptoms.[15] Providing vascular trained podiatrists to assess, diagnose and triage people with suspected PAD to appropriate treatment or other investigations has been shown to avoid unnecessary outpatient referrals to vascular services and diabetes foot services, and can save around £26,000 per 100,000 population in a CCG.[6]

Conclusion

Podiatry-led PAD diagnosis and treatment services management plans, that include discussion and negotiation addressing modifiable cardiovascular risks, initiating best medical therapy, referrals to a community structured exercise programme and ongoing support after the completion of the initial 12-week programme, are a clinical and cost-effective way of helping people with PAD understand and self-manage their condition and support their physical, social and mental wellbeing.

Podiatrists working closely with vascular teams and GPs are key to setting up and leading these tailored programmes in a community setting, which can improve a patient's journey and outcome, reduce pressure on hospitals and help people with PAD understand and self-manage their condition, lifestyle and medications.

A partnership with an existing cardiac rehabilitation team, drawing on existing provisions, that works with patients to address their individual cardiovascular risks and develop an agreed individual clinical management plan is a cost-effective way of delivering many of the interventions needed to save more limbs and lives from this common and potentially deadly disease.

Further information

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References

1. Circulation Foundation. https://www.circulationfoundation.org.uk/help-advice/peripheral-arterial-disease
2. Belch J, Stansby G, Shearman C et. al. Peripheral arterial disease – a cardiovascular time bomb. *British Journal of Diabetes & Vascular Disease* 2007; 7: 236–239.
3. Circulation Foundation. Campaign Toolkit 2011. https://bit.ly/2MQlyLQ
4. Koch M, Trapp R, Kulas W., Grabensee B. Critical limb ischaemia as a main cause of death in patients with end-stage renal disease: a single-centre study. *Nephrology Dialysis Transplantation* 1 October 2004; 19(10): 2547–2552. https://doi.org/10.1093/ndt/gfh404
5. National Institute for Health and Care Excellence. *CG147 - Peripheral Arterial Disease: Diagnosis and Management*, 2012.
6. National Institute for Health and Care Excellence. *Community triage for lower limb vascular concerns: reducing the burden on hospitals. Quality and Productivity: Proven case study.* 2016
7. National Institute for Health and Care Excellence. *A structured exercise programme to increase pain-free walking and improve quality of life by integrating peripheral arterial disease patients into an established cardiac rehabilitation programme.* Shared learning database. 2016
8. Fokkenrood HJ, Bendermarcher BL, Jan Lavret G *et al.* Supervised exercise therapy versus non supervised exercise therapy for intermittent claudication. *Cochrane Database of Systematic Reviews* 2013; issue 8: CD005263.
9. Al-Jundi W, Madbak K, Beard JD *et al.*Systematic review of home based exercise programmes for individuals with intermittent claudication. *European Journal of Vascular and Endovascular Surgery* December 2013; 46(6): 690–706.
10. Ratliff DA et.al. Supervised exercise training for intermittent claudication: lasting benefit at 3 years. *European Journal of Vascular and Endovascular Surgery* 2007; 34(3): 322-326.
11. Mahoney EM, Wang K, Keo HH *et al.* Vascular hospitalization rates and costs in patients with peripheral artery disease in the United States. *Circ Cardiovasc Qual Outcomes* 2010; 3: 642-651.
12. A toolkit for the diabetic foot. *British Journal of Primary Care Nursing Online,* March 2015. https://bit.ly/2tydyYy.
13. All-party Parliamentary Group on Vascular Disease. *Saving Limbs, Saving Lives: Patient Access to Technologies for the Diagnosis and Treatment of Peripheral Arterial Disease,* 2016.
14. Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG. Inter-Society Consensus for the management of peripheral arterial disease (TASC II). *J Vasc Surg* 2007;45 (Suppl S): S5-67.
15. National Institute for Health and Care Excellence. . *A Redesigned, GP Commissioned NHS Service Model for the Early Detection, Referral and Management of Peripheral Arterial Disease,* 2012.