Peripheral arterial disease (PAD) is a serious but its significance has only recently been reflected in NICE guidance. A trust launched a PAD service led by nurses and podiatrists. The service is cost-effective and ensures that most patients receive treatment in the community, with referrals made to secondary care as appropriate. A care pathway standardises care.

Peripheral arterial disease (PAD) has recently been included in National Institute for Health and Clinical Excellence guidance and Quality and Outcomes Framework indicators (NHS Employers, 2012; NICE, 2012). Before this, there was little to encourage service review against national standards. Despite poor outcomes and recommendations for service models led by nurses or GPs with a special interest (Burns et al, 2003), little has changed in PAD services in the last decade.

NHS initiatives have been largely led by clinicians with an interest in the lower limb, often vascular surgeons, tissue viability, vascular and leg ulcer nurse specialists and specialist podiatrists. Collaborating with such clinicians in North Manchester we have developed an integrated, robust, and cost-effective clinical service framework for this common and deadly arterial disease.

**Background to PAD**

PAD is common in the UK in people aged 55 or over. Outcomes have been poor, with substantial cardiovascular mortality and morbidity and, to a lesser degree, chronic lower limb wounds and amputation (Burns et al, 2003; Fowkes et al, 1991).

People are often surprised to learn that PAD’s 10-year mortality – around 50% – is worse than those for other serious conditions such as breast cancer and malignant melanoma of the foot. This may partially explain a general lack of early diagnosis and effective clinical management reported in the UK and US for over 10 years (Burns et al, 2003; Hirsch et al, 2001).

Ask yourself, in your clinical setting, which would be more likely to cause you to refer on for diagnosis – a new breast lump, suspicious skin lesion or an aching leg? Across the UK, opportunistic identification of PAD often occurs at the moderate to severe stage, when patients present with severe intermittent claudication, non-healing lower leg or foot wounds, or leg pain or poor foot pulses.

However, referring all people with suspected PAD to hospital vascular services can result in outpatient clinics being overbooked with people with aching, swollen legs while those with severe, potentially operable PAD may be waiting longer than necessary. Those with suspected PAD may have venous disease, peripheral neuropathy, spinal stenosis or other conditions such as arthritis. None of the common differential diagnoses, while

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**In this article...**

- Why you should consider PAD in patients with leg pain
- How you could help redesign services for PAD
- Why patients find it difficult to make lifestyle changes

**5 key points**

1. Ten-year mortality for peripheral arterial disease is around 50%
2. PAD is often not identified until it is moderate or severe
3. A nurse- and podiatrist-led service can identify PAD, inform GPs, educate patients and refer to secondary care
4. It can also save money by preventing unnecessary secondary care referrals
5. A PAD care pathway can help standardise care
important to diagnose and manage, directly threaten limb or life, unlike PAD.

**Why we started the service**

Deaths from coronary heart disease (CHD) in the North West of England were the highest in England in 2000 (Department of Health, 2000), while Greater Manchester has the worst CHD mortality outcomes in the North West. According to 2006-08 figures from the Manchester Joint Health Unit, seven of the 11 council wards in North Manchester had higher rates of circulatory deaths than the Manchester average.

The lead clinicians involved with PAD in North Manchester had been working with different organisations and departments on complex foot and leg ulcer management. Seeing frequently the dire consequences of PAD identified too late, we created a business case and presented it to local NHS commissioners. This outlined a structured, active PAD service, which would focus on assessment, diagnosis and management, working in with GPs, vascular surgeons and supervised exercise, smoking, and weight management teams.

**About the service**

The North Manchester Leg Circulation Service was launched in October 2009, with the following mission statement: “Our aim is to identify, diagnose and support people with peripheral arterial disease (poor circulation) – improving health and reducing preventable heart attacks, strokes and leg amputations.”

The clinical framework for the service model was developed largely from published recommendations (Norgren et al, 2007; SIGN, 2006) and literature (NHS Primary Care Commissioning, 2009; Burns et al, 2003; Hirsch et al, 2001). Specific objectives, agreed with commissioners, were to:

- Raise awareness and encourage early referral of PAD;
- Offer people an appointment within one month, at a choice of five locations;
- Perform non-invasive peripheral arterial assessments and diagnosis;
- Provide education on cardiovascular and limb risks and healthy options;
- Negotiate healthy lifestyle changes;
- Promote best medical therapy in partnership with general practice;
- Refer people with severe or deteriorating PAD to vascular surgeons.

We worked with stakeholders – public, clinicians, managers and commissioners – on the service name, mission statement and objectives.

The service is staffed by band 7 clinicians with a background in lower limb vascular disease. Clinical supervision and leadership come from senior clinicians involved in high-risk lower limb management (consultant podiatrist and tissue viability lead nurse) as well as the local consultant vascular surgeons and hospital vascular teams. It was anticipated, from the experience of a similar model tried in a nearby PCT, that most of those referred (75% or more) would not need hospital services, but could be managed by their GP with other community services (Tameside and Glossop PCT, 2006).

With the best UK prevalence data on PAD from the ongoing Edinburgh Artery Study (Fowkes et al, 1991), we estimated the North Manchester population prevalence to be approximately 3,600 with significant PAD. This estimate predicts there will be over 1,200 people locally with intermittent claudication. The vascular surgeons said these are the types of patients they would prefer to see, which echoes recommendations in the literature (Hirsch et al, 2001).

**Effectiveness of the service**

We have met our objective of offering all people referred an appointment at a choice of locations within four weeks. This includes home assessments for the housebound. Diagnostic reports and clinical management plans are sent to GPs and other referrers within five working days of the patient being seen. In the first six months, we referred 27 of 294 patients to secondary care (9%). This represents 17% of those later diagnosed with PAD (Fig 1).

If 15% of people were referred to secondary care after being seen by our service (the threshold set by commissioners), this would deliver an overall cost saving of 40%, based on the tariff costs of our service and the outpatient tariff.

A postal questionnaire is periodically sent to patients and the results analysed. The trends are they are happy with the service. One commented that beforehand: “I thought it was a ’Mickey Mouse’ service that my doctor was sending me to.”

After referral, he said: “There was no judgment made about my habits around smoking and eating and in return I felt I could be more honest. This honesty helped me to accept the changes I had to make. Since making changes, I can now walk double the distance I could when I first went to the clinic.”

When looking at the role of the service in promoting best medical management of cardiovascular risks and healthy lifestyle change, trends are positive but, not surprisingly, patchy. More people are considering change in relation to smoking, weight and structured cardiovascular exercise than are refusing it point blank. From a pragmatic perspective, this is not a bad start. We use time in the consultation to initiate “change talk” using brief intervention and motivational interviewing, often finding the patient has challenging social or health priorities and beliefs.

In our second year, we referred 69 people to hospital vascular teams; 26 were for severe PAD, nine for worsening symptoms at review, eight for patient preference and seven where diagnosis was unclear. The remainder were for other reasons including critical limb ischaemia or a non-healing ulcer. The vascular surgeons said these are the types of patients they would prefer to see, which echoes recommendations in the literature (Hirsch et al, 2001).

**A care pathway for PAD**

There was no common approach to PAD. Patients would get a different vascular assessment, and there would be different thresholds for referral and clinical management plans, depending on which clinicians they saw.

To encourage a more uniform approach to early identification, diagnosis and management, we have over the past two years
consulted on and developed an integrated clinical care pathway for PAD (Fig 2). The involvement of PAD stakeholders in primary, community and secondary care settings was crucial to this. Having secured endorsement on the clinical principles, we have a fully endorsed pathway, which has also been put through organisational governance groups. The community provider trust and the local hospitals trust are integrated in line with Transforming Community Services (DH, 2009), which has enabled us to progress service integration.

Future plans
A priority is to implement and raise awareness of the care pathway among all clinicians. We are working with neighbouring trusts to roll out its principles across a broader area.

Structured, individually tailored educational packages and care plans are the ideal in PAD, just as they are in other long-term conditions. Most people coming into our service with multiple cardiovascular risks do not understand those risks clearly, the medicines they are taking to reduce them and the benefits of lifestyle interventions.

Asymptomatic PAD has similar poor outcomes to symptomatic PAD, yet is difficult to identify in the absence of targeted screening. We are actively linking the foot pulse palpation/Doppler signal results in diabetes foot screening, district nurse and podiatry lower limb assessments to our referral process, to maximise the likelihood of asymptomatic PAD being found. The main challenge is encouraging the referral of people with asymmetrical/absent foot pulses or monophasic Doppler signals. In the absence of symptoms, both clinicians and patients can be reluctant to initiate further diagnostic testing.

Conclusion
The PAD service model and the integrated care pathway that has evolved from it, will enable us to embed, promote and develop a more active approach to PAD in our patch.

It provides a foundation and a framework to deliver the integrated, robust and cost-effective care that people with this vascular disease deserve. We see no reason why this model cannot be implemented across the NHS, with vascular-focused GPs, nurses and allied health professionals working with vascular surgeons and NHS commissioners on service redesign.

FIG 2. CARE PATHWAY

Peripheral Arterial Disease (PAD) Integrated Care Pathway (for patients with North Manchester GPs)

<table>
<thead>
<tr>
<th>Cardiovascular risks</th>
<th>Foot pulses</th>
<th>Leg symptoms</th>
<th>Doppler signals</th>
</tr>
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<tbody>
<tr>
<td>No PAD</td>
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<td></td>
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<tr>
<td>• Foot pulses palpable</td>
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<tr>
<td>• No intermittent claudication</td>
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<tr>
<td>• No ischaemic rest pain</td>
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<tr>
<td>• No clinical signs of PAD</td>
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<tr>
<td>Consider differential diagnosis</td>
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<tr>
<td>suspected PAD</td>
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<tr>
<td>• Foot pulses non-palpable</td>
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<td></td>
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<tr>
<td>• Symptoms of intermittent claudication</td>
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<td></td>
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<tr>
<td>• Doppler signals monophasic</td>
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<tr>
<td>• Clinical signs eg atrophy, cold, chronic wound, capillary refill &gt;3 seconds, pale</td>
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<tr>
<td>Severe/critical limb ischaemia</td>
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<tr>
<td>• Foot pulses absent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Doppler signals monophasic/absent</td>
<td></td>
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</tr>
<tr>
<td>PLUS any two of the following:</td>
<td></td>
<td></td>
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<tr>
<td>• Ischaemic rest pain</td>
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<td></td>
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</tr>
<tr>
<td>• Ankle systolic &lt;50mmHg</td>
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<tr>
<td>• Deteriorating foot leg wound</td>
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<tr>
<td>• New necrosis/gangrene</td>
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<tr>
<td>Refer urgently to hospital vascular team if not already with them, or if signs/symptoms have worsened</td>
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</table>

All patients with a confirmed diagnosis of PAD should have an individually agreed management plan, which is to be reviewed periodically with their GP the leg circulation service or the hospital vascular team

The management plan will include targeting cardiovascular risk factors, limb problems and negotiating treatment options (lifestyle, medicines, surgery) by GPs, nurses and allied health professionals involved in management of the lower limb

PAD/CV risk assessment | Target |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Antiplatelet therapy</td>
<td>Initiate for all with established PAD</td>
</tr>
<tr>
<td>Lipid lowering therapy</td>
<td>Initiate for all with established PAD</td>
</tr>
<tr>
<td>Hypertension</td>
<td>BP &lt;140/90mmHg</td>
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<tr>
<td>Smoking</td>
<td>Aim to quit</td>
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<tr>
<td>Obesity</td>
<td>BMI &lt;30</td>
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<tr>
<td>Light cardiovascular exercise</td>
<td>30 / 45 mins, 3 to 5 times per week</td>
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<tr>
<td>Glycaemic control (if has diabetes)</td>
<td>HbA1c &lt;7.0% or &lt;53mmol/mol</td>
</tr>
</tbody>
</table>

This pathway is based on PAD consensus from SIGN, TASC II, NICE, Target PAD and local expert opinion

Contact numbers for general advice regarding PAD or main hospital numbers for vascular registrar/vascular registrar

References

20 Nursing Times 30.10.12 / Vol 108 No 44 / www.nursingtimes.net