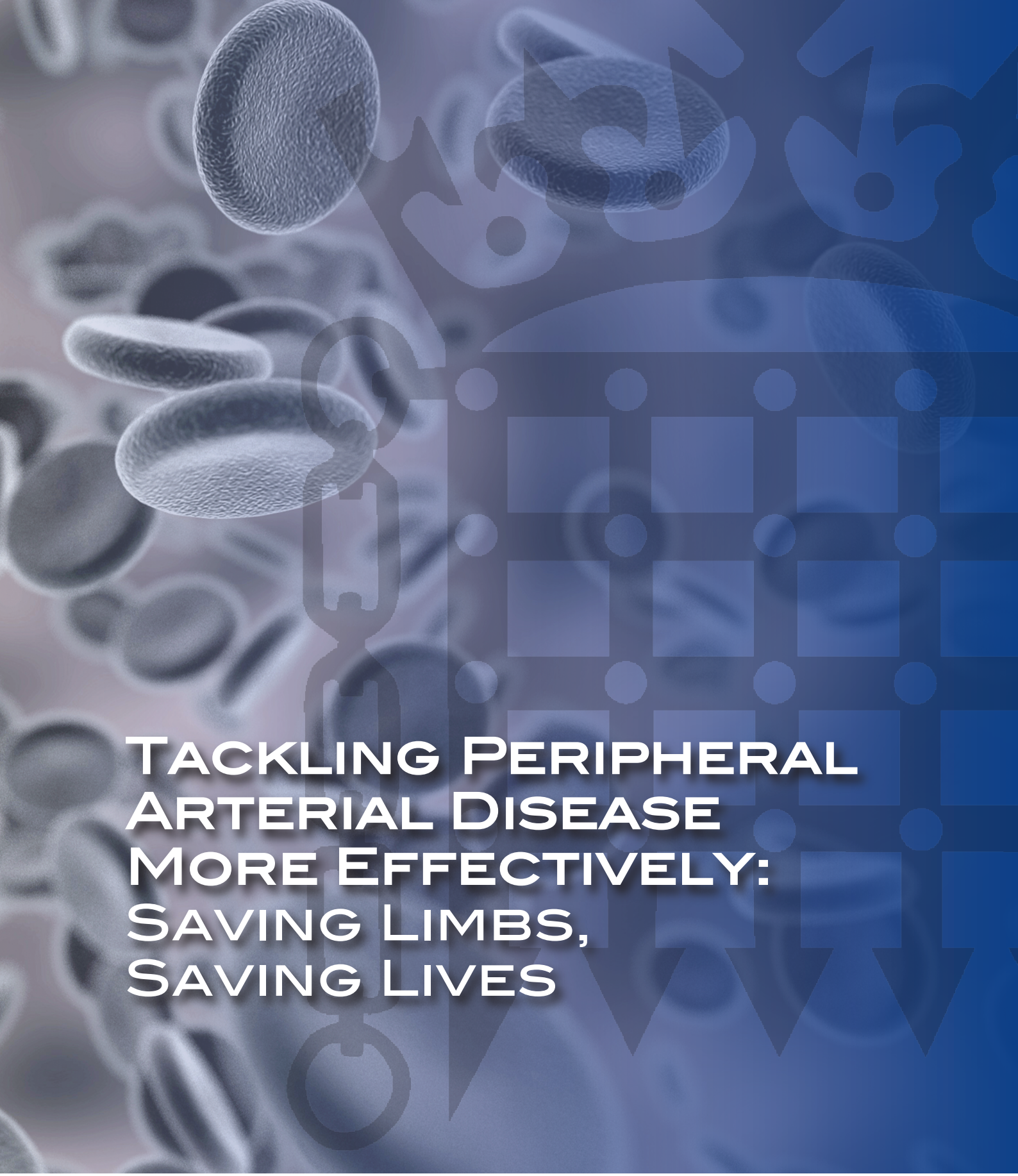


Tackling Peripheral Arterial Disease More Effectively: Saving Limbs, Saving Lives

ALL PARTY
PARLIAMENTARY GROUP
ON VASCULAR DISEASE

The APPG would like to thank the following people for their input into this report and comments following earlier drafts:

Clinicians:

Mr Ian Franklin, Consultant Vascular Surgeon
Professor Mike Edmonds, Professor of Diabetes and Endocrinology
Dr Gerald Goh, Consultant Vascular Radiologist
Mr Martin Fox, Vascular Specialist Podiatrist
Dr Dare Seriki, Interventional Radiologist
Dr Trevor Cleveland, Consultant Vascular Radiologist
Mr Hisham Rashid, Consultant Vascular Surgeon
Mr Alistair McInnes, Senior Lecturer in Podiatry
Professor Matt Thompson, Professor of Vascular Surgery
Professor Cliff Shearman, Professor of Vascular Surgery
Professor Jonathan Valabhji, National Clinical Director of Diabetes and Obesity
Professor Duncan Ettles, Consultant Radiologist

Industry:

Boston Scientific, CR Bard, Medtronic

Patient Groups:

The Circulation Foundation, Diabetes UK

Others:

Peter Cuthbertson and James Gittings, PB Political Consulting

Contents

EXECUTIVE SUMMARY

- In 2012-2013, there were almost 12,000 lower limb amputations in England, a figure that remains stubbornly high year on year. The vast bulk of these lost limbs were related to Peripheral Arterial Disease and Diabetic Foot Disease.

- Amputations are dependent on where you live, which is dependent on the service provision policies of local health authorities – Clinical Commissioning Groups and NHS Trusts. Despite guideance from NICE there is no nationally consistent approach on how to treat patients with PAD.

- Amputation is **TWICE AS LIKELY** for patients in the South West as in London. Even patients in the second best performing region, the North West, have a **31%** greater risk of amputation.

- The Clinical Commissioning Group areas, who responded to our FOI request, with the highest number of amputations per 1,000 patients with diabetes (2009-2012) were:

Lost limb	2010-2011	2011-2012	2012-2013
Leg	5,061	4,701	4,669
Foot	785	980	1,040
Toe	5,512	6,021	5,951
Total	**11,358**	**11,702**	**11,660**

CCG region	Average number of amputations per 1,000 adults with diabetes (2009/10-2011/12)	Greater risk of amputation compared to London
South West	3.88	100%
Yorkshire & Humber	2.79	44%
West Midlands	2.72	40%
Eastern	2.7	39%
South East	2.68	38%
East Midlands	2.66	37%
North East	2.66	37%
North West	2.55	31%
London	1.94	

	Clinical Commissioning Group	Region	Number of amputations per 1,000 adults with diabetes
1	Somerset	South West	4.7
2	Mansfield and Ashfield	East Midlands	4.6
3	Southend	Eastern	4.5
4	Hull	Yorkshire & Humber	4.4
5	Scarborough & Ryedale	Yorkshire & Humber	4.2
6	Vale of York	Yorkshire & Humber	4.1
7	South Devon and Torbay	South West	3.8
8	South Warwickshire	West Midlands	3.8
9	Thanet	South East	3.8
10	Kernow	South West	3.6
11	Newark and Sherwood	East Midlands	3.6
12	Corby	East Midlands	3.6
13	Darlington	North East	3.5
14	Bristol	South West	3.4
15	Knowsley	North West	3.4
16	Ashford	South East	3.4
17	Hardwick	East Midlands	3.4
18	Harrogate and Rural District	Yorkshire & Humber	3.4
19	Dartford, Gravesham and Swanley	South East	3.3
20	East Staffordshire	West Midlands	3.3

- The Clinical Commissioning Groups, who responded to our FOI request, with the highest total number of major amputations for patients with diabetes (2009-2012) were:

	Clinical Commissioning Group	Region	Number of major amputations over three years as a result of diabetes
1	Somerset	South West	108
2	Southern Derbyshire	East Midlands	93
3	Kernow	South West	90
4	Cambridgeshire and Peterborough	Eastern	89
5	Cumbria	North West	86
6	Sheffield	Yorkshire & Humber	81
7	Durham Dales, Easington and Sedgefield	North East	79
8	Birmingham Crosscity	West Midlands	78
9	Nene	East Midlands	63
10	North Durham	North East	60
11	Hull	Yorkshire & Humber	55
12	Stoke on Trent	West Midlands	53
13	Liverpool	North West	52
14	Bristol	South West	51
15	Lincolnshire East	East Midlands	49
16	Vale of York	Yorkshire & Humber	48
17	North Derbyshire	East Midlands	48
18	Oxfordshire	South East	47
19	South Devon and Torbay	South West	44
20	Bradford Districts	Yorkshire & Humber	44

- The Clinical Commissioning Groups, who responded to our FOI request, with the lowest number of amputations per 1,000 patients with diabetes (2009-2012) were:

	Clinical Commissioning Group	Region	Number of amputations per 1,000 adults with diabetes
1	Brent	London	0.9
2	Bradford City	Yorkshire & Humber	1.2
3	Ealing	London	1.3
4	Waltham Forest	London	1.3
5	Redbridge	London	1.3
6	Leicester City	East Midlands	1.3
7	Nottingham West	East Midlands	1.4
8	Hillingdon	London	1.4
9	Airedale, Wharfedale & Craven	Yorkshire & Humber	1.6
10	Lambeth	London	1.6

- A major driver of high amputation rates is the lack of a specific patient pathway for dealing with peripheral arterial disease patients. Our Freedom of Information request showed that from 2009 to 2012, Clinical Commissioning Group areas *without* a patient pathway had **11% more amputations** on average than those *with* a patient pathway. (See Chapter 2 for a full list of the 35 CCGs without a patient pathway.)

- A further driver of high amputation rates is the lack of Multi-Disciplinary Teams - core teams of clinicians who collaborate on how best to deal with patients with peripheral arterial disease or diabetes. In spite of strong evidence that MDTs are essential to high standards of patient care, **30%** of Trusts handling vascular and diabetes patients (**31**) lacked MDTs for Diabetes. **28%** of Trusts lacked MDTs for Peripheral Arterial Disease (**29**). (See Chapter 1 for a full list of the CCGs without MDTs.)

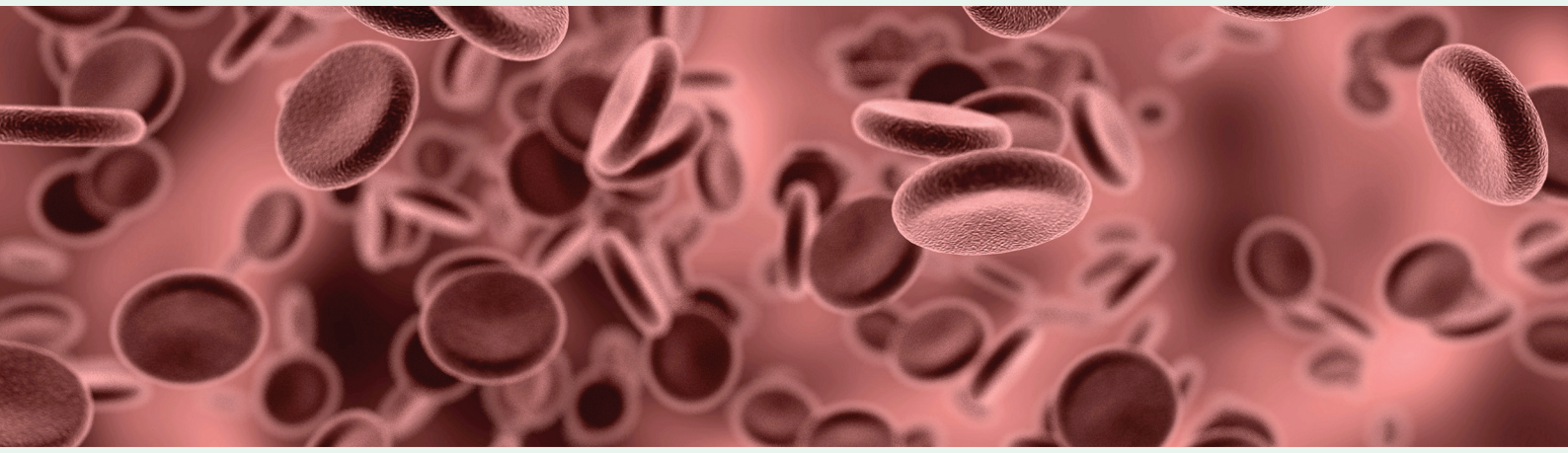
- Expert opinion suggests that once a patient is diagnosed with critical limb ischaemia, early intervention is likely to hold the key to reduced lower limb amputation rates.

- There are no national guidelines for the speed of referral for a patient suspected of CLI, despite the accepted orthodoxy among clinical experts that once admitted, a patient must be seen by a Multi-Disciplinary Team within 24 hours.

- Lower limb peripheral arterial disease represents one of the most visible manifestations of vascular disease. It is estimated to affect 9% of the population, and the incidence of it increases with age.[1] Population studies have found that about 20% of people aged over 60 years have some degree of peripheral arterial disease. Incidence is also high in people who smoke, people with diabetes and people with coronary artery disease.[2]

Number of Clinical Commissioning Groups without a patient pathway	
West Midlands	8
East Midlands	8
Yorkshire & Humber	5
London	4
Eastern	3
North East	2
South West	2
South East	2
North West	1

Number of Trusts lacking an MDT	
North West	8
London	5
East Midlands	4
Yorkshire & Humber	4
South West	3
North East	3
South East	2
Eastern	1
West Midlands	1



[1] Circulation Foundation (2011). Campaign Toolkit. (Online).
Available at: http://www.circulationfoundation.org.uk/wp-content/uploads/2012/03/awareness_week_toolkit.pdf

[2] 'Lower Limb Peripheral Arterial Disease: Diagnosis and Management', NICE Clinical Guideline 147, 2012, p. 4.

THE GROUP RECOMMENDS:

1	Amputation should be considered a failure, and a functioning foot with minimal surgery should be the success. To drive up the quality of services there needs to be a comparable set of simple outcome standards. An example would be what is seen in the intervention for aneurysms. Major amputation is currently the only main outcome, which is the result of a cultural problem, because it is still considered a successful treatment.
2	All commissioners and providers should have a clear pathway for patients suspected of increased risk of Peripheral Arterial Disease and the diabetic foot. This pathway must be made standard practice, and the route that patients are referred to a hospital with Critical Limb Ischaemia should be rapid, clear, and properly understood by all healthcare workers from primary care up to specialist care. This should be channelled down to GPs practices, and up to provider hospitals. They should also have a policy for referral to a Multi-Disciplinary Team with clear links to secondary care. Too many CCGs reported having no policy on either.
3	The use of modern technology, such as video conferencing or telemedicine, should be used to link local or remote centre to ensure cases can be discussed and where appropriate care can be delivered locally to avoid unnecessary travelling.
4	MDTs for PAD and diabetic footcare with a strong track record should be used as a model of good practice for other centres which are struggling.
5	Commissioning structures need to balance centralisation of care for complex high-risk vascular procedures with the need to maintain equity of patient access for peripheral arterial disease.
6	Establish pathway coordinators in hub centres with integrated clear pathways for the diabetic foot. This will help to identify high risk patients earlier and allow referral to expert opinions and treatment sooner which would reduce amputation rates.
7	Ensure that there is a named contact person in a hospital/community 24 hours a day who is a member of the MDT in case of emergencies.
8	All commissioners should have a sub-24 hour policy to refer patients with suspected CLI to a Multi-Disciplinary Team. Time is of the essence with this condition, and an increased delay in treatment increases the risk of amputation.
9	The Quality Outcomes Framework needs to be improved so that all patients who are identified as 'high risk' are referred for preventative podiatry and structured education. Preventative care is extremely important, as chances of lower limb amputation are massively increased if the situation develops to Critical Limb Ischaemia. Education for patients at risk should be made more widespread in the community. Guidance and support on smoking cessation and exercise, in particular for patients with diabetes, is one of the key areas which need attention.

Foreword

The last year has been a very successful one for the All Party Parliamentary Group on Vascular Disease, which has continued to grow in influence and publicity. The group has held several very well attended meetings this year, the highlight being our summer reception in July, in which the Secretary of State for Health, Jeremy Hunt MP, attended and spoke at.

The Department of Health's Cardiovascular Disease Outcome Strategy, which came out in March this year, was very well received and welcomed by the group. Furthermore, 70% of the recommendations which the group made in the report we released last year, 'Putting Vascular Disease at the Centre of Government Thinking', were included in the strategy. This is a clear example of how the work this group is doing to improve patient outcomes and awareness of vascular disease is succeeding in influencing health policy in this country.

Following consultation with a wide range of clinicians, surgeons and representatives from the NHS and the third sector, we have produced this report highlighting the problems facing those with Peripheral Arterial Disease (PAD), in particular, amputation. The group held an oral evidence meeting in the House of Commons in September, which was very well attended by clinical advisors, NHS managers and representatives from the Vascular Society and Diabetes UK, who all made excellent and valuable contributions to this report. Echoing the sentiments I made preceding the launch of our previous report, I would like to thank all of those who have attending meetings, receptions, submitted oral and written evidence, and contributed in any way to the excellent work this group is doing to tackle vascular disease in this country.

Neil Carmichael.

Neil Carmichael MP
Chair of the APPG on Vascular Disease

Introduction -
Peripheral arterial disease, diabetic Foot disease, and regional amputation rates

0.1 As of 2012, 20% of people over the age 60 of had Peripheral Arterial Disease, which equated to 2,307,306 adults. Of this 2.3+ million, 25% had symptoms of intermittent claudication (pain) - 576, 826. A fifth of these patients were likely to develop critical limb ischaemia, which equated to 115, 365 people at major risk of amputation.[3]

0.2 Data sourced from the Health and Social Care Information Centre's Hospital Episode Statistics reports from 2010 to 2013 demonstrates how consistent the total number of amputation is year on year. There is an average of 11,573 amputations every year. Though not all of these amputations are directly the result of PAD, serious action must be taken to reduce this very high number, as is displayed below.

[4]

Lost limb	2010-2011	2011-2012	2012-2013
Leg	5061	4701	4669
Foot	785	980	1040
Toe	5512	6021	5951
Total	**11358**	**11702**	**11660**

0.3 There is considerable regional variation in amputation rates for patients with PAD and diabetic foot disease. There are certain areas of England which have consistently had higher than average amputation rates for patients with both PAD and diabetic foot disease over several years. There is clearly a problem in these areas with service provision. Freedom of Information requests revealed the average number of major amputations per CGG for the nine regions of England from 2009/10 to 2011/12. A further complication is that PAD itself is not distributed homogenously across the UK. Demographic and socio-economic factors undoubtedly affect the incidents and management of PAD.

0.4 A more precise way to compare regions is to look at the number of amputations as a share of the number of adults with diabetes. This shows that patients with diabetes in the South West are approximately twice as likely to suffer a limb amputation as patients in London. Even diabetics in the next best performing region, the North West, are 30% more likely to have an amputation.

CCG location	Average number of major amputations per CCG over three years as a result of diabetes[5]
South West	73.3
Eastern	42
North East	40.6
North West	34.3
Yorkshire & Humber	31.5
East Midlands	30.8
South East	29.3
West Midlands	27.3
London	19.9

CCG region	Average number of amputations per 1,000 adults with diabetes (2009/10-2011/12)	Greater risk of amputation compared to London
South West	3.88	100%
Yorkshire & Humber	2.79	44%
West Midlands	2.72	40%
Eastern	2.7	39%
South East	2.68	38%
East Midlands	2.66	37%
North East	2.66	37%
North West	2.55	31%
London	1.94	

[3] 'Lower Limb Peripheral Arterial Disease Costing Report – Implementing NICE Guidance 147', NICE, August 2012.
[4] Hospital Episode Statistics, Admitted Patient Care, England – 2010-2011; 2011-2012; 2012-2013 – Treatment Speciality
[5] Freedom of Information Request to 212 Clinical Commissioning Groups in England, 30th August 2013
[6] Freedom of Information Request to 212 Clinical Commissioning Groups in England, 30th August 2013

0.5 A Freedom of Information request to all 164 Acute Trusts (to which 138 responded) showed the same pattern.

Trust region[7]	Average amputation rate per 1,000 adults with diabetes
South West	3.69
Yorkshire & Humber	3.17
South East	2.93
West Midlands	2.73
North East	2.64
North West	2.55
Eastern	2.51
East Midlands	2.26
London	2.06

0.6 The South West's higher than average amputation rates as can be viewed in the table below.

The average amputation rate per 1000 adults with diabetes is 2.6 (over three years, between 2009-2012). As is demonstrated above, there is a strong correlation between a lack of service provision of one of the three criteria, either at CCG or Trust level, which is leading to these higher than average amputation rates. The South-West (in what was previously the South-West Strategic Health Authority) was identified by previous studies going back to 2010 as having alarmingly high amputation rates, for patients both with and without diabetes. Regardless of whether the previous Primary Care Trust lacked appropriate commissioning policies for patients with PAD, the fact that the CCGs still do not have effective policies in place is a concern.

0.7 Major amputation should be the final resort after other channels have been attempted. There are some instances, albeit rare, when an experienced team will conclude that amputation is the correct treatment option. It should be considered a failure unless all options for (such as revascularisation, and have been considered by a vascular multidisciplinary team as stipulated by NICE guidelines) are not adhered to[8]. Amputation can have a dramatic effect on a person's life – not only is a patient's quality of living dramatically reduced due to the loss of the limb, studies show that mortality is increased if amputation, rather than other measure such as revascularisation, is the chosen route.

0.8 Data demonstrated that certain areas which had high amputation rates (3.06 – 5.17 amputations per 1000 patients admitted) for patients with diabetes consistently had high rates for those without. This is despite the fact that diabetic patients with peripheral

NHS Trust	Main commissioner	MDT at Trust?	CCG Referral Policy? Pathway?	Amputations*
Torbay and Southern Devon Health and Care NHS Trust	South Devon and Torbay CCG	No	No, No	3
Taunton and Somerset NHS Foundation Trust	Somerset CCG	No	No, No	4.7
Yeovil District Hospital NHS Foundation Trust	Somerset CCG	No	No, Yes	4.7
Royal Devon and Exeter NHS Foundation Trust	North, East, West Devon CCG	Yes	No, Yes	4.3
Royal Cornwall Hospitals NHS Trust	Kernow CCG	Yes	Yes, No	3.6
Plymouth Hospitals NHS Trust	North, East, West Devon CCG	Yes	No, Yes	4.3

*Per 1000 adults with diabetes

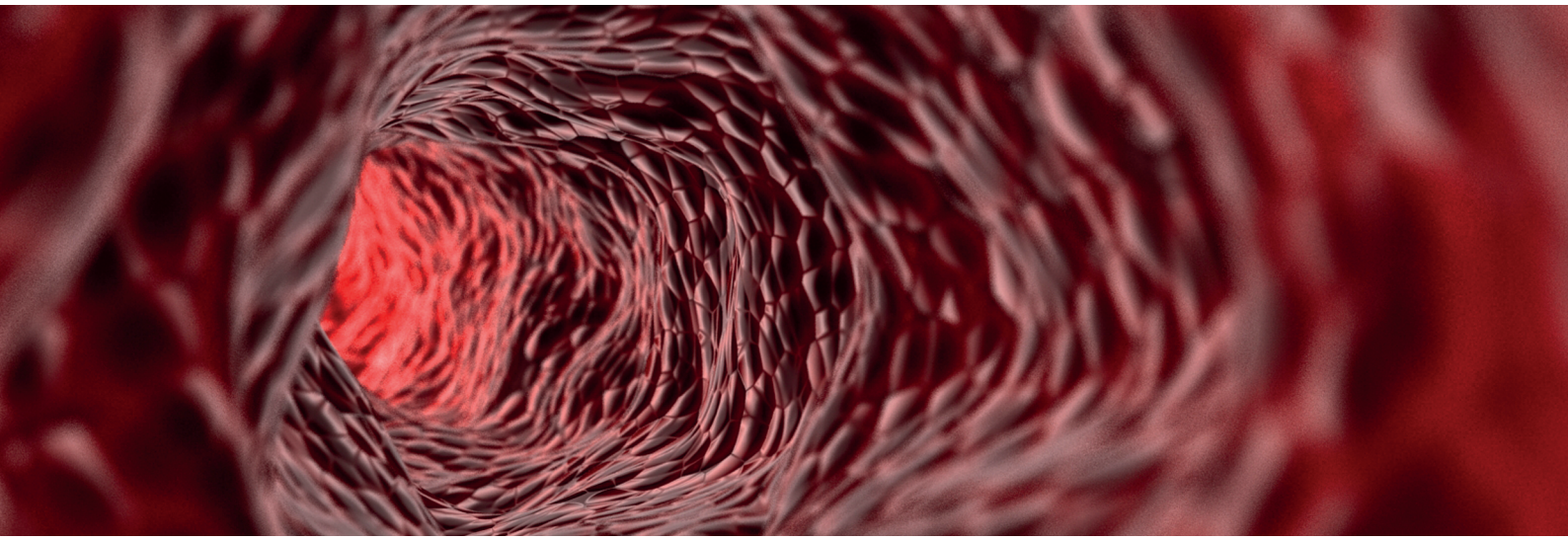
[7] Freedom of Information Request to 212 Clinical Commissioning Groups in England, 30th August 2013
[8] 'Lower limb peripheral arterial disease: diagnosis and management', NICE Clinical Guideline 147, p.14.

arterial disease have other contributing conditions which increase the likelihood of gangrene and thus amputation. Because of the similarity in amputation variations between those with and without diabetes, it most reflects the differences in local healthcare delivery.[9]

0.9 Evidence based on Freedom of Information Requests sent to every NHS Trust and CCG, when linked to more recent HES data (2009-2012) reflects this problem with healthcare delivery. The consensus among Vascular Surgeons, Diabetologists, Podiatrists and Interventional Radiologists (the core team of physicians required to care for patients with PAD or diabetic foot) is that commissioning policies (at CCGs) and provider's service provisions (at NHS Trusts) can play a major role in determining whether a patient undergoes major amputation.

0.10 This report has focused primarily on policies relating to the services provided at commissioner (CCG) and provider (NHS Trust), and asserts that improving policies at both levels can reduce unnecessary amputations in England. There are of course other factors at play here as well, for example ethnicity and certain parts of the country where negative lifestyle factors are more prevalent, such as smoking and heavy drinking. However, the key point to be made is that regardless of a person's risk, with specific policies in place, the right services should prevent a patient losing a limb.

0.11 Of the 211 CCGs, 111 failed to respond to our FOI request and 138 of 164 Acute Trusts also failed to respond. The lack of response may indicate either a lack of interest in the issue or more likely no knowledge of a diabetic footcare team.



[9] Variation in the recorded incidence of amputation of the lower limb in England', N. Holman, R. J. Young, W. J. Jeffcoate, Diabetologia, 2011.

Chapter 1 - The Importance of the Multi-Disciplinary Team in reducing amputations

What is a multi-disciplinary team, and why are they important?

1.1 NICE Clinical Guideline 147 on Lower Limb Peripheral Arterial Disease states that in the management of critical limb ischaemia (CLI), patients should be assessed by a multi-disciplinary team (MDT) before treatment decisions are made. However, the guideline does not stipulate the range of specialities that should make up a vascular MDT. Moreover, the range of specialities will also widen when CLI is complicated through diabetes.

1.2 Contributors to the call for evidence used in this report suggested that the in the case of a patient with CLI, a team should include a core of diabetologists (if diabetes is a co-morbidity factor), interventional radiologists, vascular specialists and specialist podiatrists. There should also be an extended team, which may include orthotists, microbiologists, orthopaedic surgeons, nurse practioners (including tissue viability nurses), plaster technicians and a coordinator, to ensure that clinical decisions are accurately recorded and are available for review.

1.3 The role of the MDT is to integrate specialists with relevant complementary skills who work either together or in close communication with each other every day. The team works within the focus of an outpatient diabetic foot clinic but also extends its work to the inpatient location of wards and operating theatres. It provides instant emergency access service so that patients with new ulcers, pain, or discolouration can be seen on the same day, and intensive and co-ordinated services from the aggressive treatment of infection and ischaemia can be given. In the case of the diabetic foot, there is evidence that rapid access to multidisciplinary footcare teams can lead to faster healing, fewer amputations and improved survival.[10]

1.4 It has been suggested that as well as improving patient outcomes, MDTs can generate savings to the NHS that exceed the cost of the team.[11] Lower extremity amputation rates (major and minor) at James Cook University Hospital, Middlesbrough, fell by two thirds after the introduction of an MDT. The annual cost of the team is estimated in 2010-2011 prices, at £33 000. The annual saving to the NHS from averted amputations is estimated at £249 000, more than seven times the cost of the team.[12]

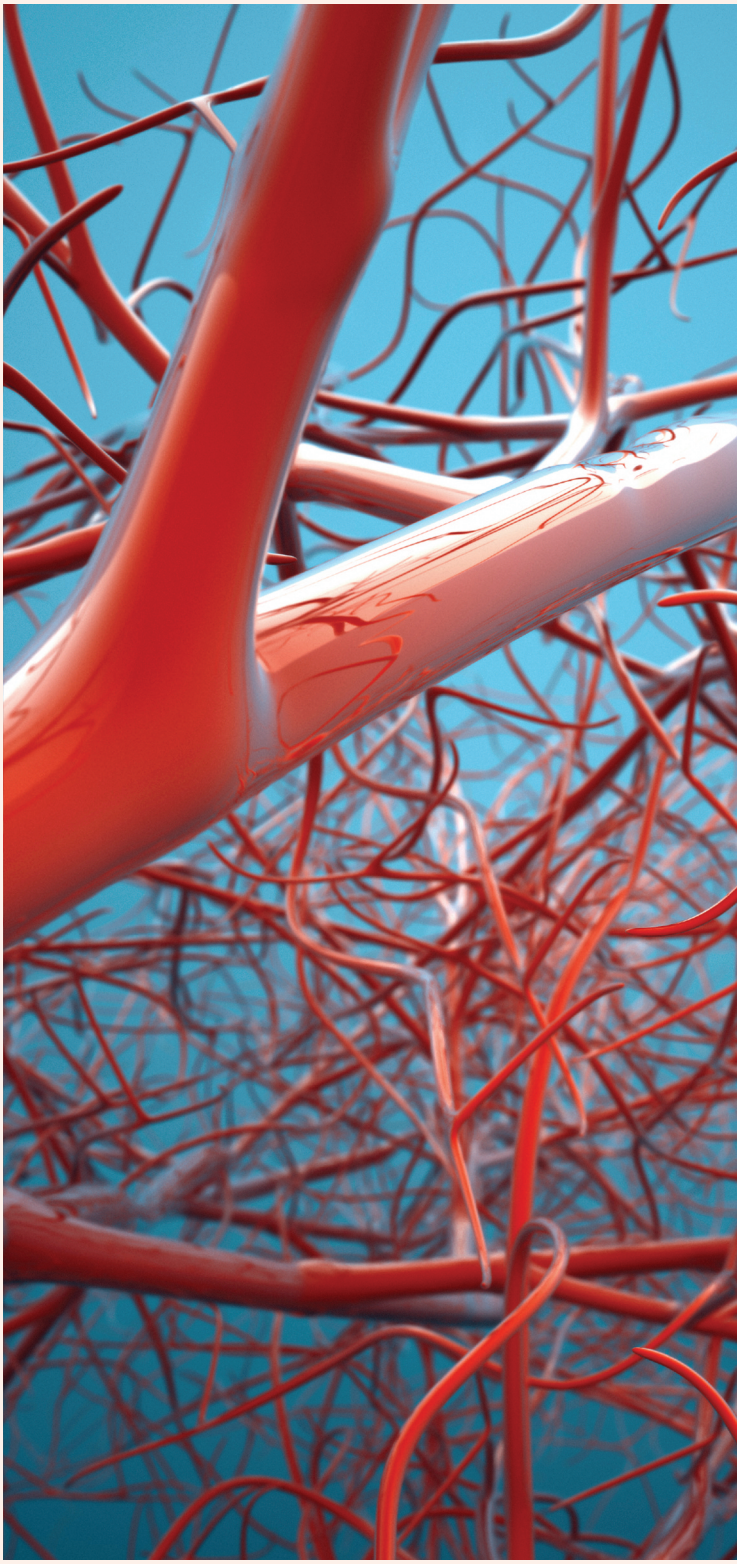
1.5 Information acquired by Freedom of Information requests sent to every NHS Trust in England in late 2013 has suggested that over 30% of those which are eligible (i.e. they are not a specialist hospital) do not have a multi-disciplinary team for the treatment of PAD or the diabetic foot. In 2010, this level was at 40% of hospitals in England which did not have an MDT. Though this has improved to only 30% lacking the team in 2012, and remained at that level a year later, there is still much room for improvement.[13] In Ipswich, amputation rates were reduced by 53% from 1999-2002 by the introduction of an MDT and in-patient foot care services[14], and at King's College Hospital's footcare team, there were estimates of a reduction of around 70% from 1990-2002.[15]

1.6 The different care needs of diabetic and non-diabetic patients with lower limb ischaemia must be recognised. For a patient with diabetes, there is a double risk of gangrene not only due to a vascular blockage, but also due ulceration, which can lead to infection. A simple revascularisation may not suffice for someone with nerve damage and blood sugar problems and therefore it is vital that vascular MDTs recognise this when shifting a patient from the hub

[10] 'Foot care for people with diabetes in the NHS in England: The economic case for change', M. Kerr, Insight Health Economics: NHS Diabetes, March 2012.
[11] 'Foot care for people with diabetes in the NHS in England', Kerr.
[12] 'Foot care for people with diabetes in the NHS in England', Kerr.
[13] National Diabetes Inpatient Audit 2012, NHS Information Centre.
[14] Gerry Rayman, presentation to the London Foot Network meeting 13th January 2012.
[15] Ibid.

to the spoke. There must be a diabetic MDT at the regional centre to take on the extra complications which come with diabetes related peripheral arterial disease.

1.7 In the case of the diabetic foot, anecdotal evidence from various contributing clinicians has suggested that there isn't an adequate level of differentiation or understanding in the differentiation between multi-disciplinary teams specialising for patients with PAD, and those caring for those with diabetic foot disease. Information from our FOI request to all NHS Trusts has suggested that of those who responded, many do not have their own Multi-Disciplinary Team, and a less than desirable number do not have the ability to treat those with diabetic foot disease. Of 164 Acute Trusts sent a Freedom of Information request, 138 responded. 33 did not carry out the relevant procedures. Of the remaining 105, 30% (31) lacked a multidisciplinary team for diabetes. All but two of these also lacked an MDT for Peripheral Arterial Disease. 8 were in the North West, 5 in London, the East Midlands and Yorkshire and the Humber each had 4, and the North East and South West each had 3. There were 2 in the South East and 1 in both the Eastern and West Midlands. The Trusts were as listed overleaf:

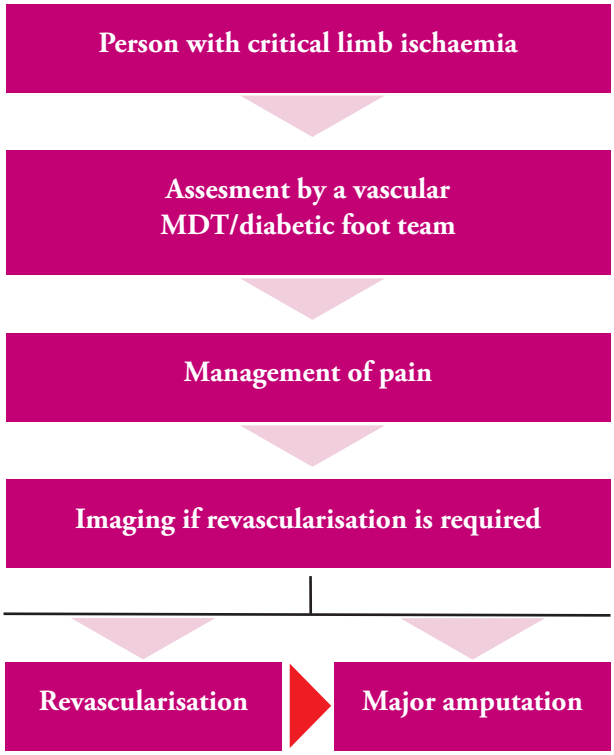


Trusts	Region	MDT for PAD	MDT for Diabetes
Airedale NHS Foundation Trust	Yorkshire & Humber	No	No
Bolton NHS Foundation Trust	North West	No	No
Burton Hospitals NHS Foundation Trust	West Midlands	No	No
Chelsea and Westminster NHS Foundation Trust	London	No	No
City Hospitals Sunderland NHS Foundation Trust	North East	No	No
Countess Of Chester Hospital NHS Foundation Trust	North West	No	No
County Durham and Darlington NHS Foundation Trust	North East	Yes	No
East Cheshire NHS Trust	North West	No	No
Harrogate and District NHS Foundation Trust	Yorkshire & Humber	No	No
Homerton University Hospital NHS Foundation Trust	London	No	No
Isle Of Wight NHS Trust	South East	No	No
Kettering General Hospital NHS Foundation Trust	East Midlands	No	No
Mid Cheshire Hospitals NHS Foundation Trust	North West	No	No
Mid Essex Hospital Services NHS Trust	Eastern	No	No
North Middlesex University Hospital NHS Trust	London	No	No
Northampton General Hospital NHS Trust	East Midlands	Yes	No
Northumbria Healthcare NHS Foundation Trust	North East	No	No
Royal Surrey County NHS Foundation Trust	South East	No	No
Salford Royal NHS Foundation Trust	North West	No	No
Southport and Ormskirk Hospital NHS Trust	North West	No	No
Stockport NHS Foundation Trust	North West	No	No
Taunton and Somerset NHS Foundation Trust	South West	No	No
The Lewisham Healthcare NHS Trust	London	No	No
The Rotherham NHS Foundation Trust	Yorkshire & Humber	No	No
The Royal Marsden NHS Foundation Trust	London	No	No
Torbay and Southern Devon Health and Care NHS Trust	South West	No	No
Trafford Healthcare NHS Trust	North West	No	No
United Lincolnshire Hospitals NHS Trust	East Midlands	No	No
University Hospitals Of Leicester NHS Trust	East Midlands	No	No
Yeovil District Hospital NHS Foundation Trust	South West	No	No
York Teaching Hospital NHS Foundation Trust	Yorkshire & Humber	Yes	No

Chapter 2 - Early diagnosis, early referral and patient pathways

From lower limb pain to amputation – the problems

2.1 It has been made clear by numerous vascular and diabetic specialists that there needs to be a major emphasis on the prevention of PAD before it reaches a critical state. If diabetic, management of the condition and frequent foot checks by GPs is vital, as is advice on smoking cessation and other lifestyle factors. NICE Guidance 119 sets out best practice recommendations for prevention and management of foot problems for people with diabetes.[16] This includes providing an annual foot check to everyone with diabetes and assessing their risk status; in 2010-2011, 27% of people with Type 1 Diabetes did not receive their annual foot check and 13% with Type II Diabetes did not receive the check.[17] NICE Guideline 147 Once the patient has been diagnosed with critical limb ischaemia; there must be a clear pathway, as outlined by NICE Pathways in the example to the left, on PAD.



2.2 In evidence gathered by a Freedom of Information request made to every Clinical Commissioning Group in England, of the 112 who responded within the 20 day limit, only 77 (68%) have a policy on referring to a multi-disciplinary team patients at risk of lower limb amputation who suffer from either PAD or diabetic foot disease. When this is matched with HES data, it was found that for every 1000 patients with diabetes, there was a 0.2% higher chance of amputation if the commissioner did not have an established pathway. The average amputation rate per 1000 adults with diabetes from 2009 to 2012 was 2.6, or 30.6 major amputations.

2.3 There is concern that education and knowledge of lower limb peripheral disease, in both patients with or without diabetes, is limited among both the general population and more importantly in primary care. Despite the associated morbidity and mortality that PAD confers on the diabetic population, many patients are being referred too late to specialist care. Two patients who attended the group's oral evidence session in September 2013 recalled how initial poor referral and education nearly cost them the loss of lower limbs to amputation. Stuart Robson was diagnosed with diabetes related peripheral arterial disease at a late state, with foot ulcers and severe pain. Local hospitals suggested amputation. It was by chance that he was informed about King's College Hospital's multidisciplinary footcare team, who ruled out amputation, and instead he was given

[16] 'Type 2 Diabetes: Prevention and management of foot problems', Clinical Guideline 10 http://guidance.nice.org.uk/CG10; Diabetic Foot Problems – Inpatient Management NICE Clinical Guideline 119 http://guidance.nice.org.uk/CG119

[17] NHS Information Centre 2013 – National Diabetes Audit 2011-2012, Report 1- Care Processes and Treatment Targets

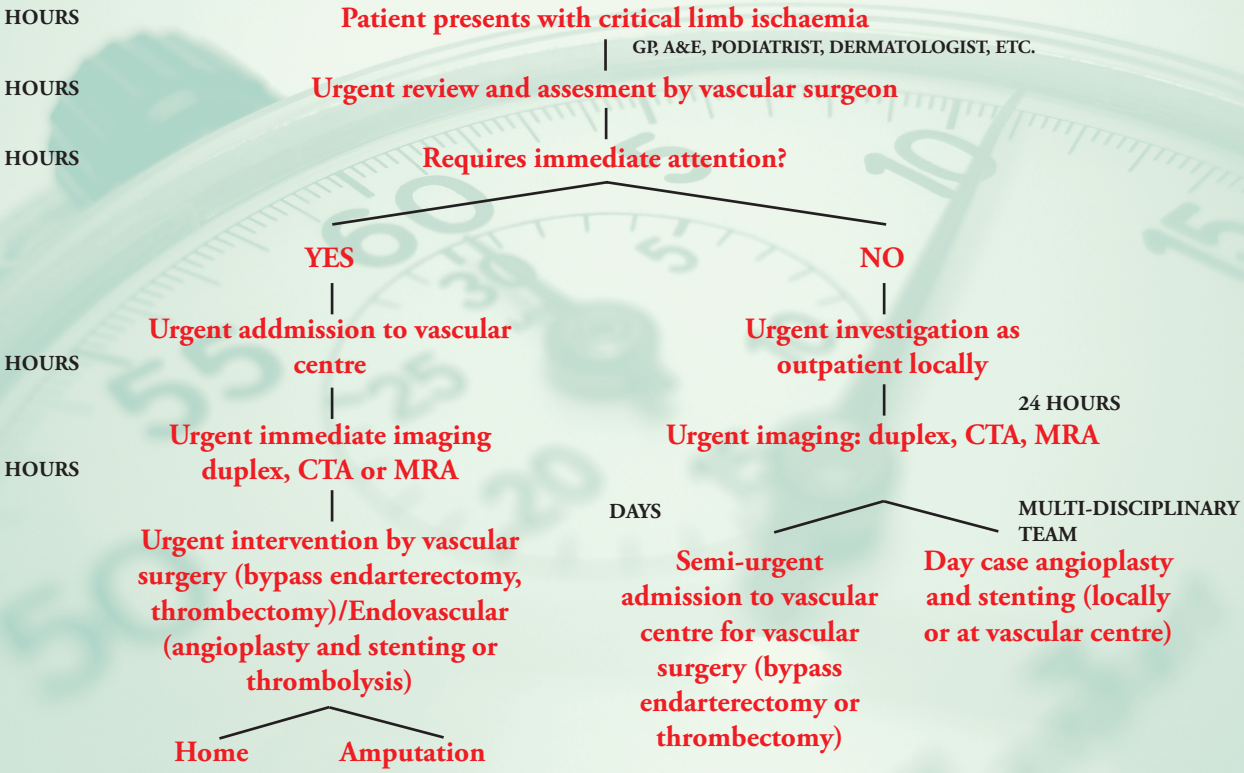
revascularisation with a bypass. Four years later he can still walk, work and drive a car. Another diabetic patient, John Turner, after months of various referrals to different hospitals, all suggesting amputation, he also by chance came across King's MDT, and through similar procedures, has kept all his legs. This demonstrates a fundamental dearth of patient/GP information and education, a lack of communication between commissioners and providers, and a lack of relevant specialists working together.

The pathway problem

2.4 Urgent foot referral to specialist care is crucial for patients with critical limb ischaemia to avoid unnecessary foot amputations. NICE have produced detailed care pathways (from Guidelines 147 and 119 respectively) for those with suspected lower limb peripheral arterial disease and the diabetic foot, with or without symptoms.[18]

2.5 Dr Dare Seriki, an Interventional Radiologist from Manchester, has recently proposed the adoption of his own pathway for the management of patients with CLI. The 'STAMP' campaign is aimed at preventing 'all unnecessary amputations' by improving awareness of CLI among the general public, as well as all relevant clinicians (including GPs, Diabetologists, Podiatrists and Orthopaedic Surgeons). Reducing unnecessary delays is the key to this campaign – maximising on increased public exposure to the urgent nature of CLI is vital. Time is critical and there should be minimal stoppages before a patient sees a Vascular Surgeon, has the appropriate radiology imaging before any potential vascular surgery. STAMP was created due to the inconsistent management of CLI in Greater Manchester, Lancashire and South Cumbria Strategic Network, with the aim of having it adopted across the region. We hope that this model could be adopted nationally.

STAMP pathway – Stamp Out Unnecessary Amputations [19]



[18] 'Lower limb peripheral arterial disease overview', NICE, 2013
[19] STAMP Campaign – Dr Dare Seriki, Greater Manchester, Lancashire and South Cumbria Strategic Network

Of the 118 Clinical Commissioning Groups who responded to the Freedom of Information request, only 94 answered the specific question regarding how quickly patients with CLI are referred to a provider. Fifty three groups have a policy whereby patients diagnosed with CLI are referred to a provider (which may or may not entail an MDT) within 24 hours. Seven have a policy which specifies that they must be referred to secondary care between 24 and 72 hours, and thirty four CCGs were unclear whether they a) had a policy on urgent referral or b) what the timescale was for urgent referral. There should be concern at the failure to adopt a clear pathway when the medical situation can be so time sensitive. The 24 hour window in the pathway can make the difference to whether a limb is salvaged.

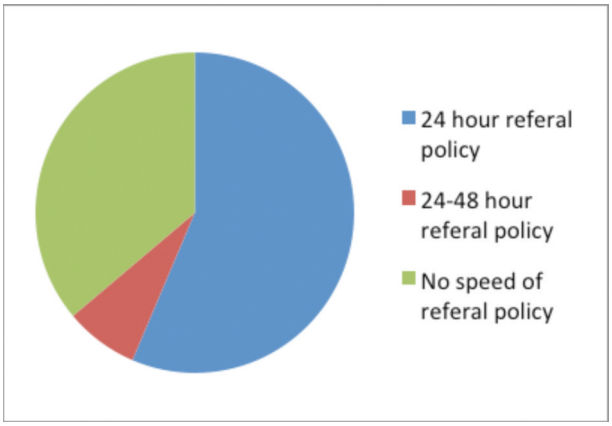
2.6 Of the 110 Clinical Commissioning Groups who responded to the Freedom of Information request regarding the following of an established patient pathway for feet, 75 claimed they did, many of whom cited following NICE guidelines. However, 35 do not have an established pathway at all.

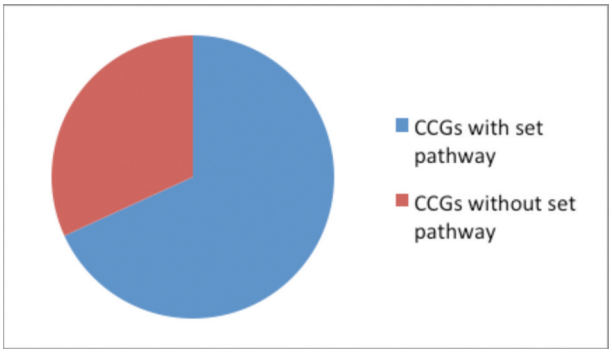
This is an obvious cause for concern, both for diabetic patients who live in the remit of those CCGs, and also the various clinicians at the local providers who will be presented with cases of diabetic foot too late.

The Clinical Commissioning Groups without a patient pathway recorded 32.8 amputations for every 1,000 adults with diabetes from 2009/10 to 2011/12. This figure was 11% higher than the 29.7 for the CCGs with a patient pathway.

The West Midlands had the most CCGs without a patient pathway, the North West the least.

The CCGs without a patient pathway are shown in the table overleaf.





Patient Pathway	Average number of amputations per 1,000 adults with diabetes
Yes	29.7
No	32.8

Number of Clinical Commissioning Groups without a patient pathway	
West Midlands	8
East Midlands	8
Yorkshire & Humber	5
London	4
Eastern	3
North East	2
South West	2
South East	2
North West	1

Clinical Commissioning Group	Region	Number of major amputations over three years as a result of diabetes	Number of amputations per 1,000 adults with diabetes
Airedale, Wharfedale & Craven	Yorkshire & Humber	10	1.6
Bassetlaw	East Midlands	12	3.1
Bradford City	Yorkshire & Humber	7	1.2
Bradford Districts	Yorkshire & Humber	44	2.4
Cambridgeshire and Peterborough	Eastern	89	2.6
Coventry and Rugby	West Midlands	41	2.1
Croydon	London	23	2
East Staffordshire	West Midlands	19	3.3
Harrogate and Rural District	Yorkshire & Humber	12	3.4
Hartlepool and Stockon-upon-Tees	North East	40	2.7
Ipswich and East Suffolk	Eastern	35	1.9
Islington	London	14	2.3
Lewisham	London	24	2.1
Lincolnshire East	East Midlands	49	2.8
Lincolnshire West	East Midlands	27	2.2
Liverpool	North West	52	3.2
Mansfield and Ashfield	East Midlands	38	4.6
Merton	London	20	2
Milton Keynes	South East	33	3
Newark and Sherwood	East Midlands	21	3.6
North Lincolnshire	Yorkshire & Humber	18	1.7
Nottingham West	East Midlands	9	1.4
Oxfordshire	South East	47	1.7
Redditch and Bromsgrove	West Midlands	12	2.2
Rushcliffe	East Midlands	11	2.9
Somerset	South West	108	4.7
South Devon and Torbay	South West	44	3.8
South East Staffs and Seisdon and Peninsular	West Midlands	18	2.5
South Tees	North East	42	2.8
South Warwickshire	West Midlands	37	3.8
South Worcestershire	West Midlands	24	2.8
Southern Derbyshire	East Midlands	93	2.7
Warwickshire North	West Midlands	30	2.8
West Suffolk	Eastern	34	2.8
Wyre Forest	West Midlands	11	3.3

Appendix 1:
Responses from all Clinical Commissioning Groups, by Region

East Midlands				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Mansfield and Ashfield	4.6	38	No	Yes
Corby	3.6	17	Yes	No
Newark and Sherwood	3.6	21	No	Yes
Hardwick	3.4	18	Yes	Yes
Bassetlaw	3.1	12	No	No
Rushcliffe	2.9	11	No	No
Lincolnshire East	2.8	49	No	Yes
Southern Derbyshire	2.7	93	No	Yes
North Derbyshire	2.6	48	Yes	No
Erewash	2.3	11	Yes	Yes
Lincolnshire West	2.2	27	No	Yes
Nottingham North and East	2.2	20	Yes	Yes
Nene	2.1	63	Yes	No
East Leicestershire and Rutland	1.8	27	Yes	Yes
Nottingham West	1.4	9	No	Yes
Leicester City	1.3	28	Yes	Yes

Eastern				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Southend	4.5	30	Yes	No
West Suffolk	2.8	34	No	Yes
Cambridgeshire and Peterborough	2.6	89	No	No
Ipswich and East Suffolk	1.9	35	No	No
Basildon	1.7	22	Yes	Yes

London				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Kingston	3	16	Yes	No
Sutton	2.7	25	Yes	Yes
Bexley	2.5	19	Yes	No
Greenwich	2.5	23	Yes	No
Camden	2.3	21	Yes	Yes
Havering	2.3	23	Yes	No
Islington	2.3	14	No	Yes
Bromley	2.1	17	Yes	No
Lewisham	2.1	24	no	No
Wandsworth	2.1	24	Yes	No
Croydon	2	23	No	No
Hammersmith and Fulham	2	9	Yes	Yes
Merton	2	20	No	No
Richmond	2	"Too small to analyse"	Yes	Yes
Barking & Dagenham	1.9	13	Yes	Yes
Central London	1.9	13	Yes	Yes
Enfield	1.9	27	Yes	No
Haringey	1.9	22	Yes	No
Hounslow	1.9	18	Yes	No
Barnet	1.7	20	Yes	No
Southwark	1.7	"Too small to analyse"	Yes	Yes
West London	1.7	14	Yes	No
Lambeth	1.6	12	Yes	Yes
Hillingdon	1.4	19	Yes	Yes
Ealing	1.3	24	Yes	Yes
Redbridge	1.3	26	Yes	Yes
Waltham Forest	1.3	25	Yes	Yes
Brent	0.9	27	Yes	No

North East				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Darlington	3.5	32	Yes	Yes
Durham Dales, Easington and Sedgefield	3.2	79	Yes	Yes
North Durham	2.8	60	Yes	Yes
South Tees	2.8	42	No	No
Hartlepool and Stockon-upon-Tees	2.7	40	No	No
Newcastle West	2.5	22	Yes	Yes
Sunderland	2.2	34	Yes	Yes
Newcastle North and East	2.1	16	Yes	Yes
Northumberland	2.1	40	Yes	Yes

North West				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Knowsley	3.4	37	Yes	No
Liverpool	3.2	52	No	Yes
Cumbria	3.0	86	Yes	Yes
South Sefton	2.5	20	Yes	Yes
Vale Royal	2.4	14	Yes	No
Trafford	2.1	27	Yes	No
Eastern Cheshire	2.0	22	Yes	Yes
St Helens	1.8	16	Yes	No

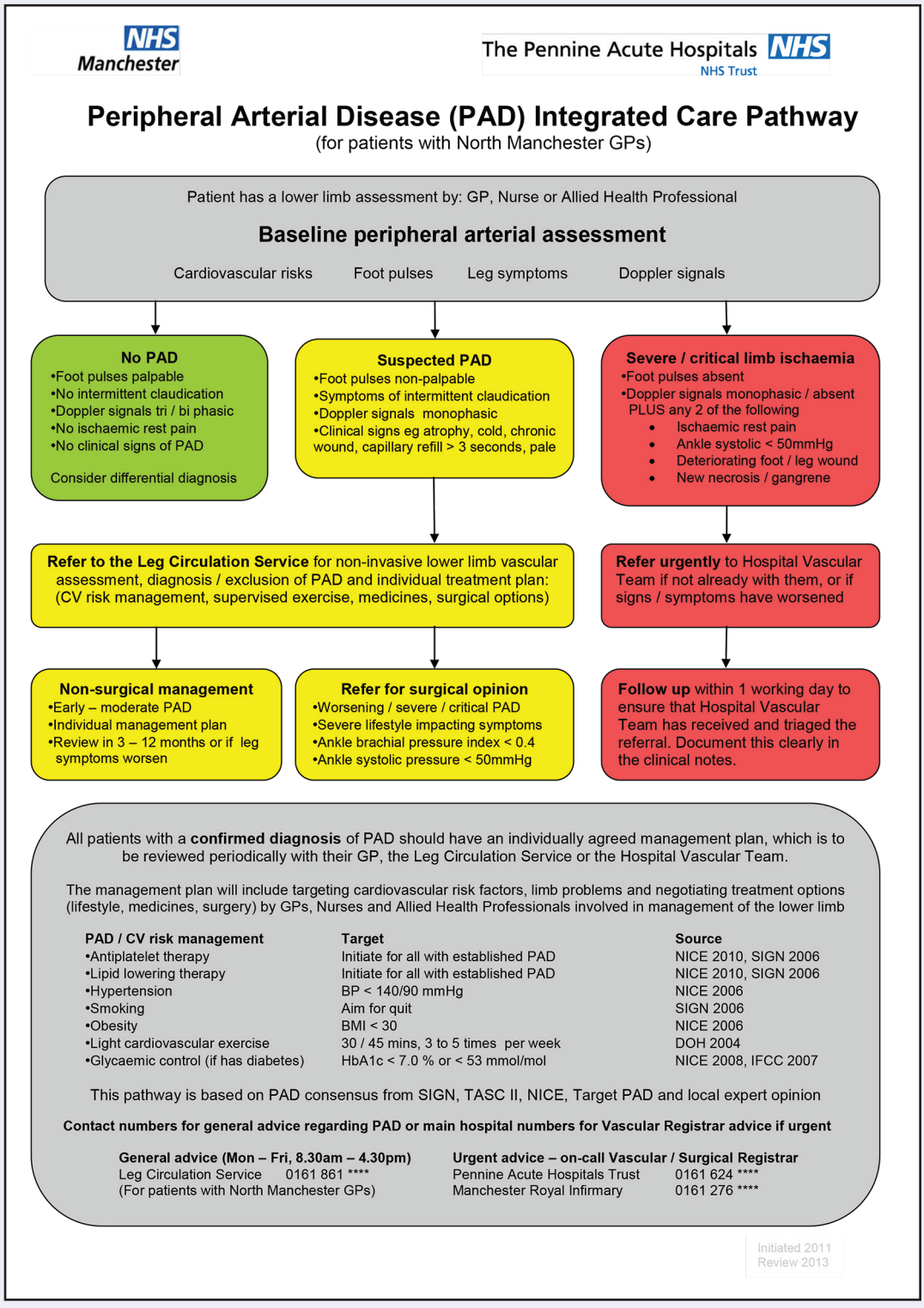
South West				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Somerset	4.7	108	No	No
South Devon and Torbay	3.8	44	No	No
Kernow	3.6	90	Yes	No
Bristol	3.4	51	Yes	No

South East				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Thanet	3.8	36	Yes	Yes
Ashford	3.4	21	Yes	Yes
Dartford, Gravesham and Swanley	3.3	26	Yes	Yes
Isle of White	3.0	16	Yes	Yes
Milton Keynes	3.0	33	No	Yes
South Kent Coast	2.9	43	Yes	Yes
Chiltern	2.5	31	Yes	No
Medway	2.3	37	Yes	Yes
Swale	2.2	18	Yes	Yes
Canterbury and Coastal	2.1	22	Yes	Yes
Surrey Downs	2.0	22	Yes	No
Oxfordshire	1.7	47	No	No

West Midlands				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
South Warwickshire	3.8	37	No	No
East Staffordshire	3.3	19	No	Yes
Wyre Forest	3.3	11	No	No
Stafford and Surrounds	3.2	22	Yes	No
Herefordshire	3.0	27	Yes	Yes
Stoke on Trent	3.0	53	Yes	Yes
Cannock Chase	2.9	22	Yes	No
Halton	2.8	20	Yes	Yes
North Staffordshire	2.8	29	Yes	Yes
South Worcestershire	2.8	24	No	No
Warwickshire North	2.8	30	No	No
Birmingham Crosscity	2.5	78	Yes	No
South East Staffs and Seisdon and Peninsular	2.5	18	No	No
Telford and Wrekin	2.4	15	Yes	Yes
Redditch and Bromsgrove	2.2	12	No	No
Coventry and Rugby	2.1	41	No	No
Birmingham South	1.8	17	Yes	No
Solihull	1.8	17	Yes	Yes

Yorkshire & Humber				
Clinical Commissioning Group	**Number of amputations per 1000 adults with diabetes**	**Number of major amputations over three years as a result of diabetes**	**Established patient pathway**	**Policy for referral**
Hull	4.4	55	Yes	Yes
Scarborough & Ryedale	4.2	26	Yes	No
Vale of York	4.1	48	Yes	No
Harrogate and Rural District	3.4	12	No	No
Sheffield	3.2	81	Yes	Yes
Hambleton, Richmondshire & Whitby	2.8	23	Yes	Yes
Bradford Districts	2.4	44	No	No
Barnsley	1.7	23	Yes	No
North Lincolnshire	1.7	18	No	No
Airdale, Wharfedale & Craven	1.6	10	No	No
Bradford City	1.2	7	No	No

Appendix 2:
Integrated PAD Care Pathway



NHS Manchester

The Pennine Acute Hospitals NHS Trust

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

Patient has a lower limb assessment by: GP, Nurse or Allied Health Professional

Baseline peripheral arterial assessment

Cardiovascular risks | Foot pulses | Leg symptoms | Doppler signals

No PAD
- Foot pulses palpable
- No intermittent claudication
- Doppler signals tri / bi phasic
- No ischaemic rest pain
- No clinical signs of PAD

Consider differential diagnosis

Suspected PAD
- Foot pulses non-palpable
- Symptoms of intermittent claudication
- Doppler signals monophasic
- Clinical signs eg atrophy, cold, chronic wound, capillary refill > 3 seconds, pale

Severe / critical limb ischaemia
- Foot pulses absent
- Doppler signals monophasic / absent PLUS any 2 of the following
  - Ischaemic rest pain
  - Ankle systolic < 50mmHg
  - Deteriorating foot / leg wound
  - New necrosis / gangrene

Refer to the Leg Circulation Service for non-invasive lower limb vascular assessment, diagnosis / exclusion of PAD and individual treatment plan: (CV risk management, supervised exercise, medicines, surgical options)

Refer urgently to Hospital Vascular Team if not already with them, or if signs / symptoms have worsened

Non-surgical management
- Early – moderate PAD
- Individual management plan
- Review in 3 – 12 months or if leg symptoms worsen

Refer for surgical opinion
- Worsening / severe / critical PAD
- Severe lifestyle impacting symptoms
- Ankle brachial pressure index < 0.4
- Ankle systolic pressure < 50mmHg

Follow up within 1 working day to ensure that Hospital Vascular Team has received and triaged the referral. Document this clearly in the clinical notes.

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 management	Target	Source
Antiplatelet therapy	Initiate for all with established PAD	NICE 2010, SIGN 2006
Lipid lowering therapy	Initiate for all with established PAD	NICE 2010, SIGN 2006
Hypertension	BP < 140/90 mmHg	NICE 2006
Smoking	Aim for quit	SIGN 2006
Obesity	BMI < 30	NICE 2006
Light cardiovascular exercise	30 / 45 mins, 3 to 5 times per week	DOH 2004
Glycaemic control (if has diabetes)	HbA1c < 7.0 % or < 53 mmol/mol	NICE 2008, IFCC 2007

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 advice if urgent

General advice (Mon – Fri, 8.30am – 4.30pm)		Urgent advice – on-call Vascular / Surgical Registrar	
Leg Circulation Service	0161 861 ****	Pennine Acute Hospitals Trust	0161 624 ****
(For patients with North Manchester GPs)		Manchester Royal Infirmary	0161 276 ****

Initiated 2011
Review 2013

Peripheral Arterial Disease Integrated Care Pathway endorsed by:

Clinician	Position
Dr C Dang	Consultant Physician (diabetes), PAHT
J Dyce	Leg Ulcer Nurse Specialist, PAHT
M Fox	Vascular Specialist Podiatrist, PAHT
H Gordon	Podiatry Services Manager, PAHT
Mr M Hadfield	Consultant Vascular Surgeon, PAHT
J Harker	Nurse Consultant Tissue Viability, PAHT
Mr R Ibrahim	Consultant Vascular Surgeon, PAHT
Dr S Jackson	General Practitioner, Urban Village MC
S Lake	District Nurse Lead, PAHT
Mr M Madan	Consultant Vascular Surgeon, PAHT
B O' Shea	Practice Nurse, Urban Village MC
Mr T Oshodi	Consultant Vascular Surgeon, PAHT
M Proudman	Tissue Viability Nurse Lead, PAHT
D Ruff	Vascular Nurse Specialist, PAHT
Dr M Savage	Consultant Physician (diabetes), PAHT
L Smith	Vascular Nurse Specialist, PAHT
L Stuart MBE	Consultant Podiatrist, PAHT
P Yates	Principal Podiatrist, PAHT

Group / Team

North Manchester High Risk Lower Limb Governance Group, PAHT

Medicine and Community Services Governance Group, PAHT

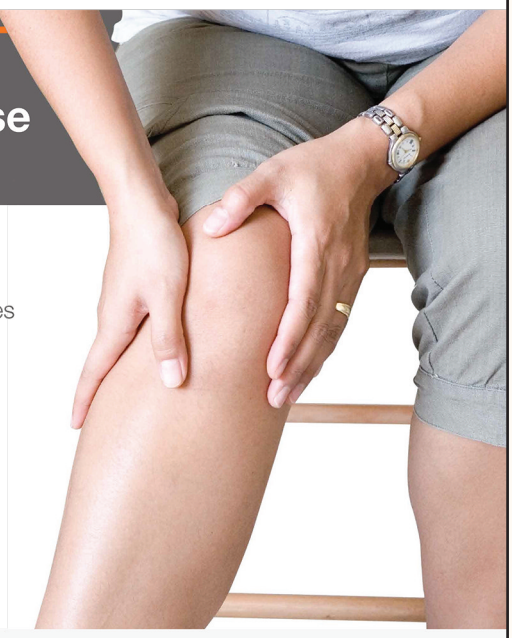
Surgical Division Governance Group, PAHT

APPENDIX 3:
NICE SHARED LEARNING AWARDS

NICE Shared Learning Awards 2013

The Pennine Acute Hospitals NHS Trust

Setting up a service for peripheral arterial disease in North Manchester



Poor outcomes for cardiovascular disease, an outdated service model and the need to manage resources more effectively, convinced a team of clinicians in North Manchester to redesign services for diagnosing, treating and managing peripheral arterial disease.

"The NICE guideline gave focus to our plans to redesign services for patients in North Manchester and enabled us to plan a more coherent and effective approach to the management of peripheral arterial disease."

Martin Fox, Vascular Specialist Podiatrist, Pennine Acute Hospital Trust

Using NICE guidance to redesign services

Peripheral arterial disease (PAD) happens when arteries narrow, causing poor circulation. It mainly affects arteries taking blood to the legs. Clinicians involved in PAD in North Manchester identified it as a key risk factor in the area's high rate of CVD morbidity and mortality. They were frequently seeing the consequences of late diagnosis and under-management of PAD, resulting in avoidable amputations and vascular related deaths, inappropriate referrals to hospital and resources being wasted.

A team of vascular nurse specialists and podiatrists wanted to improve early detection and long term management of PAD and save costs by reducing unnecessary hospital referrals. Using the NICE guideline on lower limb peripheral arterial disease (CG 147) they commissioned a community-based service which:

- encouraged early referral of cases of PAD
- offered an appointment within one month at a choice of five locations
- carried out non-invasive, PAD assessments and diagnosis
- educated patients on CVD and the risks of not treating leg circulation disease
- worked with other teams to promote healthy living (e.g. exercise and quitting smoking)
- ensured severe or deteriorating cases were referred to vascular surgeons

Benefits of managing PAD in the community

Since setting the service up, the team has already begun to see positive results. Patient surveys have shown high levels of satisfaction with the choice of location, the prompt offer of appointments, the clinical treatment plans and the written and verbal information provided about PAD and the service.

They have also developed a database to help identify the PAD population, manage PAD patients in the community and devise individual treatment plans for them, involving their GP and other community teams (best medicines, supervised exercise, stop smoking, weight management, diabetes etc).

Overall they found that, of the patients diagnosed with PAD, 80% could be managed in the community through GP care and healthy living programmes and only 20% needed to see a vascular specialist in hospital. This has resulted in a 40% cost saving to the health and social care system and has freed up hospital resources for those who needed them more. There have also been positive trends around CVD rates in the area because more people are considering and engaging in lifestyle changes than they were before.

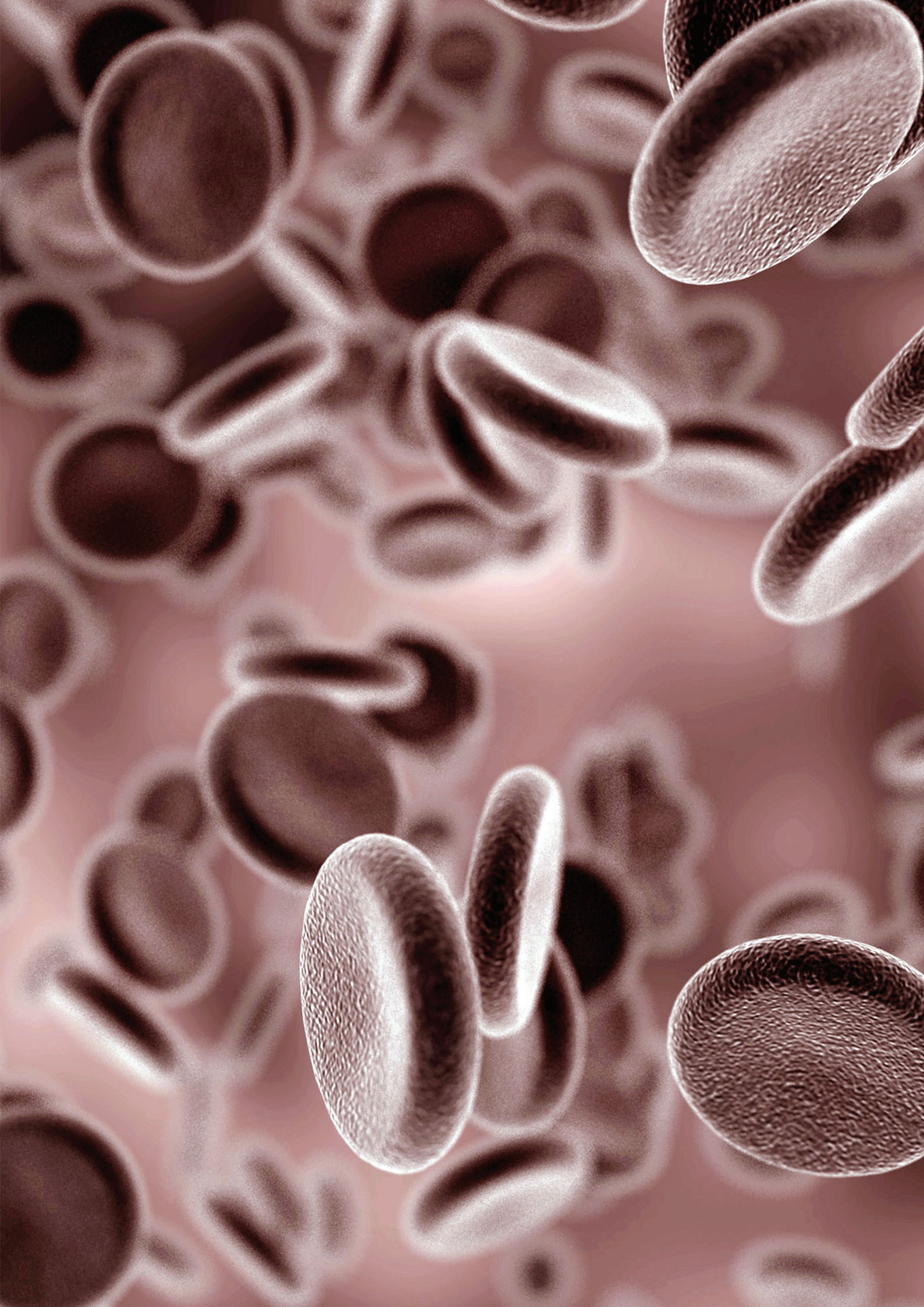
Importance of a multi-disciplinary approach

The North Manchester team identified a number of key learning points as they developed the service, which included:

- the need to work with all teams involved in PAD care to develop an integrated clinical pathway to classify patients and plan treatment accordingly
- importance of engaging with hospital vascular teams before starting any service redesign
- need to develop a common approach to tackling PAD, which is endorsed by all clinicians
- ensuring the staff who deliver the service have the right level of knowledge and skills in CVD and lower limb vascular disease
- clinical diagnosis, health education and promotion and treatment for PAD are essential to effective delivery
- organisations should make use of existing clinical expertise and knowledge about lower limb care (podiatrists, tissue viability, leg ulcer and vascular nurse specialists)

Contact: Martin Fox and Lisa Smith
Vascular Specialist Podiatrist and Vascular Nurse Specialist
Pennine Acute Hospitals Trust
Email: martin.fox@nhs.net and Lisa.smith2@pat.nhs.uk
Telephone: 0161 861 2439

www.nice.org.uk



THE ALL PARTY PARLIAMENTARY GROUP
ON VASCULAR DISEASE