

# Setting up neurovascular assessment clinics in primary care

Kit McAuley

People who have diabetes are vulnerable to neural and vascular damage of their feet. This can result in the loss of protective sensation, poor circulation and poor healing of foot ulcers. The risks to people with diabetes increase with age as well as poor diabetes control and duration of diabetes. Assessment of the diabetic foot at least every 15 months is now the responsibility of primary healthcare teams in accordance with the nGMS contract (DoH, 2003). However, foot assessment can be complicated in people with diabetes. Foot pulses can be difficult to palpate and symptoms of painful neuropathy can vary remarkably from person to person. This article details how neurovascular assessment clinics in the primary care setting were developed to meet the needs of people with diabetes living in Enfield.

Enfield PCT is situated in North London, 12 miles from the city centre. It has a population of 280 000, of which 9708 people are currently on the diabetes register. Prevalence rates vary from practice to practice. The lowest prevalence in a GP practice is 1.7% and the highest is 6.4%, but averages at 3.7% (QoF, 2006). The average national prevalence is 3.6%.

Enfield is split into three locality groups that reflect not only the natural geography of the borough but also the three primary care groups that merged to become one PCT in 2001. There is a diverse population. The 2001 census revealed that 38.8% of the population are from minority ethnic backgrounds (Enfield Council, 2007). The estimated percentage of people in Enfield over the age of 50 years stood at 31.15% in 2001. Life expectancy for males is 77.1 years, and for females is 81.3 years (Enfield Observatory, 2007). This is of significance when considering that the

prevalence of diabetic neuropathy increases with age (Young et al, 1993).

In September 2005, Enfield PCT embarked on the diabetes project. This project, which was initially driven by central government policy and included the NHS Plan (DoH, 2000), the NSF for diabetes (DoH, 2001), the NHS Improvement Plan (DoH, 2004) and the White Paper 'Our health, Our care, Our say: a new direction for community services' (DoH, 2006), has been an overwhelming success with regards to cost savings as well as a positive patient experience. The service has been assessed by a patient satisfaction survey in 2007, which showed that 96% of people referred to the primary care diabetes nursing team perceived their experience as either excellent or very good (Unpublished). The aim of the project was to develop a comprehensive and equitable diabetes service for all residents of Enfield that was patient centred and evidence-based (Hicks and McAuley, 2006). It would be true to say that one

## Article points

1. Assessment of the diabetic foot at least every 15 months is now the responsibility of primary healthcare teams in accordance with the nGMS contract.
2. Enfield PCT carried out a baseline audit for the diabetes project 'Redesigning diabetes services in Enfield' and the team looked at alternative ways of delivering foot care to people with diabetes without compromising quality.

## Key words

- Neuropathy
- Assessment clinics
- Audit

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### Page points

1. The aim of the project was to develop a comprehensive and equitable diabetes service, for all residents of Enfield, that was patient centred and evidence based.
2. At the commencement of the diabetes project in Enfield, we undertook a baseline audit aimed at examining existing diabetes management in all GP surgeries.
3. After discussions with the PCT podiatry lead and management within the PCT, it was found that GP teams were referring high numbers of people with diabetes to the podiatry department for basic foot assessment.
4. A decision was taken to ensure that people with foot problems, and the primary healthcare teams that look after and support them, needed clear guidance to ensure the best outcomes possible for people with diabetes who are experiencing foot problems.

of the initial drivers for the diabetes project was financial, yet it has evolved into a comprehensive and forward-thinking service that is continuing to gain credibility.

At the commencement of the diabetes project in Enfield, we undertook a baseline audit aimed at examining existing diabetes management in all GP surgeries. The audit was completed with relevant practice personnel and looked at all aspects of diabetes care. The Leicester Diabetes Primary Healthcare team baseline assessment tool was chosen as our audit proforma. This tool allowed us to examine all aspects of diabetes organisation and management within the PCT as well as at surgery level (Farooqi, 2004). At the end of each practice visit to complete the audit tool, an informal discussion took place around diabetes care. It was noted during these informal discussions that recurrent themes arose. One of the emerging themes was a concern around the perceived 'long' waiting times for podiatry services and/or assessment.

After discussions with the PCT podiatry lead and management within the PCT, it was found that primary-care teams were referring high numbers of people with diabetes to the podiatry department for basic foot assessment. This was swamping a service that was already under pressure. It then followed, as a direct result of the high referral rate and reduced staff numbers, that waiting lists were becoming very long. It was also noted that a large number of referrals for assessment of vascular status or confirmation and treatment of neuropathy were being sent to the specialist diabetes service at one of the local acute trusts.

The NSF for diabetes (DoH, 2001) issued clear guidance when it was recommended that 'the NHS will develop, implement and monitor agreed protocols and systems of care to ensure that all people who develop long-term complications of diabetes receive timely, appropriate and effective investigation and treatment to reduce their risk of disability'.

Enfield PCT were struggling to achieve these targets. A decision was taken to ensure that people with diabetes and foot problems, and the primary healthcare teams that look after and support them, received clear guidance to ensure the best

outcomes possible.

The first issue that needed to be addressed was the high referral rate into the podiatry service in Enfield. A letter was sent to all GPs in Enfield stating clearly that referral to podiatry should be completed only after a full foot assessment was carried out by the practice team. It was made clear that only people with diabetes requiring treatment interventions would be seen. It was no longer possible to refer to the podiatry service for routine foot assessment.

It was felt that it was essential to add a new section to the diabetes care pathway for the assessment and treatment of painful neuropathy. This would be inserted into the *Complication and risk management* chapter of the pathway that had been given to all GPs, practice nurses and community nursing staff in September 2006. The painful neuropathy addition to the care pathway was undertaken by the primary care diabetes nursing team in collaboration with the chair of the professional executive committee, consultants from the local specialist or acute trusts, podiatrists and pharmaceutical advisors. The painful neuropathy care pathway is illustrated in *Figure 1*.

This addition to the care pathway was publicised and promoted during Protected Learning Time (PLT) sessions within each locality. PLT sessions have been developed by PCTs across the UK to ensure structured feedback and education programmes are in place for all levels of practice staff, including all GPs, practice nurses, managerial and administrative staff. In Enfield this takes place monthly at three sessions in different localities. A multidisciplinary training event entitled 'Best foot forward: A practical guide for the assessment and treatment of the diabetic foot' was co-ordinated for Enfield PCT staff. This education session was not only well subscribed but well attended and well evaluated. It was open to all healthcare professionals within the PCT and the attendees had the opportunity to see a 'live' diabetic foot assessment. Further training of a similar nature will be held at least annually in Enfield.

The neurovascular assessment service at the local acute trust, to which healthcare teams were referring people with diabetes in large numbers had been set up by the author and a consultant physician at the North Middlesex University

Hospital NHS Trust in 1997. Initial funding had been obtained as part of a drive to reduce waiting times. The project had proven to be a success and the service was continued.

Between September 2006 and September 2007, 20 people with diabetes were triaged for routine neurovascular assessment. In cases where pulses were not felt or patients had possible painful neuropathic symptoms, they were referred to North Middlesex University Hospital. The outpatient tariff for any specialist referral in diabetes currently stands at £247 for the initial consultation and £90 for a follow-up consultation (DoH, 2007). For a minimum of one initial referral and one follow up per patient, the cost implication for the PCT was £6740 over a 1-year period. It was felt that as the author had a weekly session available, as well as a keen interest and experience in this area, it would be useful to set up a service within the primary care setting for Enfield PCT practice teams.

The referral criteria are as follows.

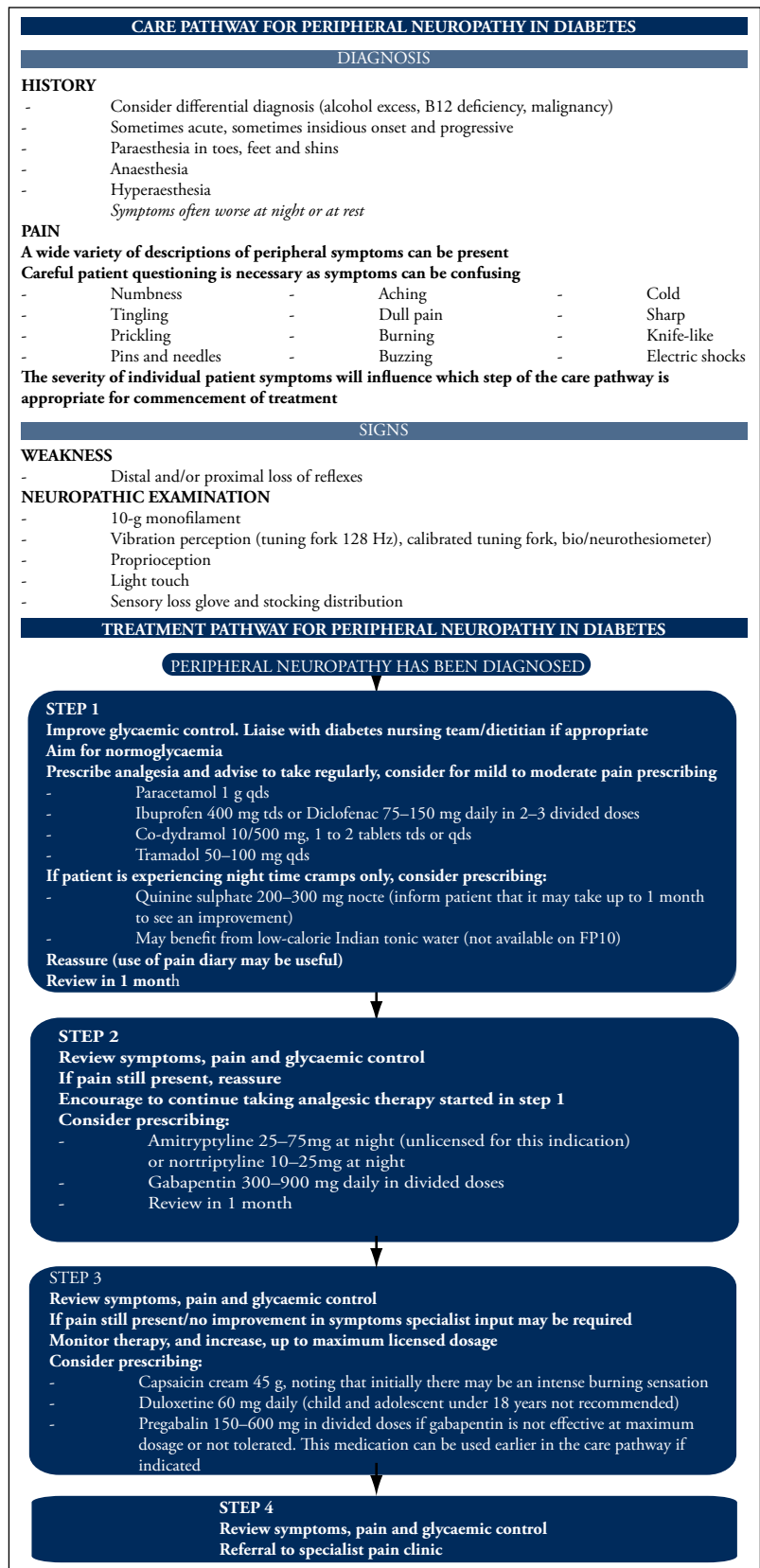
- A diagnosis of diabetes.
- Reduced or absent pulses, or any other symptoms of vascular disease.
- Painful neuropathic symptoms.

The aim of the clinic was to ensure that people with diabetes who have either suspected vascular deficiency or painful neuropathic symptoms are referred for assessment and care that is systematic, evidence-based and of high quality.

The service was not for people with venous ulceration (a tissue viability/venous ulcer clinic is already in place) or for acute diabetic foot problems, such as penetrative foot injury, ulceration, ischaemia and infection. A rapid-access foot service had been negotiated with North Middlesex University Hospital NHS Trust at the beginning of the project (see *Figure 2*).

The Enfield PCT diabetes nursing team took the proposal to the appropriate directors within the PCT where it was discussed and given approval. The costs for purchasing the necessary equipment are seen in *Table 1*.

As can be seen from *Tables 1* and *2*, using the 2007–2008 medical tariff, three initial appointments and one follow up would equal the expenditure on the equipment necessary for start up.



Patient with diabetes presents with an acute foot problem

<p><b>INFECTION</b></p> <ul style="list-style-type: none"> <li>Pain (not obvious if neuropathy present)</li> <li>Redness</li> <li>Swelling</li> <li>Heat</li> <li>Pyrexia</li> <li>Poor glycaemic control</li> <li>Exudate</li> </ul>	<p><b>PENETRATIVE FOOT INJURY</b></p> <ul style="list-style-type: none"> <li>Obvious break in skin integrity</li> <li>Pain (not obvious if neuropathy present)</li> <li>Bleeding</li> <li>Oozing</li> </ul>	<p><b>REDUCTION IN VASCULAR FLOW</b></p> <ul style="list-style-type: none"> <li>Change in colour: paler, white, blue, purple, black</li> <li>Cooler to touch</li> <li>Pedal pulses difficult to feel / absent</li> <li>Pain (not if neuropathy present)</li> <li>Smell</li> <li>Reduced leg hair</li> </ul>	<p><b>ULCERATION</b></p> <ul style="list-style-type: none"> <li>Pain (not if neuropathy present)</li> <li>Break in skin</li> <li>Signs of infection</li> <li>Exudate</li> </ul>
<p>MONDAY-FRIDAY 9 am-5 pm                  Contact NMUH switchboard on 020 8887 2000                  Ask for VASCULAR NURSE ON BLEEP 324                  Prior to sending patient to Diabetes Centre</p>		<p>AFTER 5 pm AND WEEKENDS                  PATIENT TO GO TO LOCAL A&amp;E IMMEDIATELY                  SCAS referral form is not necessary</p>	

DO NOT UNDER ANY CIRCUMSTANCES SEND THE PATIENT TO NMUH DIABETES CENTRE WITHOUT CONTACTING VASCULAR NURSE

Figure 2. NMUH Diabetes Centre checklist for primary care teams about to make a referral.


Neurovascular Assessment Clinic Letter	
Clinic date	GP name
Patient name	
Address	
Date of birth	
Pedal pulses present	Right <input type="checkbox"/> Left <input type="checkbox"/>
Doppler reading	NORMAL                      ABNORMAL A:BPI Dors. ped <input type="checkbox"/> <input type="checkbox"/> Post. tibial <input type="checkbox"/> <input type="checkbox"/> BP <input type="checkbox"/> <input type="checkbox"/> A:BPI <input type="checkbox"/> <input type="checkbox"/>
Risk factors	Smoker? Yes <input type="checkbox"/> /day No <input type="checkbox"/> Ex smoker <input type="checkbox"/> Quit date: _____ Aspirin? Yes <input type="checkbox"/> No <input type="checkbox"/> Raised cholesterol? Yes <input type="checkbox"/> No <input type="checkbox"/> Statin prescribed? Yes <input type="checkbox"/> No <input type="checkbox"/> Diabetes control HbA <sub>1c</sub> : _____ %
Intermittent claudication present	Yes <input type="checkbox"/> No <input type="checkbox"/> Distance walked: _____
XXX: hard skin/callus /////: dry skin 	Monofilament testing Right foot: ___/___ Left leg: ___/___
Calibrated tuning fork	Right                      Left
	Hallux
Patient experiencing symptoms (Description)	
Treatment recommendations	Foot care information given? Yes <input type="checkbox"/> No <input type="checkbox"/> At risk? Yes <input type="checkbox"/> No <input type="checkbox"/> Referred to podiatry? Yes <input type="checkbox"/> No <input type="checkbox"/> Review date: _____ Signature: _____

Figure 3. The neurovascular assessment clinic letter.

A room was secured in one of the Enfield PCT primary care centres from May 2007. We decided that it would be useful to run this clinic in conjunction with other members of the diabetes team as this would allow smooth team working that facilitates inter-referral, as well as maintaining relationships with other health professionals when there are complex issues to address pertaining to diabetic foot problems (Boulton, 1998). This is essential considering that optimal glycaemic control cannot only prevent or delay symptoms of painful neuropathy (DCCT, 1993) but can reduce existing symptoms.

There are eight appointments available in each clinic: four new patient slots and four follow-up slots. A neurovascular appointment can include the following.

- Foot pulses are assessed at the dorsalis pedis and posterior tibial points.
- Doppler studies are undertaken and the ankle: brachial pressure index (ABPI) is calculated.
- Neuropathy diagnosed with 10-g monofilament and Reidel Seiffer calibrated tuning fork.
- Information and explanation of exercise therapy if individual has intermittent claudication.
- Education and information about foot care in diabetes.
- Basic risk assessment and information on diabetes control (aim for HbA<sub>1c</sub> <6.5%), smoking, blood pressure (≤130/80mm/Hg), aspirin and cholesterol levels (aim for ≤4 mmol/l).

Outcomes, expected follow up and treatment

recommendations are written in the GP letter that at the current time also forms part of the patient record. This is shown in *Figure 3*.

Since the inception of this service in May 2007, there have been 29 referrals. Out of these, the following outcomes were noted.

- Two individuals required urgent further assessment by vascular teams as they had an ABPI < 6.
- Thirteen people are being followed up monthly for painful neuropathic symptoms and have embarked on the painful neuropathy care pathway.
- Seven people have reduced ABPI and are being monitored every 1, 3 or 6 months, dependent on symptoms or severity.
- Seven individuals have been assessed and discharged (with ability to self-refer back into the clinic without the need for re-referral).
- Twenty nine have been given full risk management assessment, and recommendations for treatment to target have been put in place.
- Twenty nine have had education and information about how to care for your feet in diabetes.
- Six have been referred for podiatry treatment and have been seen within 3 months of referral.

The cost savings for the PCT are broken down in *Table 2*.

It would be true to say that even though this clinic has not had a huge number of referrals through it, the PCT has more than recouped the funding that has been spent on equipment. People with diabetes are now being seen in the 'right place, by the right person, at the right time'. ■

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**Table 1. Cost for purchasing the necessary equipment for the project.**

Initial equipment	Cost (March 2007)
Diabetic Foot Kit (includes hand-held Doppler* and 10-g monofilament) *Extra warranty may be purchased for hand-held doppler	£700
Anaeroid sphygmomanometer with extra size cuffs	£65
Reidel Seiffer tuning fork	£66.13
	Total = £831**
**The final total does not include consumables and additional items that are/ may be required (e.g., couch rolls, calculator, extra electrode gel, etc.)	

**Table 2. Cost savings for the PCT.**

Episode	Annual cost
Initial assessment for 29 patients	29 x £247 = £7163
Monthly follow up for 13 patients for 6 months	13 x £90 x 6 = £7020
3-monthly follow up for seven patients	7 x 4 x £90 = £2520
	Total saved = £16 703

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