

Quality assurance of podiatric management of diabetic foot ulceration demonstrates the need to standardise practice in Northern Ireland

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Article points

1. A regional audit of diabetic foot ulcer management was carried out to provide baseline information on assessment, clinical management, healing times and amputation rates.
2. The assessment of neuropathy, pulses, risk and appropriate review fell below national targets; however, at 24 weeks, 74% of ulcers had healed.
3. Following the audit, improvements to services are planned.

Key words

- Amputation
- Assessment
- Diabetic foot ulcer
- Healing
- SINBAD

Authors

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It was recognised that there were a lack of data on and variation in diabetes foot ulcer (DFU) management in Northern Ireland. A retrospective regional audit of DFU management provided baseline information on the assessment, clinical management, healing times and amputation rates in 100 patients presenting with a new DFU in 2013–14. The assessment of neuropathy, pulses, risk and appropriate review fell below expected national targets. However, all patients had agreed management plans and at 12 and 24 weeks, 57% and 74% of DFUs had healed. Twenty-nine per cent of audit patients were admitted to hospital and those with peripheral arterial disease had access to and intervention by vascular services. Thirteen patients had an amputation and nine patients died. Standardisation of the assessment and diagnosis of peripheral arterial disease and peripheral neuropathy is recommended. The SINBAD diabetic foot classification system will become embedded into podiatry practice.

Diabetes and diabetic foot disease are increasingly important global health issues. Of Northern Ireland's (NI)'s 1.8 million population, 84,836 people had diabetes in 2014–15 and the annual cost of diabetic foot disease is estimated to be £28 million (Department of Health, 2016). Diabetic foot ulcer (DFU) management is challenging, and a lack of data on the incidence of DFUs in podiatry caseloads and some variation in the provision and quality of care in NI had been identified. The aim of the audit was to provide baseline information on the assessment, clinical management and outcomes of patients presenting with a new DFU in 2013–14 and to monitor the results against national standards (National Institute for Health and Care Excellence [NICE], 2004, 2011, 2015; Diabetes UK, 2013).

Methodology

The need to review, change and integrate the delivery of diabetic foot care in the region was recognised and funding secured from the Guidelines and Audit Implementation Network. Permission was granted

to consider data collected in the 2014–15 National Diabetic Foot Ulcer Audit (NDFUA, Clinical Audit and Registries Management Services and Health and Social Care Information Centre, 2016). A regional data access agreement was completed to fulfil data governance obligations.

A descriptive, retrospective cohort comprised of people with and without diabetes and people with DFUs was identified from April 2013 to March 2014 data. One-hundred subjects (including the pilot study of 25 patients) were randomised electronically from caseload lists. Data were collected on diabetes status, assessment, risk assignment, DFU classification, healing time, ulcer prevention and amputation rates in the 12-month period. Practice was assessed against NICE guidelines and Putting Feet First (Diabetes UK, 2013).

Results

A pilot study was completed (n=25) to assess the feasibility of the audit design, methodology and data collection methods. The audit methodology was then reviewed, amended and applied to the main audit.

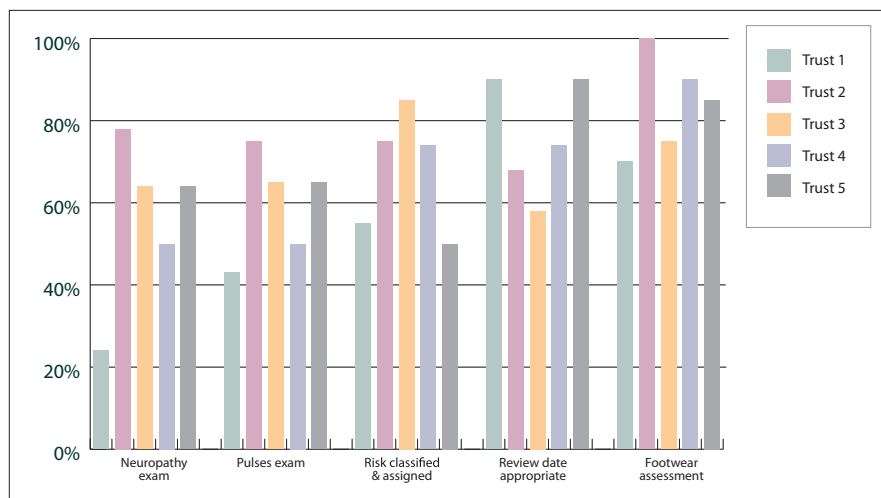


Figure 1. Percentage of diabetic foot ulcer assessments completed in both community and hospital settings in individual trusts in Northern Ireland.

The Quality and Outcomes Framework reported that there were 81,167 people with diabetes in NI in 2013–14 (Department of Health, 2013). Audit results showed that the podiatry caseload in NI was 136,808, including 53,590 people with diabetes of whom 2,468 presented with a new DFU (4.6%) during the audit period. The average duration of diabetes in audit patients was 17 years (range 1–55 years). These patients had an average HbA_{1c} value of 8.6 mmol/L (range 4.8–23.2 mmol/L).

Assessment

The percentages of assessments carried out by five trusts in NI within 12 months of DFU onset in both community and hospital settings are presented in Figure 1. Assessments were for neuropathy, pulses, risk, appropriate review and appropriate footwear. The proportions of patients receiving four of these DFU assessments were lower than the expected regional standards (Figure 2); however, at 84%, footwear assessment was better than expected.

Timely review and referral

The time to first review at podiatry following initial presentation of the DFU to a healthcare professional was recorded in 37 out of 100 cases. Nineteen of these cases (50%) were referred to podiatry within 2 days (Figure 3).

A total of 35 out of 100 patients (ten community patients and 25 hospital patients) presented with a foot emergency. Twenty-six (74%) emergency patients were seen by the community/hospital teams, GP or

Accident and Emergency within 24 hours.

Thirty-seven patients (15 in the community setting and 22 in hospital) in the audit presented with a foot infection. Twenty-six (70%) of these patients were referred to the GP, Accident and Emergency or hospital team within 24 hours.

Twenty-nine patients were admitted to hospital with DFUs and other conditions. Twelve of these inpatients (41%) were referred to the hospital team within 24 hours.

Healing and management

Overall, 57% of patients’ DFUs had healed at 12 weeks. In comparison, preliminary results from the NDFUA reported a healing rate of 49% at 12 weeks. At 24 weeks, 74% of DFUs had healed. Forty-one out of 100 patients remained ulcer free for 12 months from the date of healing of the target ulcer.

All patients had agreed management plans within 12 months of the onset of their DFU. Thirty patients had used an offloading system. Four patients had attended a structured education programme within 12 months of ulcer onset.

Limb salvage, amputation and mortality

The 54 patients with peripheral arterial disease had access when and if required to vascular services. Nine (17%) of these patients underwent endovascular and surgical intervention.

Thirteen patients had an amputation within the audit period; three were major/above ankle amputations and ten were minor/below ankle amputations. Of the 13 amputation patients, eight had no history of a vascular intervention.

Nine patients died within the audit period: four within the first 12 weeks; three between weeks 12 and 24; and two between weeks 24 and 52.

Discussion

Professionals across NI are seeking to address inequalities of care in the diabetes population, including those with diabetic foot pathologies, through the recently-formed NI Diabetes Clinical Network and its subgroups and through the implementation of the NI integrated diabetic foot pathway, which incorporates current NICE guidance. (Northern Ireland Diabetic Foot Working Group, 2017). Our audit has presented baseline data on the incidence and clinical management of DFUs in

the region. As in other areas of the UK, access to robust information and the number and variability of information systems often contribute to variation in care. The results from our audit will enable professionals to benchmark practice against national and local standards and address any gaps in service provision and delivery.

Audit results reported that 2,468 patients (4.6%) presented with a new DFU in podiatry caseloads in the audit period. This is comparable to the national figure of 5% cited by Cheer et al in 2009.

When the podiatry review of patients with diabetes was compared in the audit in each Trust, two Trusts reported that they had reviewed 92% and 95% of the diabetes population on their caseloads, respectively. Historically, these trusts have been funded to carry out annual reviews/foot screening on people with diabetes, so these results were as expected. One trust reported a low number of DFUs in its diabetes caseload. This may be explained by the difficulty in extracting specific caseload information from the information technology system in use. The time interval from first presentation with DFU to assessment by podiatry was poorly documented, and we recognise that in a re-audit a prospective design may yield data that are more reliable.

While the proportions of patients receiving assessment of neuropathy, pulses, risk and appropriate review in our audit fell below the expected regional and national targets, it was evident that trusts that were historically funded to conduct annual reviews performed better. Footwear assessment outperformed the standard set in this audit. Another positive finding was that all patients had an agreed management plan documented.

Although no DFU classification system had been formally adopted in the region, some elements were recorded in the clinical notes. There are plans to address this issue. A validated DFU classification system called SINBAD (Site, Ischaemia, Neuropathy, Bacterial infection and Depth) will be adopted once a regional training programme has been completed in 2017 and become embedded in clinical case notes.

Healing rates were favourable at 12 and 24 weeks and comparable to preliminary results from the NDFUA at 12 weeks (Clinical Audit

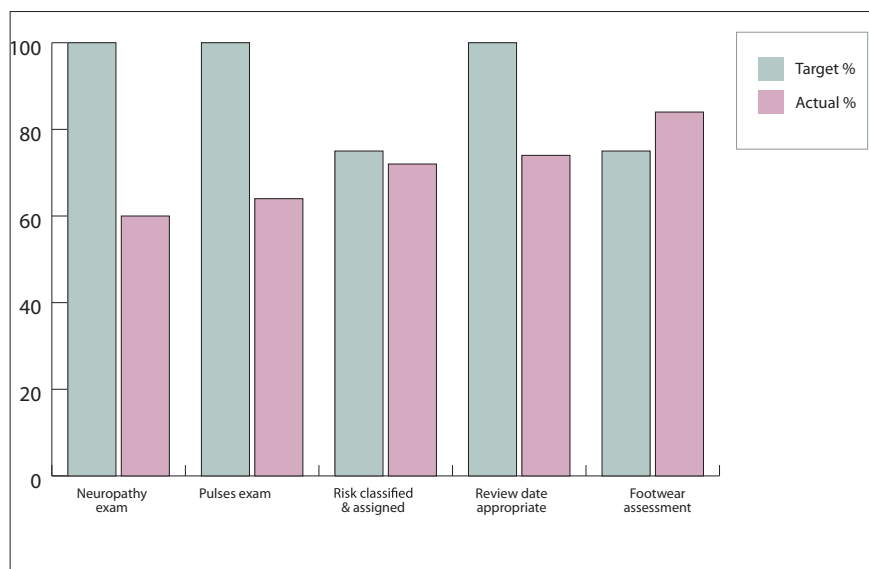


Figure 2. Diabetic foot ulcer assessment outcomes compared with expected regional standards.

and Registries Management Services and Health and Social Care Information Centre, 2016). From healing, 41% of patients remained ulcer free for 12 months.

The use of an offloading system was poorly documented and fell well below the expected target of 75%. There was also a significant gap in the uptake and/or availability of structured education programmes. These results highlight the need to improve the use of offloading and structured education programmes in DFU patients in NI.

It is widely recognised that robust protocols and clear care pathways should be in place for those presenting with diabetic foot emergencies and/or infection in community or hospital settings. Some delays in the referral process were reported and showed that 70% of patients with a foot emergency and 74% of those presenting with a foot infection were seen within 24 hours. These delays highlight the need for the development and regional implementation of the NI integrated diabetic foot pathway in order to achieve optimum patient care.

All patients with a DFU and peripheral arterial disease had access to vascular services when and if required, which was a positive finding. The monitoring of cardiovascular risk and early detection of associated complications is vital, as many amputations are preceded by a DFU (Moulik et al, 2003). The reported amputation

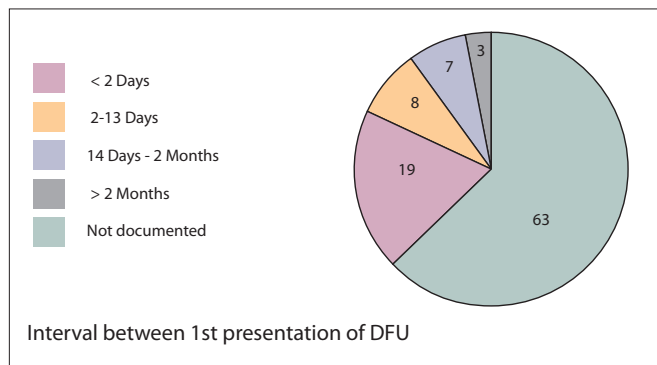


Figure 3. Time to first review at podiatry following initial presentation to a healthcare professional.

rate in the regional audit was 13% (10 minor and 3 lower-extremity amputations). This figure is in contrast to figures reported by Kerr in 2012 who estimated the number of lower extremity amputations in England to be 6000 per annum – approximately 10% of those with DFUs.

In this regional audit 4% of patients died within 12 weeks of DFU presentation, which is considerably higher than in the NDFUA, which found that 2.3% of such patients were deceased at 12 weeks. The high short-term mortality rate in our audit is consistent, however, with the high mortality rates in patients with DFUs reported by Brownrigg et al in 2012.

The missing and/or poor data relating to aspects of our audit highlight the importance of having robust information technology systems that interface with each other to provide reliable, timely and specific information on the management of people with diabetes. Good information technology will support audit and research programmes across all professions and ultimately enhance patient care. A regional podiatry training programme focusing on the clinical management of DFUs (standardisation of assessment, interpretation of test results and diagnosis of peripheral vascular disease and peripheral neuropathy) has been developed and has just been completed. An evaluation of the programme will become available in summer 2017.

Conclusion

Diabetic foot assessments, risk assessment and assignment, and timely review should be standardised within NI. Assessments should be completed annually, or more frequently if

indicated by individual risk or clinical need. The findings of this audit will inform future re-audits and enable benchmarking at a local and national level.

This audit provided important baseline information on patient care in NI. Successful collaboration between podiatry services in the trusts will implement changes that will standardise the clinical assessment and management of DFUs. Podiatry service development and redesign coupled with an aspiration to have robust information technology systems will be key in providing high-quality podiatry care for this vulnerable group of people. ■

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