

CLINICAL RESEARCH ARTICLE

A prospective audit of the impact of additional staff on the care of diabetic patients in a community podiatry service

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Objective: The purpose of this study was to evaluate the impact of the employment of additional podiatry staff on patients with diabetes attending a community-based podiatry service.

Methods: An audit was conducted to evaluate the intervention of two additional podiatry staff. All patients with diabetes referred to and attending community podiatry services in a specified area in the Republic of Ireland between June 2011 and June 2012 were included. The service was benchmarked against the UK gold standard outlined in the 'Guidelines on prevention & management of foot problems in Type 2 Diabetes' by the National Institute of Clinical Excellence (NICE). Process of care measures addressed were the number of patients with diabetes receiving treatment and the waiting times of patients with diabetes from referral to initial review.

Results: An increase in the number of patients with diabetes receiving treatment was seen in all risk categories (ranging from low risk to the emergency foot). Waiting times for patients with diabetes decreased post-intervention but did not reach the targets outlined in the NICE guidelines. The average time from referral to initial review of patients with an emergency diabetic foot was 37 weeks post-intervention. NICE guidelines recommend that these patients are seen within 24 hours.

Discussion: During the life cycle of this audit, increased numbers of patients were treated and waiting times for patients with diabetes were reduced. An internal re-organisation of the services coincided with the commencement of the additional staff. The improvements observed were due to the effects of a combination of additional staff and service re-organisation. Efficient organisation of services is key to optimal performance. Continued efforts to improve services are required to reach the standards outlined in the NICE guidelines.

Keywords: *podiatry; audit; waiting times; diabetic foot*

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Diabetes is a common chronic condition which can cause foot ulcers and subsequent lower extremity amputation (LEA) (1). In the Republic of Ireland (RoI), surging levels of obesity and an ageing population are contributing to a rising prevalence of diabetes, with a projected increase to 5.9% of the Irish population by 2020 (2). This could potentially lead to a rise in the number of LEAs in people with diabetes (3).

In 2011, a new 'Model of Care for the Diabetic Foot' was introduced in an attempt to prevent future LEAs

in people with diabetes. This model of care focusses on the role of the multidisciplinary team (MDT) and emphasises structured care pathways and protocols for patient management shared between healthcare providers in the community and the hospital settings (4). A podiatrist is well-recognised as a valuable member of an MDT managing diabetic foot disease (5, 6). As part of the roll-out of this model of care, additional podiatry posts were created in the RoI. However, prior to the roll-out of the model of care for the diabetic foot, a local arrangement

to create two extra posts in the study area was agreed based on estimated need for the patient population with diabetes and available funding.

It was decided to conduct an audit to evaluate the effect of the two extra podiatry posts allocated to community podiatry services in the study area. Nationally, the diabetes service implementation group was tasked with implementation of the model of care. In the study area, a subgroup convened with representatives from podiatry, general practice, and academia to implement the model of care locally. It was envisioned that results of this audit would inform the local and national roll-out of the model of care.

'Guidelines on prevention & management of foot problems in Type 2 Diabetes' from the National Institute for Clinical Excellence (NICE) outlines recommendations for time intervals for review of patients with diabetes based on their level of risk (6). Low-risk patients (i.e. with normal sensation and palpable pulses) should be seen annually; moderate risk patients (i.e. with neuropathy, absent pulses, or other risk factors) should be seen every 3–6 months; high-risk patients (i.e. with neuropathy, absent pulses, and deformity or skin changes or previous ulcer) should be seen every 1–3 months; and the emergency foot (i.e. with an ulcer, infection, or Charcot neuroarthropathy) should be seen within 24 hours by a foot care MDT.

There is a broad assumption among clinicians that the addition of extra staff improves the provision of services to patients with diabetes. However, there is a dearth of published literature in this area. Thus, we aimed to explore the impact of additional staff at a community podiatry department on the number of patients with diabetes being treated and the average waiting times from referral to first review. Performance is then benchmarked against recommendations outlined in the NICE guideline, which are assumed to be the gold standard.

Methods

North and South Lee Community Podiatry services serve a population of approximately 372,971 people in the South of Ireland. This audit was restricted to all new and existing patients with diabetes referred to and attending the podiatry services between June 2011 and June 2012. Referrals were made by general practitioners on designated forms which were triaged by the senior podiatrist, who allocated appointment priority depending on the level of risk as defined by NICE (6). The risk status determined by the senior podiatrist from the referral in turn determines how quickly patients are seen with priority granted to those at most risk. If necessary, patients are then referred on to the MDT, which is hospital based.

Initial baseline data were collected on 1 June 2011 before an additional two whole time equivalent (WTE) podiatrists commenced employment. Further data were then collected at 4, 8, and 12 months after the intervention

on 1 October 2011, 1 February 2012, and 1 June 2012. The number of WTE podiatrists in post at each time point was calculated.

Data were collected at each time point on the number of patients with diabetes treated during the 4 months preceding each time point and the average waiting time from referral to first review for patients with diabetes per risk category. Cuzick's trend test was used to test for significant changes over time, using the Stata command 'nptrend'. Waiting times were benchmarked against the standards outlined in the NICE guideline. Data were extracted from Tynedale Omnis 7 (7), the patient information management system in operation in the department at the end of the study period. Analyses were conducted in Excel and Stata V12.IC.

Ethical approval

Aggregate data from a routine dataset was obtained via the information management system, Tynedale. Ethical approval was not required. As this data cannot be linked to individual patients, individual patient consent was not obtained. No personal information was handled.

Results

Table 1 outlines the number of WTE podiatrists in post at the four time-points included in the audit. At baseline, 4.6 WTE were employed. Two additional WTE podiatrists joined the service and an increase in staffing levels was seen 4 months after the intervention. The intervention was not maintained 8 or 12 months later due to the departure of pre-existing staff on statutory leave.

Following the intervention, increased numbers of patients in all risk categories were attending the service (Fig. 1). There were fluctuations over time in the average waiting times per risk category. For all risk categories, the average waiting times were reduced 12 months post-intervention (Fig. 2). Waiting times before and after additional staff joined the service are longer than the gold standard outlined in the NICE guidelines (Table 2).

Discussion

During the life cycle of this audit, increased numbers of patients were treated and waiting times for patients with diabetes were reduced, albeit to statistically insignificant

Table 1. Number of WTE podiatrists available for patient review at each time-point

| Time in audit cycle | Number of WTE podiatrists |
|--|---------------------------|
| Pre-intervention (1 June 2011) | 4.6 WTE |
| 4 months post-intervention (1 October 2011) | 6.2 WTE |
| 8 months post-intervention (1 February 2012) | 4.6 WTE |
| 12 months post-intervention (1 June 2012) | 4.3 WTE |

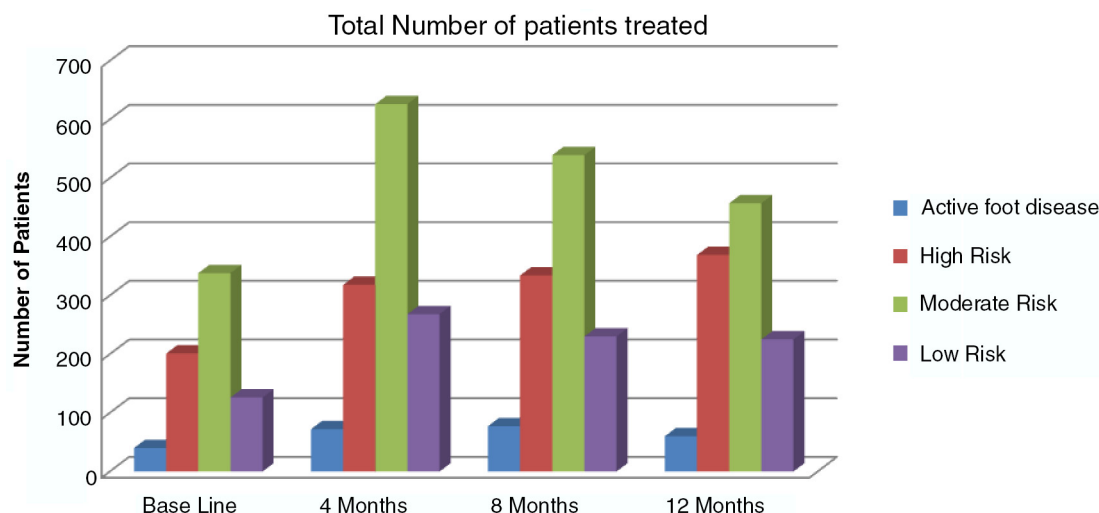


Fig. 1. Total number of patients treated per risk category, per time frame.

levels (Table 2). Overall, increased numbers of patients with diabetes were receiving treatment 4, 8, and 12 months post-intervention (Fig. 1) and average waiting times had decreased for all risk categories at 12 months post-intervention (Fig. 2). We can hypothesize that these changes were, at least partially, attributable to the additional staff that joined the service.

However, the intervention of additional staff was not maintained over time. Two additional podiatrists did commence post at baseline and the increase in staffing levels is evident at the re-audit 4 months post-intervention. However, in subsequent months, other podiatry staff in the service that went on statutory leave were not replaced due to a recruitment embargo. Thus, staffing levels 8 and 12 months post-intervention were similar to those at baseline (Table 1). Nevertheless, a continued upward trend in the numbers of patients receiving treatment and a downward trend in waiting times for patients in all risk

categories was observed over the audit cycle. It would be interesting to compare our results to those from other areas in the RoI but published data are lacking.

There are a number of possible reasons for our findings. The effect of extra staff, albeit for a short time-period, may have longer term impacts on the service. It is usual when extra staff are recruited, that a department internally re-organises their service, that is, re-prioritises and re-dispenses tasks. Changes implemented in this department at baseline included discharge of patients deemed very low risk, recruitment of additional administration support, and re-structuring of current practices, for example, change of policy for review of current patients from 12 to 16 weeks. It is most likely that these re-organisational efforts, in addition to the extra posts, contributed to the service running more efficiently (8). These effects persisted throughout the study period even though staffing levels at the end were comparable to the beginning of the audit.

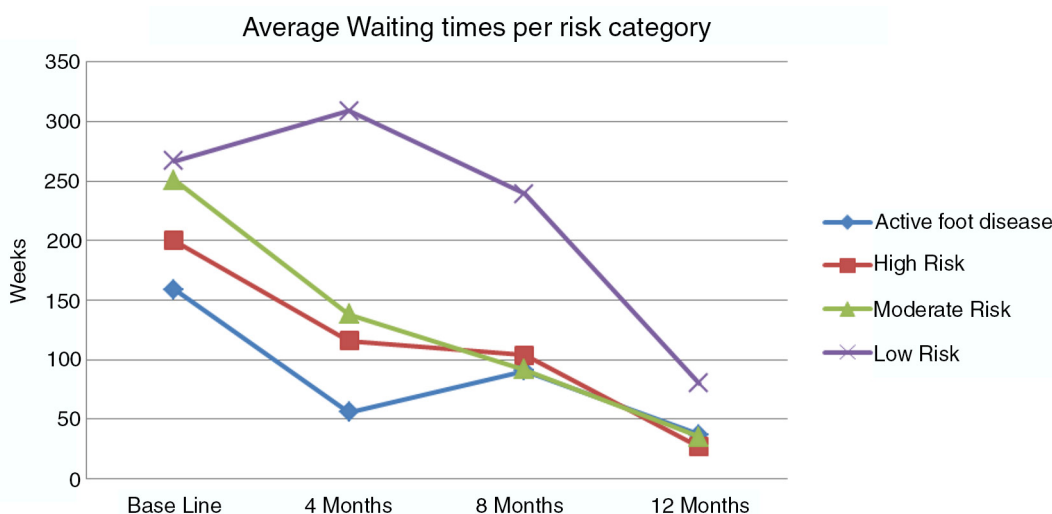


Fig. 2. Average waiting times in weeks per risk category, per time frame.

Table 2. Average waiting times in weeks per risk category, from referral to first review

| | Pre-intervention (1 June 2011) | 4 months post- intervention (1 October 2011) | 8 months post- intervention (1 February 2012) | 12 months post- intervention (1 June 2012) | <i>p</i> | NICE Guidelines recommendations (weeks) |
|---------------------|-----------------------------------|--|---|--|----------|---|
| Active foot disease | 159 | 56 | 91 | 37 | 0.16 | 0.14 |
| High risk | 199 | 116 | 104 | 27 | 0.08 | 12 |
| Moderate risk | 251 | 138 | 92 | 35 | 0.08 | 26 |
| Low risk | 267 | 309 | 239 | 80 | 0.17 | 52 |

Limitations

This audit has a number of limitations. It is observational and does not account for the effects of potential confounders that could have occurred during the 12-month period. Increased awareness amongst physicians and nurses of appropriate referrals with the introduction of the new model of care for the diabetic foot, or increased awareness amongst the general public of diabetes and its possible effects, could act as potential confounders.

The lifespan of this audit cycle was 12 months. Thus, we considered processes-of-care measures to assess the potential impact in these short-term. Future work should include looking at long-term measures including ulcer and LEA rates over a longer period of time.

Conclusion

A positive impact on service provision was demonstrated during this audit cycle. This was due to a combination of an initial increase in staff levels and an internal service re-organisation. During the 12-month period, the gap was reduced between clinical practice for patients with diabetes and the gold standard set out in the NICE Guidelines. However, waiting times are still longer than target and continued efforts, both locally and nationally, are required in the future to improve services.

Recommendations

The results of this audit are beneficial to clinical staff organising services locally and to healthcare policymakers planning future services nationally. It is important that audit continues on a local level over the following years, to ascertain if targets are met and maintained. Nationally, it is anticipated that major LEA rates will reduce with the introduction of the new 'Model of Care for the Diabetic Foot'. To evaluate the effect of this model of care on the long-term outcome of ulcer and LEA, future trends in annual ulcer and LEA rates should be monitored (9).

Authors' contributions

AR conceived and designed the study, extracted the data, conducted the analyses, and wrote the paper. MU designed the study, reviewed the analyses, and revised the paper. IC designed the study, reviewed the analyses, and revised the paper. CMB designed the study, conducted the analyses,

and revised the paper. All authors read and approved the final version.

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