# Striving to put feet first: an audit of podiatry referrals from A&E

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### Article points

1. A large UK teaching hospital has developed an A&E to podiatry referral service and has audited the results.
2. Patients with a diabetic foot ulcer should be seen by a podiatrist within 24 hours of referral.
3. Referral to the emergency podiatry team is being used appropriately, but there is still some improvement to be made to ensure all patients with diabetic foot ulcers are reviewed within 24 hours.

### Key words

- Audit
- Diabetic foot disease
- Podiatry referrals

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**Diabetic foot complications are the most common cause of non-traumatic lower-limb amputation in the UK and most are considered preventable. Diabetes UK (2009) has published guidance on the management of diabetic foot disease in secondary care. The FDUK audit tool outlined that patients with a diabetic foot ulcer should be seen by a multidisciplinary team within 24 hours of referral. A large UK teaching hospital has developed an A&E to podiatry referral service and has audited the results.**

In 2009, Diabetes UK published its *Putting Feet First* guidance on the management and prevention of diabetic foot disease in secondary care. The guidance established periodic goals for diabetic foot ulcer (DFU) management over three time phases, from the patient's initial presentation to hospital (*Figure 1*).

Salford Royal NHS Foundation Trust Hospital is a large teaching hospital in northwest England. It is a tertiary referral centre providing services for over 11,000 people with diabetes; a significant number of which will develop foot complications. The hospital endeavours to provide optimal care with a holistic approach, including foot screening, preventative foot care and multidisciplinary management of diabetic foot disease. Since 2007, it has continued to reduce both diabetes-related amputations and average DFU presentation to healing time (Salford Foot Ulcer Audit, 2009).

Despite this, an audit in 2010 highlighted several areas in which care could be improved. This audit was based on the FDUK audit tool assessing hospital compliance with *Putting Feet First* guidance (FDUK, 2009). The audit examined all patients who presented to the Salford Royal NHS Foundation Hospital with active diabetic foot disease in a 3-month period (Paisley and Chadwick, 2010). Several aspects of management were suboptimal, such as the initial assessment and documentation of foot ulcer patients.

The audit also highlighted the need for prompt access to a multidisciplinary specialist DFU team. Referral and input from a specialist team was found to be inadequate, with only two (14%) foot ulcer episodes being referred onwards at initial assessment. By the end of phase II (up to 48 hours), only 50% of episodes had been reviewed by a specialist foot team.

Audit outcomes included improving education and creating a red flag warning system for patients being admitted to hospital in order to bring DFU patients to the notice of admitting healthcare professionals. This involved expansion of the Waterlow score (pressure area risk assessment performed by nursing staff on admission) to include a foot check in anyone with diabetes.

In order to reach this gold standard of care for both inpatients and outpatients, Salford Royal NHS Trust has also worked to create a podiatry referral system for patients presenting to emergency care. This enables review of all patients with DFUs by a multidisciplinary specialist team (including podiatrists, diabetes specialist nurses, and diabetes and endocrinology consultants) within 24 hours of presentation. Results of a baseline audit of this service are reported in this article.

## Audit of A&E to podiatry referrals

Within the phases of inpatient care outlined in *Putting Feet First*, second phase care (within 48 hours) states: "Consult with the specialist diabetes foot care team; agree on management and transference of care." In Salford, the podiatry team are seen as the start of the multidisciplinary footcare team (MDFT),

therefore, the audit stated: "Patients with a diabetic ulcer should be seen by a podiatrist within 24 hours of referral."

A direct referral system to podiatry via the A&E clinic booking system was developed. A clinic appointment slip was made available across A&E, where staff could book an emergency podiatry slot immediately with the emergency department clerks and give the patient their appointment time before they left the department. A&E staff were notified of this referral system and advised to refer any person with diabetes with a foot ulcer whether or not it was the presenting complaint or an incidental finding, regardless of whether the patient was admitted or not.

This podiatry referral system was not confined solely to DFU patients. Two daily slots each weekday were allocated for such referrals. The service was audited over a period of 9.5 months (from July 2012 to May 2013). Any person referred from A&E to podiatry within this timeframe was included in the audit. A&E notes, medical records and podiatry clinic notes were used as data sources.

## Results

A&E notes were found to be adept at documenting a clear referral to podiatry. This is unlike previous documentation noted in the 2010 audit, where initial documentation of foot ulcers was found to be sparse, with few timely specialist referrals. A range of foot presentations were referred, regardless of whether diabetic, infected or a clear issue that required podiatry input. Podiatry notes were clear and documented the source of referral with follow-up appointments as required, and the outcome and follow-up outlined in each appointment.

## Patient presentation

During the audit period, there were 25 A&E referrals to podiatry in total, all for patients who were not subsequently admitted, to be seen as out-patients. The median age of referral was 52 years old and ages ranged from 16 to 77 years old. Eight (32%) of the patients referred had diabetes, while 17 (68%) did not. Referrals were made for a variety of reasons (*Figure 2*). The most common reason for referral was for a podiatry review of ingrowing toenails. Of patients with diabetes, six (75%) had active infection; two of whom presented with periungual cellulitis and four presented with a foot ulcer. Only four of the 25 people referred from A&E had diabetes and an active foot ulcer (*Figure 3*).

Two of the four patients who had diabetes and a foot ulcer had ulceration with ongoing infection. Antibiotics were commenced appropriately in A&E on presentation; however, one patient subsequently had their antibiotic dose increased by the multidisciplinary team. Both ulcers healed, one by 8 months and the other by 13 months after initial presentation.

The third patient presented with a DFU on the right hallux. The patient was appropriately commenced on antibiotics and referred to podiatry.

*Figure 1. The management of acute diabetic foot disease for patients admitted to hospital (Diabetes UK, 2009).*

**Immediate care – first 4 hours of admission:**

- Both feet should be examined for pulses and sensation.
- Assess the foot for infection.
- If there are signs of infection, antibiotics should be given promptly.
- If there is unexplained swelling and inflammation of the foot, acute Charcot neuroarthropathy must be considered.
- The advice of a specialist diabetes foot care team should be obtained as soon as possible.
- The need for urgent surgery should be assessed by an experienced surgeon.
- Other aspects of diabetes, including glycaemic control, should be attended to.

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**Second phase care – 4 to 48 hours of admission:**

- Review of the results of investigations and response to treatment.
- Consult with specialist diabetes foot care team.
- Provide accurate information for the patient/family, and general practice, including contact details for those responsible for specialist care.
- Follow-up by specialist diabetes foot care team as appropriate.

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**Continuing specialist care of active disease of the foot:**

- Continued review of emergency management.
- Assess the need for specialist debridement.
- Provide appropriate pressure relief.
- Assess the need for vascular intervention.
- Optimisation of diabetes care, including glycaemic control and cardiovascular risk reduction.
- Provide accurate information for patient/family and general practice, including contact details for those responsible for specialist care.

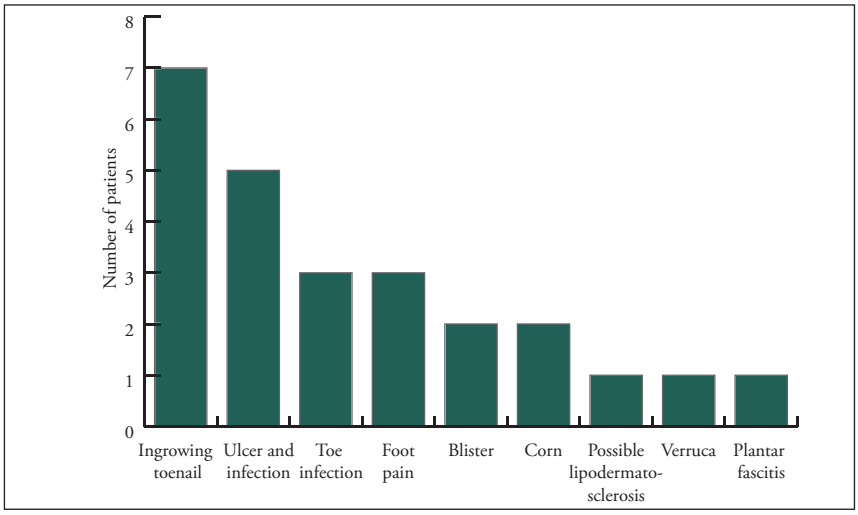


*Figure 2. Reason for referral of patients to podiatry.*

The multidisciplinary specialist diabetic foot review found evidence of osteomyelitis and the antibiotics were continued.

The fourth patient had a diabetic ulcer with severe neuropathy. This was appropriately treated with antibiotics in A&E and subsequently continued by the multidisciplinary team. Inflammatory markers were not raised at time of presentation. At 12 months after presentation, the ulcer was stable, but unhealed and the patient was being reviewed in clinic by the multidisciplinary team on a fortnightly basis.

One patient presented with a subungual haematoma. Antibiotics were not commenced by A&E, but were deemed necessary upon MDFT review. All other patients with diabetes were appropriately started on the correct antibiotic at initial presentation (as per Salford Royal Hospital guidelines — oral flucloxacillin 500 mg daily).

Diabetes control was assessed at, or around the time of, referral in seven of the eight patients with diabetes. The average $HbA_{1c}$ was 76 mmol/mol, with a range of 42–107 mmol/mol. Paradoxically, the patient with a diagnosis of osteomyelitis had one of the lowest $HbA_{1c}$ values — 45 mmol/mol at the time of presentation to A&E. This patient has an extensive history of severe diabetic neuropathy with recurrent neuropathic ulcers. It was believed the cause of his ulcer at this presentation was his neuropathy combined with poor footwear and a manual occupation requiring steel-toed footwear.

The patient with an ongoing ulcer unhealed 12 months from initial presentation had the worst $HbA_{1c}$ — 107 mmol/mol. This patient had an element of diabetic neuropathy with a fall and trauma to their toe, precipitating ulcer formation.

Only three-out-of-eight (38%) people with diabetes were seen by podiatry within 24 hours of referral (as per *Putting Feet First* guidelines). Reasons for this were examined and included one patient who went on holiday and thus delayed podiatry presentation (no osteomyelitis present, healed on next presentation). A further patient was seen on a Saturday and not seen until the following Monday — no podiatry service is available over the weekend currently. Six patients were seen on a weekday: one within 3 hours, two within 24 hours, one within 48 hours, one within 72 hours and one 4 days after presentation. It was unclear what limited the latter three patients to appointments more than 24 hours after their initial presentation.

Due to the non-discriminatory use of podiatry referrals from A&E, the referral pathway was also used for non-diabetic patients. Regardless of diabetic status, the time taken from referral to review by podiatry was assessed. There was an average of 41 hours between podiatry referral and review. Three patients who did not have diabetes failed to attend their appointments. Ten of the 26 patients (38%) were seen within 24 hours (as well as 38% of diabetic patients). It is important to note that no patients with diabetes and concurrent diabetic foot disease who presented to A&E with another illness were referred to podiatry during this audit time.

## Discussion

These results highlight an ongoing need to refine and improve A&E to podiatry referrals for DFU patients, as only 38% of such patients presenting to and discharged from A&E were seen by the MDFT within 24 hours. Positively, in all patients with diabetes presenting with foot ulcers, the correct antibiotics were commenced at the time of A&E presentation. These patients were followed up appropriately in the multidisciplinary foot clinic, with regular examination and extension of antibiotic treatment when required. All but one ulcer healed. The time delay noted with the majority of patients not being reviewed by MDFT for over 24 hours shows a lack of prompt assessment and multidisciplinary input into the management of DFUs.

Diabetes UK (2009) *Putting Feet First*. Diabetes UK, London. Available at: http://bit.ly/1w3qUn8 (accessed 30.12.14)

FDUK (2009) *Putting Feet First: Self-audit Tool*. Available at: www.footindiabetes.org/resources (accessed 30.12.14)

Health & Social Care Information Centre (2013) *National Diabetes Inpatient Audit*. Available at: www.hscic.gov.uk/diabetesinpatientaudit (accessed 30.12.14)

Paisley AN, Chadwick P (2010) Striving to put feet first: An audit for inpatient care. *The Diabetic Foot Journal* **13**: 162-8

Public Health England (2014) *Diabetes Footcare Activity Profile*. Available at: http://bit.ly/1IvoF2T (accessed 08.01.15)

Salford Foot Ulcer Audit (2009) Oral presentation, Salford Audit Day

It is unclear why this delay occurred, as patient appointment slots were available every weekday at 10am with no difficulty in terms of availability. This could be due to a failure of the A&E physician to recognise the need for referral appointments to be booked for the following day, or the patient choosing when they would like to return for their podiatry appointment.

To ensure that all patients with DFUs are appropriately referred to podiatry services within 24 hours further education of physicians initially reviewing patients in an emergency setting may be beneficial. However, further work is required to determine exactly what caused the delays. A lack of weekend clinics is also a factor, although given the small number of referrals received during this audit period, it would probably not be a cost-effective measure to introduce one. A more appropriate use of resources could be the introduction of 7-day working for podiatry staff who could provide in-reach to the emergency department for such patients.

The audit did not quantify the total number of people with diabetes presenting to A&E with a foot ulcer. Salford Royal Hospital A&E department explains the need for podiatry referral of DFUs to all employees during their induction. However, the referral procedure relies on staff members booking in patients. This could potentially be missed during an A&E visit and an unknown quantity of DFUs may never reach the emergency podiatry service. However, if a patient does attend A&E, is not referred to podiatry and subsequently is treated in podiatry, a DATIX or adverse incident form is produced. There were no forms for this period.

No patients with diabetes and concurrent diabetic foot disease who presented to A&E with another illness were referred to podiatry services. It may be that these patients were all admitted and, therefore picked up as inpatients. Following the previous audit in 2010, when Salford introduced a foot check as part of the Waterlow risk assessment, there has been a significant rise in the number of inpatients receiving a foot assessment. National Diabetes Inpatient Audit (2013) figures show that in Salford Royal 96.7% patients received a foot assessment within 24 hours of admission, with a further 3.3% receiving a check after 24 hours (Health & Social Care Information Centre (2013). However, it would

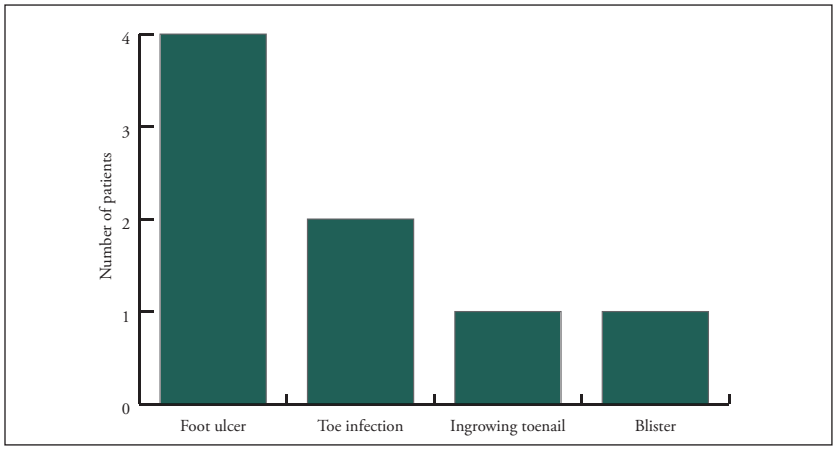


*Figure 3. Reasons for referral of people with diabetes to podiatry.*

***"Auditing practice against the standards outlined in* Putting Feet First *can lead to positive changes in practice and patient multidisciplinary care."***

be worthwhile auditing how many patients with active foot disease picked up during this assessment were actually referred on for podiatry input.

The fact that so few patients with diabetes were referred during the audit period may also suggest that more are being admitted for management. The Salford Diabetes Footcare Activity Profile (Public Health England, 2014) demonstrated that Salford had increased average episodes of care compared to the national average. If this is still the case, then a review is needed to see if these were all appropriate admissions or whether some could have been managed as outpatients with referral to podiatry within 24 hours.

A&E referrals with other foot conditions indicate a need for a wider emergency podiatry service, encompassing other foot conditions in non-diabetic patients. The significant uptake of this service by A&E staff, not just for diabetic feet but for other foot conditions, implies that A&E staff feel input from a specialist, experienced podiatry service would benefit a range of patients presenting to A&E.

## Conclusion

Auditing practice against the standards outlined in *Putting Feet First* can lead to positive changes in practice and patient multidisciplinary care. Referral to the emergency podiatry team has been established and is being used appropriately. However, there is still some improvement to be made to ensure all patients with DFUs are reviewed within 24 hours. Audit can highlight areas where care can be improved in a cost-effective manner and, over time, improve the management and outcome of DFUs. ■