

Perspectives on current provision of Acute Diabetic Foot Care

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Abstract

Aim

Up to 34% of diabetic patients will develop diabetic foot ulcers (DFUs) over their lifetime, with significant associated morbidity, mortality, and healthcare costs. Timely access to a multidisciplinary foot team (MDFT) can reduce DFU complications and represents the gold standard of management. Despite this, MDFT in Ireland is perceived to be ad hoc. This short report presents feedback from Irish healthcare professionals working on the frontline of diabetic foot disease.

Methods

An opportunistic electronic mixed-method surveys was sent to all attendees of the Beaumont Multidisciplinary Diabetic Foot Care Symposium, a cross-speciality meeting of stakeholders in diabetic foot care across hospital and community settings in Ireland. A series of categorial and Likert scale questions were designed to gather current perspectives on service design and delivery. A thematic analysis was performed on free-text responses.

Results

The response rate was 84/160 (52%), including 35 podiatrists (42%), 30 doctors (36%), 14 nurses (17%) and 3 orthotists (3.5%). Based on meeting content, 79/84 (94%) of responders reported they found the meeting “relevant or very relevant” to their current practice and 60/84 (71%) reported they were “likely or very likely” to change their practice. 73/77 (95%) of responders were in favour of a designated “Diabetic Foot Coordinator” to bridge community and hospital care. A thematic analysis of free-text “key take-aways” identified the importance of a formalised multidisciplinary DFU service with “buy-in” from all specialties as the most common response (58 [69%]).

Discussion

Regular multidisciplinary meetings can showcase gold-standard care, update on current developments towards MDFT in Ireland and facilitate networking between specialties.

However, institutional support, ring-fenced funding and realistic key performance indicators are needed to advance Irish diabetic foot care in line with international best practice.

Introduction

Diabetes mellitus has been described as the “defining disease of the 21st century”.¹ There are an estimated 300,000 people with diabetes in Ireland, with the incidence projected to increase.² Up to 34% of diabetic patients will develop foot ulcers over their lifetime.³ Amongst Irish adults, awareness of the sequelae of diabetic foot ulcers (DFU) is poor, namely the risks of peripheral arterial disease and limb loss.^{4,5} In Ireland, diabetic patients are 22 times more likely to undergo a major amputation than the general population.^{6,7} The financial burden created by diabetic foot disease is astronomical.⁸ In the UK, diabetic foot care costs more than breast, prostate and lung cancers combined.⁹ Contemporary figures for costs of inpatient foot care in Ireland are variable. In 2010, the Diabetes Federation of Ireland reported that €239 million is spent on preventable DFD, while more recently it has been suggested that diabetic care exceeds €2 billion annually.^{10,11}

Timely access to multidisciplinary care reduces the incidence of major amputations secondary to diabetic foot complications.¹² Such multidisciplinary teams are well-established within the National Health Service, where NICE guidelines specify *“the MDFT [multidisciplinary foot team] should be led by a hospital-based specialist diabetic podiatrist and should comprise of a diabetic physician, vascular surgeon, orthopaedic surgeon with special interest in foot and ankle surgery, diabetic nurse, vascular nurse, tissue viability nurse and Orthotic specialist. There should be close contact with the community podiatry for a seamless pathway for patients with diabetic foot ulcers in primary and secondary care. The main aims of the Diabetic MDFT are to reduce major amputations, reduce hospital stay and reduce readmissions”*.¹³ In a similar fashion, the 2021 HSE Model of Care for Diabetic Foot Disease outlines *“active diabetic foot disease ... will be actively managed by a multidisciplinary specialist foot care service, in conjunction with vascular surgery, orthopaedics and orthotics input as required”*.¹⁴

Despite this, in Ireland, care for acute diabetic foot infection (DFI) varies significantly between hospitals and is often delivered without structured referral pathways between primary and secondary care or formalised inpatient multidisciplinary input. In many centres, the involved specialties—however expert in their respective fields—work disjointedly. Though a patient may be reviewed by several specialists who would traditionally make up a MDFT, these happen individually, without multidisciplinary discussion or oversight. To encourage cross-speciality collaboration and develop better understanding of how current services can be improved, the vascular surgery department in

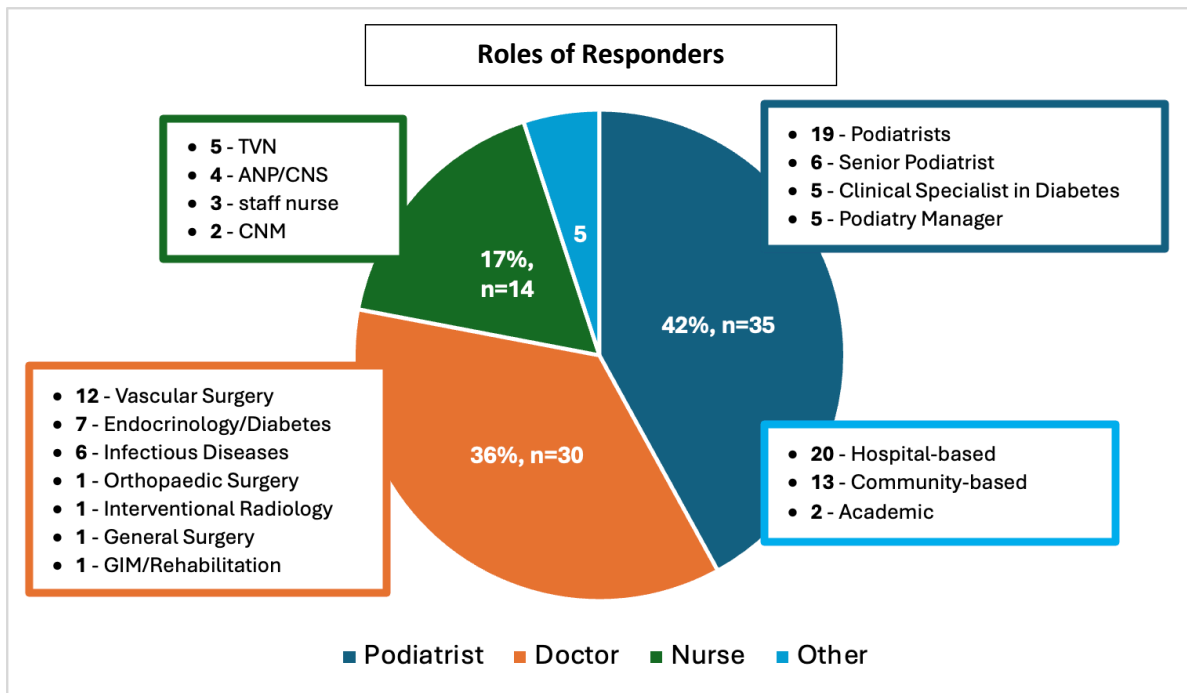
Beaumont Hospital organised a collaborative Multidisciplinary Diabetic Foot Care Symposium, inviting speakers from across the MDFT. Based on feedback from meeting attendees, this report aimed to present the real-world perspectives of healthcare professionals working on the frontline of diabetic foot disease across Ireland and highlight their shared desire to bring diabetic foot care in line with international standards.

Methods

An opportunistic electronic survey of attendees at the Beaumont Multidisciplinary Diabetic Foot Care Symposium (June 19th 2024), a cross-speciality meeting that aimed to bring together stakeholders involved in diabetic foot care across hospital and community settings in Ireland, was performed. QR codes with the survey link were displayed throughout the meeting and emailed to attendees afterwards. The survey was not mandatory. A mixed-methods study was performed, with a series of categorical, Likert scale and free-text responses questions designed to gather feedback on the meeting content as well as current perspectives on service design and delivery (*Appendix 1*). Anonymous responses were collected and analysed using SPSS version 27.0 (IBM SPSS Inc., Armonk, NY, USA. IBM Corp). Categorical variables were presented as count and percent. Chi-square tests were used to analyse categorical variables. A p-value of <0.05 was considered to be statistically significant. In a thematic analysis, the two authors independently categorised free-text responses to “*What are your key take-aways?*”.

Results

Out of 161 attendees, 84 (52%) feedback forms were received. Reflective of the broad audience, responses were received from 35 podiatrists (42%), 30 doctors covering seven different specialties (36%), 14 nurses (17%) and 3 orthotists (3.5%) (*Figure 1*).



Seventy-five percent (63) of responses came from hospital-based healthcare professionals and 21.5% (18) from community settings. Attendees came from 17 hospitals and 13 community catchment areas across Ireland and Northern Ireland, giving a broad perspective on current practice in Ireland.

Attendees were asked how they found the meeting content. Ninety-four percent (79/84) of responders reported they found the meeting “relevant or very relevant” to their current practice and 71% (60/84) reported they were “likely or very likely” to change their practice based on content presented. Attendees were asked who is their current point of contact for “at-risk” diabetic foot ulcers. Nine (10.7%) responders reported having access to a hospital-based diabetic foot MDT – six of whom worked in the NHS. For the community-based HCPs, 62.5% (10/16) referred acute DFUs to hospital-based podiatrist, 25% to other hospital-based medical or surgical teams and one had direct access to a hospital-based diabetic foot MDT. For hospital-based HCPs, 42% (25/59) were themselves the point of contact acute DFUs, 20% (12/59) got referrals from hospital-based podiatrists and 25% (15/59) contacted other

inpatient teams. As expected, significantly more doctors reported themselves as the “point of contact”, while podiatrists were more likely to report hospital-based specialist podiatrists or hospital-based medical/surgical teams as their point of contact ($p<0.001$).

When asked which MDT member they thought should be the point of contact for an “acute” diabetic foot ulcer, the majority of responders chose podiatrists (57 [68%]) compared to endocrinologist (5 [6%]) or vascular surgeons (6 [7%]) – while fifteen (18%) highlighted that a Diabetic Foot MDT should occupy this role as different patients require input from different specialties. When asked should there be a designated “Diabetic Foot Coordinator” to bridge community and hospital care and liaise with the various MDT specialties, there was overwhelming support for the creation of such a role (95% in favour, 73/77). Podiatrists and/or Clinical Nurse Specialists/Advanced Nurse Practitioners were considered the most appropriate MDT members to fill this role, with 91% of responders choosing either or both of these professions. Podiatrists were the most popular choice for both podiatrists and doctors, while nurses were evenly divided between podiatrists and CNS/ANPs ($p=0.005$). Similarly, podiatrists were the most common suggestion by both community and hospital-based HCPs (70.5% and 71%, respectively).

Attendees were asked their key take-aways from the symposium, which were reviewed in a thematic analysis. Responses were consolidated into general themes of “Systems”, “Staffing” and “Specialist Skills”. Combining “Systems” and “Staffing”, the importance of a formalised multidisciplinary DFU service with “buy-in” from all specialties was the most common response (58 [69%]). In other “systems” topics, 13% of responses highlighted establishing properly resourced care pathways (13%). Under “staffing”, further input from orthopaedic surgery accounted for 12% of responses. Within the “Skills” theme, performing diagnostic bone biopsies for guiding management of osteomyelitis (11%), techniques for localised infection control and new offloading and casting techniques (8%) were common responses.

Discussion

Irish physicians have long been advocating for a coordinated multidisciplinary approach to diabetic foot disease to both improve patient outcomes and reduce the economic burden.¹⁵ Successful international models for integrated diabetic foot care typically include a system for urgent review of high-risk feet identified by community-based healthcare professionals through a “hot foot” clinic.^{16,17} In these one-stop-shop clinics, patients are assessed for infection, ischaemia and structural deformities by a variable combination of endocrinology, infectious diseases, vascular surgery, orthopaedic surgery and podiatry, with the most

appropriate team leading further management.^{18,19} Compared to attending a singular service, MDFT clinics are associated with improved wound healing, reduced amputation rates and improved survival.^{20,21} Other centres focused on inpatient multidisciplinary “limb salvage” teams that collectively review hospitalised patients.²²⁻²⁴ The common denominator across these programmes is a patient-centred approach with timely collaboration between MDFT members and rapid mobilisation of resources.^{12,25} In this study, responses from a wide array of healthcare professionals currently working to deliver high-quality care for diabetic foot disease in Ireland highlighted perceived discrepancies between this aspirational “gold standard” MDFT approach and the current system. In a qualitative analysis of comments received, a desire for more integrated multidisciplinary services between primary and secondary care was a consistent theme. The gaps between national policy and service delivery identified in this survey are not recent developments, they were also noted in a 2018 survey of Irish podiatrists.²⁶

However, despite a need for further investment and integration, progress has been made in delivering coordinated diabetic foot care in Ireland over the last twenty years. In 2001, Smith et al audited and costed inpatient care for diabetic foot complications in an Irish tertiary referral hospital. Out of 30 patients with DFUs, the average length of inpatient stay was 20.3 days, 26% underwent amputation and the average cost per admission was €23,500.¹⁵ Eight years later, a fortnightly multidisciplinary foot protection clinic run with vascular surgery, orthopaedic surgery, podiatry, endocrinology, orthotics and tissue viability was established in a large urban tertiary vascular centre with a catchment area of 450,000. The clinic saw 313 patients in two years and led to a 42% reduction in major amputations, an increase in revascularisations and a 13% reduction in inpatient bed days.²⁷ The initiative was cost effective with the improvement in patient outcomes also equating to a €330,600 reduction in hospital costs.²⁸ During the same period, a similar clinic in another tertiary urban vascular centre staffed by consultant endocrinologist, a diabetes nurse specialist, a podiatrist, an orthotist and a consultant vascular surgeon with input from a consultant orthopaedic surgeon available on request saw 98 patients with active DFU.²⁸ There was no proceeding comparative cohort to gauge the impact of the clinic, however five-year follow-up of the attendees noted 24.5% of ulcers had healed, 33.7% recurred and 28.6% patients underwent an amputation, which is in line with international data²⁹. Furthermore, an inter-speciality inpatient programme for treatment of acute diabetic foot attacks, a “hot foot protocol”, has been effective at reducing length of hospital stay, 30-day readmissions, amputation rates and overall costs.²⁹ Led by vascular surgery, an Irish tertiary referral centre developed an hospital-wide algorithm for emergency DFUs aiming to streamline care pathways, ring-fence beds and reduce time to review by senior decision makers.³⁰ In the four years before and after the introduction of the protocol, 913 individual admissions for

acute DFUs were recorded. After the protocol commenced, the rate of minor amputation rose while major amputations fell as did the cost of inpatient care, despite a higher number of admissions.

The work of these three Irish units demonstrates that developing multidisciplinary clinics and streamlined managements protocols are both achievable and effective in reducing costs and adverse outcomes for patients with diabetic foot disease. Similarly, survey responses demonstrated a collective of dedicated individuals willing to work collaboratively to improve services – and outcomes – for Irish patients. A limitation of this study was the low response rate to the voluntary survey and with it a degree of selection bias, as likely the cohort both attending the meeting and responding to the survey are those most interested in DFD. Holding an annual multidisciplinary meeting that showcases gold-standard care and updates on current developments towards MDFT in Ireland and facilitates networking between specialties represents a low-cost, high-yield method of promoting communication and connectivity between the services. However, without institutional support, ring-fenced funding and realistic key performance indicators to track progress, it is unlikely that Irish diabetic foot care will catch up with our UK counterparts.

Declarations of Conflicts of Interest:

None declared.

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Appendix 1. Copy of Survey Content






Beaumont Multidisciplinary Diabetic Foot Care Symposium

Beaumont Multidisciplinary Diabetic Foot Care Symposium Feedback

B *I* U ↺ ✕

Thank you for participating in our event. We hope it was educational and enjoyable

We want to hear your feedback so we can keep improving our logistics and content. Please fill this quick survey and let us know your thoughts (your answers will be anonymous). We have included a brief survey to help us better understand how acute diabetic foot disease is managed. Responses may be collated and presented to stakeholders to promote MDT foot care

1. What is your current role?* *[free text]*
2. If you are a doctor, what speciality do you work in?* *[free text]*
3. Medical Council Number (for doctors for CPD) *[free text]*
4. Where do you work?* *[free text]*
5. How satisfied were you with the event?*

Not Very	1	2	3	4	5	Very Much
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6. How relevant and helpful do you think it was for your job?*

Not Very	1	2	3	4	5	Very Much
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7. What were your key take aways from this event?* *[free text]*
8. How do you hear about the Beaumont Multidisciplinary Diabetic Foot Care Symposium?* *[multiple choice – select ≥1]*

- RCSI Communication
- RCPI Communication
- Internal advertising in Beaumont Hospital
- Social Media
- Word of Mouth
- Other [*free text*]

9. How relevant did you find Session I, the King's College Hospital Experience?*

- The King's Diabetic Foot Pathway: Development & Outcomes

Not Relevant	1	2	3	4	5	Very
Relevant						

- Podiatry: The Bridge between Community and Hospital Foot Care

Not Relevant	1	2	3	4	5	Very
Relevant						

- An Orthopaedic Approach to Diabetic Foot Reconstruction

Not Relevant	1	2	3	4	5	Very
Relevant						

- The Vascular Surgeon on the Diabetic Foot Service

Not Relevant	1	2	3	4	5	Very
Relevant						

10. How relevant did you find Session II, Diabetic Foot Care in Ireland?*

- Interventional Radiology in Diabetic Foot Reperfusion

Not Relevant	1	2	3	4	5	Very
Relevant						

- The Model for Care for Diabetic Foot Disease

Not Relevant	1	2	3	4	5	Very
Relevant						

- The Role of Infectious Diseases in Diabetic Foot Infection: An Irish Perspective

- Podiatry
- Vascular Surgery
- Endocrinology

- Infectious Diseases
- Orthopaedic Surgery
- Other [*free text*]

19. Do you think there is a role for a Diabetic Foot Coordinator, in a similar model to Cancer CNS/ANP?* [*categorical*]

Yes

No

20. Which member of the MDT would be best suited to the Diabetic Foot Coordinator role? [*free text*]