

# Foot screening in diabetes: What? — So what? — Now what?

*David Wylie*

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This is the second in a series of articles celebrating 25 years of significant developments in the delivery of diabetes-related foot care.

The global burden of diabetes-related foot disease has increased so rapidly over the last 25 years that many international bodies now consider it to be a public health emergency. Yet in spite of a significant improvement in awareness of complications associated with diabetes-related foot disease, the challenge of reducing lower-extremity amputations remains extant (Zhang et al, 2017).

One of the key clinical developments over this period has been the implementation of foot screening programmes for individuals with diabetes, in order to stratify their risk of developing foot ulceration and potential amputation, and to signpost them appropriately for the level of support they require commensurate with their individual risk.

To acknowledge the impact of foot screening on diabetes service provision, David Wylie, co-chair of the Foot in Diabetes UK (FDUK), invited seven members of the FDUK executive committee to respond to seven questions about foot screening for individuals with diabetes.

Here, he edits their responses into an insightful overview of the major issues relating to foot screening — past, present and future.

## **1) What have been the most significant developments in the development and delivery of screening over the last 25 years?**

### **Service delivery**

Prior to the introduction of foot screening for individuals with diabetes, we knew that some people with diabetes developed foot ulceration, but we did

not know which ones. Therefore, in undergraduate and patient education, as well as service delivery models, the profession of podiatry treated all people with diabetes as being at risk. We ‘educated’ them never to treat their own foot problems, or to cut their own toenails — or even to let anyone else but a podiatrist cut their toenails. Now we are able to say with a high level of assurance and evidence that individuals screened as being in the ‘LOW RISK’ category are at no greater risk of developing foot ulceration than the general population.

### **Standardisation of approach**

Although guidelines pertaining to the assessment of the foot in diabetes go back as far as the mid 1990s, when the Scottish Intercollegiate Guidelines Network (SIGN) published SIGN Guideline 12 relating to the management of the diabetic foot, a standardised approach to screening, assessment and management took some time to become established in clinical practice. In 1998, the Clinical Resource Efficiency Support Team (CREST) guidelines in Northern Ireland advised that every person with diabetes should have an initial foot assessment and then be categorised by risk. At that time, the differentiation between screening and assessment was less well defined. The International Working Group on the Diabetic Foot (IWGDF) guidelines in 1999 followed and by the time SIGN 55 was published in 2001, momentum was building for a consistent approach to taxonomising individuals with diabetes according to risk. These guidelines were quickly followed by a raft of other guidelines across the UK, including the National Institute for Health and Care Excellence (NICE) diabetic foot guideline in 2004.

In 2002, the Scottish Care Information – Diabetes (SCI-D) was implemented to provide a

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Scotland-wide data collection tool that supported the Managed Clinical Network (MCN) for Diabetes in Scotland, and provided an integrated electronic database to capture all data for individuals with diabetes in Scotland, including their foot risk classification.

However, on reflection, it seems that the inclusion of diabetic foot screening in the Quality Outcome Framework for Primary Care across the UK in 2004 raised the profile of foot screening in a way that nothing else had done until that point. Although contributing only a relatively small weighting within the overall framework, the financial incentivisation of this activity provided an impetus that saw a large increase in the number of individuals with diabetes screened.

The national nature of the framework also drove the need for a consistent approach to data collection during screening, in order to calculate risk in a consistent manner.

Initially, foot screening was envisaged as an annual event for all people with diabetes. However, as time has passed, and data have accumulated, the frequency of foot screening has become an area of contentious academic and clinical debate. For although failure to carry out comprehensive diabetes foot screening at a national level has been reported to have detrimental consequences for those with diabetes (Kuhnke et al, 2013), evidence for a screening interval remains non-existent, with guidance based on expert opinion alone (IWGDF, 2019).

### **Creation of clear pathways linked to risk category**

The consistency of approach to screening was also helpful in answering the ‘so what?’ question emerging from the screening outcome, ensuring that individuals were signposted appropriately to resources or treatment and interventions commensurate with their screening category. In 2008, again in Scotland, the Diabetic Foot Risk Stratification and Triage System was launched, popularising the ‘Traffic Light’ risk classification model of Green, Amber and Red for Low Moderate and High Risk individuals. This project also delivered patient information leaflets for each risk category, with tailored advice and recommended treatment intervals. This was updated in 2016 (Stang

and Leese, 2016) to prioritise at-risk patients and introduce earlier preventative management into the action points. The high-risk category was also split to introduce a new category — ‘In Remission’ — and renal disease was introduced as an additional risk factor.

### **2) Who or what have been the major influences in the development of screening in the UK?**

The evidence described above led the way. However this was amply augmented by Diabetes UK, FDUK, local podiatry services, particularly those that engaged in radical whole system redesign.

At individual level within the medical profession, a number of key individuals helped podiatry raise the profile of their professional offer and, consequently, the need for more robust processes to support service redesign. Professor Mike Edmonds, Dr Matthew Young, Professor Graham Leese, Professor William Jeffcote and Dr Brian Kennon are national figures representative of the many local consultants and GPs who supported podiatry into the profession we know it to be today.

It is also important to acknowledge the contribution made to foot screening by the Scottish Foot Action Group, and the national work in Scotland and Wales led by Duncan Stang and Scott Cawley, respectively. This shows what can be achieved by resourcing national co-ordinating roles, and is a model worth considering substantiating elsewhere.

### **3) What have been the main barriers to screening in your own experience?**

Although progress has undoubtedly been made nationally with respect to screening, there is still a long way to go for it to be fully embedded in the service specification for every diabetes or high risk foot service across the UK. Chiefly, this seems to be the result of a lack of clarity as to who is responsible for the task and, therefore, a lack of clarity about who should fund the task. It may also be due to the fact that the evidence linking frequency of foot screening to lower rates of lower-extremity amputation is conflicting (Kerr, 2012; 2017).

In spite of this, Kuhnke et al (2013) clearly recommend that healthcare organisations must

develop a dedicated funding plan that supports diabetic foot screening and re-screening of the non-high-risk foot as per guidelines. However, they also state that the aims and objectives of any screening policy should be clearly stated. It may be that screening is falling between two stools. Perhaps this is the fundamental question that needs to be answered — the problem behind the problem. What is the purpose of a national diabetic foot screening programme? Is it a clinical tool to shape and enable clinical care to prevent foot ulceration and amputation — or is it a research tool to monitor population health, linked to socioeconomic demographics? Or is it a monitoring tool to enable incentivised clinical targets and tasks to be met (as in the quality and outcomes framework)?

Although screening levels across the UK have been consistently high within a global context (Kuhnke et al, 2013), unpublished levels of screening have dropped significantly in Scotland since foot screening was removed from the 2018 GP contract, and following the pandemic.

Perhaps the vexed challenge of securing long-term funding at national level for this element of diabetes foot care, particularly when clinical resources are scarce is, therefore, linked to the need for increased clarity in relation to the purpose of screening. Historically, podiatrists often assumed the role of screener, however, this is not their primary role — any more than is the role of the GP, and there are workforce challenges in maximising existing skills to ensure the most appropriately trained individuals carry out the task. In addition, the challenge of achieving consistency of approach across the entire screening workforce, whether at post- or pre-registration level also remains a challenge.

Furthermore, implementing foot screening in acute environments remains challenging with the number of type 1 patients consistently lower than those with type 2 as a percentage of the respective populations.

One innovative solution to this conundrum has seen an increase in the number of services linking foot screening with retinal screening (Formosa et al, 2016).

#### **4) Has the pandemic changed the way patients are screened?**

Although the evidence of the pandemic on foot

screening has not yet been fully published, it is anecdotally evident that significant volumes of patients have not had a foot screening in the last two years. While it is universally recognised that there is an opportunity to generate a 'new normal' in terms of clinical care and service delivery models, incorporating learning from lockdown, the emerging pressures of increased financial constraints make it difficult to see how these can be sustained and funded. Overall, the consensus is that foot screening is not being prioritised, due to the emerging unmet need in terms of developed pathology that may have been generated by clinical delays over the last two years. It is unclear what the long term implications of these pressures are likely to be, however from what we already know — the future looks challenging for foot screening both in terms of funding and staffing.

#### **5) How much do you think targeted patient information alongside a comprehensive screening strategy would benefit both patients and clinicians?**

The need to understand the issues relating to patient education and their connectivity and engagement with their own care has never been greater.

The challenges of increased lower-extremity amputations linked to socioeconomic deprivation and, by extension, lower health literacy is well documented (Hurst et al, 2020). Having targeted patient information should get patients to engage and understand the devastating results of not controlling their diabetes and seeking help urgently when a foot problem occurs would thus help improve outcomes. However, although linking screening with targeted education is generally accepted to be a good thing, significant problems remain.

Walton (2021) reported that out of 202 individuals referred to multidisciplinary care, only 4% knew their current foot risk status. This level of understanding and engagement presents massive challenges to health and care systems, and it may be that a completely new model of patient education and engagement is required.

Binning et al (2019) advocate the need for further understanding of how to better address joint goal setting and adherence to treatment and

intervention regimens rather than simply revise endless tranches of leaflets. This paradigm shift will not be easy and must be backed up by rapid access to multidisciplinary care.

### 6) Do you think there needs to be a discussion over the frequency of screening?

The short answer to this question is a resounding 'yes'! However, given that current recommendations for screening are not currently being delivered consistently across the UK health and care systems, it may be more prudent to incorporate this discussion into the wider discussion about patient motivation, goal setting, literacy and self management as we move forward

As outlined above, the need to improve rapid access for individuals with concerns or even small skin lesions is paramount and may be more important than hypothesising about the frequency of screening, particularly if technological solutions and data collection methods can be found that enable individuals to self-screen in the future. In addition, it may help with health inequalities to focus on screening in areas of greater deprivation, while utilising an asset-based approach for individuals with higher levels of health literacy. We have the data to stratify the population in this way, and this may provide a more sustainable way forward.

### 7) How do you envisage screening changing in the future and how do we continue to develop the workforce to build on the progress that has been made over the last 25 years?

There is a need to embrace technology more and involve patients in developing solutions that work for them. If the population can regularly send in meter

readings for gas and electricity, it may be possible to develop a means of self-screening using a simple single test, such as the Ipswich touch test or some other simple mechanism that may indicate early sensory loss more proactively. TikTok brought us many ideas and video clips when lockdown measures were in place during the pandemic. Perhaps now is the time to be "blinded by the light" of improved opportunities and models for foot-screening and engage the brain power of new recruits into the podiatry profession, and those with technological knowhow.

Until then, with regard to the workforce, it may be time to upskill and develop our associate workforce while offering employment to technicians to assist with the algorithmic task of screening. ■

- Binning J, Woodburn J, Bus SA, Barn R (2019) Motivational interviewing to improve adherence behaviours for the prevention of diabetic foot ulceration. *Diabetes Metab Res Rev* 35(2): e3105
- Formosa C, Gatt A, Chockalingam N (2016) A critical evaluation of existing diabetic foot screening guidelines. *Rev Diabet Stud* 13(2-3): 158-86
- Hurst JE, Barn R, Gibson L et al (2020) Geospatial mapping and data linkage uncovers variability in outcomes of foot disease according to multiple deprivation: a population cohort study of people with diabetes. *Diabetologia* 63(3): 659-67
- International Working Group on the Diabetic Foot (2019) IWGDF Guidelines on the Prevention and Management of Diabetic Foot Disease. The International Working Group on the Diabetic Foot. Available at: <https://bit.ly/3uaHfib> (28.06.2022)
- Kerr M (2012) *Foot Care for People with Diabetes: The Economic Case for Change*. London: NHS Diabetes. Available at: <https://tinyurl.com/2wt37h5k> (28.06.2022)
- Kerr M (2017) *Insight Health Economics for Diabetes UK. Diabetic Foot Care in England: An Economic Study*. Available at: <https://tinyurl.com/5bba55vn> (accessed 28.06.2022)
- Kuhnke J, Botros M, Elliot J et al (2013) The case for diabetic foot screening. *Diabetic Foot Canada* 1(2): 8-14
- Stang D, Leese GP (2016) The Scottish Diabetes Foot Action Group 2016 update of the Diabetic Foot Risk Stratification and Triage System. *The Diabetic Foot Journal* 19: 182-6
- Walton DV, Edmonds ME, Bates M et al (2021) People living with diabetes are unaware of their foot risk status or why they are referred to a multidisciplinary foot team. *J Wound Care* 30(8): 598-603
- Zhang P, Lu J, Jing Y et al (2017) Global epidemiology of diabetic foot ulceration: a systematic review and meta-analysis. *Ann Med* 49(2): 106-16