

The National Diabetes Footcare Audit of England and Wales: an overview

Bob Young and William Jeffcoate

The National Diabetes Footcare Audit was launched in 2014 and aims to measure the structures, processes and clinical outcomes of diabetes foot care in order to support improvements for this important, but neglected, health issue. To achieve this aim, it is important that as many as possible of all foot ulcer treatment services participate. The greater the participation, the greater will be the weight of the observations, and the greater the power of the evidence to drive change. If this can be achieved, it is calculated that the total number of major amputations in England and Wales might be halved.

No one reading this article will be under any illusion of the size of the problem presented by diabetic foot ulcers (DFUs): clinical dilemmas, workload, costs, and the suffering and personal tragedies for those affected. Clinicians involved in the management of DFUs often feel as though their day-to-day work is a struggle and that resources are being progressively reduced. The majority respond to the pressures by simply working harder — and often far in excess of their contracted hours. However, while a person who works harder at what they already do may achieve some small benefit, large improvements require the working environment to change. The magnitude of the change required in diabetic foot disease is too big to be tackled by increased effort. It can only be realistically achieved by changing the structures of the end-to-end systems for DFU management.

What is the source of the problems?

There are many reasons why the management of DFUs is far from good overall. Perhaps the most important reason is that most doctors have not perceived it to be a major problem. In this respect, they are no different from most healthcare managers, but it means that the principles of DFU

care have not traditionally been taught or valued and the field has been seriously under-researched.

The disorder is also highly complex — with multiple, variously overlapping, causative factors (trauma, reduced sensation, infection, peripheral artery disease etc) and there is limited insight into the cellular and molecular processes involved in delayed healing. The inevitable associations with diabetes and its other complications, including eye, kidney and arterial disease, compound the complexity. It is because of this complexity of causes and associations that DFUs can be managed properly only by multidisciplinary teams; professionals with complementary skills and who work closely with each other. The latter is seriously hampered by the failure of many healthcare professionals to work as team players and is compounded by inter-departmental and inter-organisational barriers erected by unenlightened management who often seem to have a blind spot about this important healthcare challenge.

The failures to ensure that the management of podiatry and orthotics are sufficiently closely linked to the broader structure of specialist health care and the lack of clear, monitored referral systems are particular problems.

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Article points

1. Diabetic foot disease is serious, complex and neglected. Rates of its most feared consequence, amputation, still show huge geographical variation.
2. Changes to basic local care pathways and systems could produce immediate improvements.
3. There is now a mechanism to measure variation in diabetic foot-care delivery — The National Diabetes Footcare Audit. Wide participation could help accelerate improvement.

Key words

- National Diabetes Footcare Audit of England and Wales
- Ulcer management

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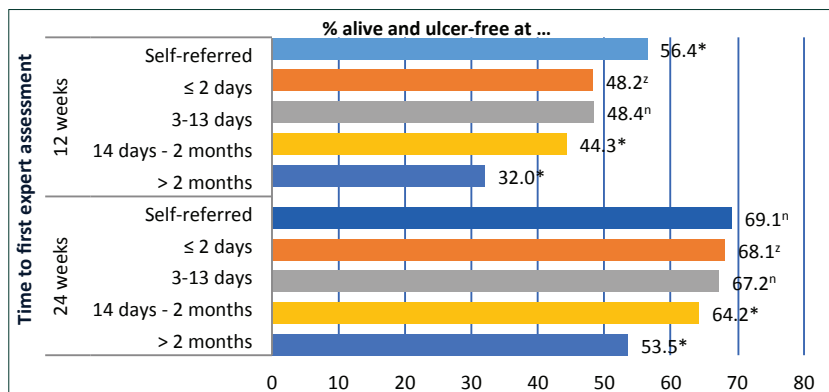


Figure 1. National Diabetes Foot Care Audit 2014-16: Proportions 'alive and ulcer-free' at 12 week and 24 week assessments (NHS Digital, 2017a).

What is the solution?

In the absence of strong research evidence to support the management of nearly every part of ulcer treatment (with the exception of aspects of infection, revascularisation when needed and of offloading, and the possible exception of topical negative pressure therapy), the mainstay of management of every ulcer relies on early assessment by a member of a designated multidisciplinary team — and thereafter ensuring intervention and surveillance as dictated by the circumstances. Such early referral is the cornerstone of NICE guidance (first published in 2004 and updated in 2010 and 2016) and it relies heavily on the evidence derived from a number of centres in the UK in which major (and highly cost-effective) improvements in outcome were documented following the creation of a dedicated care pathway between the community and an expert team.

Foremost among these were the achievements documented by the teams at Middlesbrough and Ipswich hospitals in the late 1990s — when both centres independently demonstrated a fall within five years in the incidence of major amputation from 35 to 40 per 10,000 people with diabetes per year to between 6 and 7 per 10,000 (Canavan et al, 2008; Krishnan et al, 2009). As this improvement was not associated with any other change in the details of management, it is now widely believed that the creation of such an early assessment pathway is the key to the provision of good care.

How much does the incidence of amputation vary?

There is no denying that the overall management

of diabetic foot ulcers has improved considerably over the past 20 years — at least on the evidence provided by falls in the incidence of major (above the ankle) amputation. Thus, the median incidence in people with diabetes had fallen by 2010–2012 to between 9 and 10 per 10,000 per year in England (Holman et al, 2012), and in Scotland (Kennon et al, 2012) and while this might be assumed to indicate an overall satisfactory level of care, there is persisting cause for considerable concern. This is because the evidence from England, at least, is that despite the overall lower numbers of amputations, there was also evidence of up to a tenfold variation between different GP groupings (primary care trusts) between 2007 and 2010 (Holman et al, 2012). If such major geographical variation persists in the incidence of major amputation, it is very likely to indicate major differences in the quality of overall care.

Possible confounding factors contributing to differences in the incidence of amputation

The limitation of the 2007–2010 data from England was that it was not adjusted for one of the most important modifiers of ulcer incidence; that of genetics. Thus, it has been known for many years that even though the prevalence of type 2 diabetes in the UK is very much higher in those of South Asian heritage, the incidence of amputation is much lower: between one fifth and one quarter of that in white Europeans (Chaturvedi et al, 2002). A similar difference was shown among Afro-Caribbeans living in London, with the incidence of amputation in black males being only one third that of whites (Leggetter et al, 2002). It follows that it is not possible to compare amputation incidences unless they are adjusted for ethnicity.

Recently, however, Public Health England has published 2010 to 2016 data on amputation in diabetes that are adjusted for age and ethnicity and used them to compare performance between different localities (Clinical Commissioning Groups [CCGs]) (Public Health England, 2017). The results are clear, but very worrying. In brief, these latest data show that while the median incidence of major amputation in England has now fallen to 8 per 10,000 people with diabetes per year, there remains considerable geographical variation with a persisting

sevenfold difference between the best- and worst-performing CCGs. In the absence of other evidence, it is most likely that this variation relates to differences in care pathways. These differences are likely to encompass the varying existence of specialist diabetic footcare services and the varying frequency — and speed — with which people with new DFUs are referred to them.

The role of the National Diabetes Footcare Audit (NDFA) of England and Wales

The National Diabetes Footcare Audit (NDFA) was launched in 2014 after 4 years of development work and trials (NHS Digital, 2017). The aim was to measure the relationships between clinical outcomes and aspects of the structure and delivery of care. Like all national clinical audits, it is focussed on measurement for improvement and not on finding fault. To make improvements, it is helpful to know how much the performance in one area compares with others and it is essential to know how much improvement results from making changes. For DFUs, as for so many clinical challenges, clinical outcomes are the result of events throughout the whole care pathway, including actions and delays by the patient, by clinicians in primary care, community care, emergency services and specialist hospital care. It is unlikely that poor outcomes will relate to only one link in the chain. The NDFA can provide insight into how most of the links are working and it aims to do so in ways that are easy for busy clinicians.

NDFA and CCGs

There is an element of the NDFA that does not involve clinicians. Each autumn a simple, three question survey is sent to all CCGs. These questions request information about the structure of healthcare services (which it is the responsibility of CCGs to commission). Two of these questions relate to DFU prevention, the third to treatment.

1. Is there a training programme designed to ensure that all people involved in annual foot risk assessment have the necessary competence?

Note that the question is simply whether there is training available for all, and not whether everyone has attended and has the necessary competence as a result.

2. Is there a foot protection service available such that people defined as being at increased risk can be

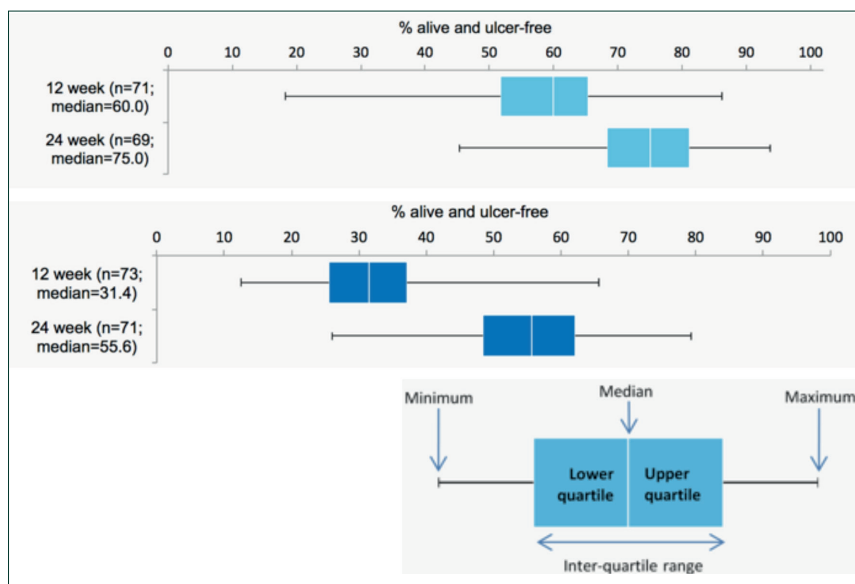


Figure 2. Variation among NHS Trusts and Local Health Boards in terms of the range of clinical outcomes ('alive and ulcer free') at 12 weeks and 24 weeks after first expert assessment for less severe (SINBAD score <3) and severe (SINBAD score >3) ulcers.

referred for education and or advice?

Once again, as for the first element, the question is simply to determine whether this key element of NICE guidance for DFU prevention is in place.

3. Is there a designated multidisciplinary foot care service such that all people newly occurring DFUs can be assessed as an emergency, if necessary?

The response of CCGs to questionnaires circulated in 2014, 2015 and 2016 has been disappointing, with only approximately 50% responding at all and less than 50% of all responders able to answer 'Yes' to all three questions. These responses are a clear indication of a lack of focus on diabetic foot disease that could well explain the poorer outcomes in some areas.

NDFA and management of ulcers

The NDFA uses 'data linkage' to minimise data collection and submission by the clinicians treating DFUs. The use of the NHS number means that patient information, such as demographics, diabetes details, hospital admissions and deaths already recorded by the Core National Diabetes Audit, Hospital Episode Statistics (England) and the Patient Episode Database for Wales, and the Office of National Statistics enables it to be obtained by electronic linkage, rather than being re-collected. This means that the information that is asked of



clinicians dealing with each new DFU included in the NDFA is reduced to the bare minimum and relates only to ulcer duration, ulcer severity and patient outcome at 12 and 24 weeks. The chosen outcome is patient-centred and is simply whether the person is still 'alive and is free from any active ulceration'.

Participation has been widespread and the total number of ulcers registered exceeded 13,000 by March 2017 (NHS Digital, 2017b). This is a massive total to have been collected prospectively, but it is likely to represent only about 10–20% of all ulcers that actually occurred over the same period. One reason for this has undoubtedly been the difficulty hitherto imposed by the requirement to obtain individual informed patient consent. However, in August 2017, this requirement was lifted (in England only to date).

One dominant finding that has emerged from the early results is the influence of the time that elapses between ulcer onset and first expert assessment (*Figure 1*). The longer the delay, the more severe the ulcer is at presentation and the worse the outcomes at 12 and 24 weeks. Associated data on amputations and hospital bed occupancy were published in October 2017.

NDFA and evidence of variation

Analysis of the 2014–16 results also provides evidence of very considerable variation in outcome between CCGs and local health boards across England and Wales, respectively (*Figure 2*). It should be noted that, presently, these are crude data; as participation increases it will be possible to adjust for case-mix effects.

Other analyses

There are currently approximately 2,400 major amputations in people with diabetes in England each year and the evidence from Public Health England is that approximately one third of CCGs have an incidence that exceeds the current national average of 8 per 10,000 with diabetes (Public Health England, 2017). If all those currently above national average were to reduce the number of operations to, or below, that average (and, in the process, reduce variation from sevenfold to approximately threefold), the total number of major amputations would be halved.

The publication of NDFA data on hospital admissions, vascular procedures and amputation has just recently occurred (NHS Digital, 2017c), while linkage between the NDFA and the National Vascular Registry of the Royal College of Surgeons (Healthcare Quality Improvement Partnership, 2016) is being formulated and reports on re-ulceration and longer term mortality will be included in the future. A new, extended NDFA report is scheduled for release in March 2018. It is envisaged that the NDFA will, by stages, bring together all the links between the complex care structures, care systems and clinical outcomes of diabetic foot disease, thus providing reliable measurements to help drive improvement for this common, serious and neglected condition. All clinicians are urged to help correct the current deficiencies of foot care by taking part in the NDFA (NHS Digital, 2017a). If all DFUs from all services are included, the strength of the measurements will accelerate the long overdue investment and improvement in care pathways for this pernicious problem. ■

- Canavan RJ, Unwin NC, Kelly WF, Connolly VM (2008) Diabetes and nondiabetes-related lower extremity amputation incidence before and after the introduction of better organized diabetes foot care: continuous longitudinal monitoring using a standard method. *Diabetes Care* 31(3): 459–63
- Chaturvedi N, Abbott CA, Walley A et al (2002) Risk of diabetes-related amputation in South Asians vs. Europeans in the UK. *Diabet Med* 19(2): 99–104
- Healthcare Quality Improvement Partnership (2016) Vascular: National Vascular Registry. Available at: <http://bit.ly/2hIASQJ> (accessed 02.10.2017)
- Holman N, Young RJ, Jeffcoate WJ (2012) Variation in the recorded incidence of amputation of the lower limb in England. *Diabetologia* 55(7): 1919–25
- Kennon B, Ieese GP, Cochrane L et al (2012) Reduced incidence of lower-extremity amputations in people with diabetes in Scotland: a nationwide study. *Diabetes Care* 35(12): 2588–90
- Krishnan S, Nash F, Baker N et al (2009) Reduction in diabetic amputations over 11 years in a defined UK population: benefits of multidisciplinary team work and continuous prospective audit. *Diabetes Care* 31(1): 99–101
- Leggetter S, Chaturvedi N, Fuller JH, Edmonds ME (2002) Ethnicity and risk of diabetes-related lower extremity amputation: a population-based, case-control study of African Caribbeans and Europeans in the United Kingdom. *Arch Int Med* 162(1): 73–8
- NHS Digital (2017a) *National Diabetes Footcare Audit (NDFA)*. Available at: <http://bit.ly/2thjDqx> (accessed 02.10.2017)
- NHS Digital (2017b) *Find Data And Publications*. Available at: <http://bit.ly/2klMyEl> (accessed 12.10.2017)
- NHS Digital (2017c) *National Diabetes Footcare Audit Hospital Admissions Report 2014-2016*. Available at: <http://bit.ly/2ihiQpn> (accessed 16.10.2017)
- NICE (2016) *Diabetic Foot Problems: Prevention and Management*. NG19. Available at: <http://bit.ly/1NdG8mM> (accessed 02.10.2017)
- Public Health England (2017) *Diabetes Footcare Profile By Area*. Available at: <http://bit.ly/2ykqXrZ> (accessed 02.10.2017)