

**Improving footcare for people  
with diabetes and saving money:  
an economic study in England**



## Introduction

Diabetic foot disease (foot ulcers and amputations) reduces the quality of life of tens of thousands of people in England every year. It also costs the NHS hundreds of millions of pounds annually;



**at least £1 in every £140 of NHS expenditure in England is spent on footcare for people with diabetes.**

This paper, which is a summary of an updated health economic analysis<sup>1</sup>, presents estimates of the numbers of people with diabetes experiencing ulcers or amputations in England each year, and the cost of their care. The full analysis also reviews the quality of current diabetes footcare, and the potential for improved care both to improve and lengthen lives, and to reduce NHS costs. Some examples are presented from services around the country where improvements in the quality of diabetes footcare have been followed by reductions in ulceration and amputation rates, improving equality of life for people with diabetes and making savings for the NHS.

## The scale and impact of the problem

It is estimated that 5–7 per cent of people with diabetes have had a foot ulcer at some time, and that 2 per cent experience at least one new foot ulcer in a year<sup>2,3,4,5</sup>.

**Around 2–2.5 per cent of the diabetes population has an ulcer in any given week, around 60,000–75,000 people in England.**

There are over 7,000 lower limb amputations in people with diabetes in England each year, and the likelihood that someone with diabetes will have a leg, foot or toe amputation is around 23 times that of a person without diabetes<sup>6</sup>. Every year, approximately 8 out of every 10,000 people with diabetes undergo major lower extremity amputation (above ankle), and 18 out of 10,000 have a minor amputation (below ankle). In many cases, amputation occurs as a result of foot ulceration and infection.

For many people with diabetes, ulceration is an ongoing problem. Studies suggest that around a quarter of patients who become ulcer-free have developed new ulcers within 3 months. Many foot ulcers are painful, unsightly and smell unpleasant. Treatment often requires a considerable amount of time spent on clinic visits, hospitalisation and frequent changes of wound dressings. This all has a massive impact on patients' family and working lives, reducing independence, self-esteem and the ability to socialise.

## The financial cost of foot ulcers and amputations

**£1  
BILLION**

**Total expenditure on healthcare related to foot ulceration and amputation in people with diabetes in 2014–2015 in England is estimated at £1 billion.**

(£972m–£1.130bn; equivalent to around 0.7–0.8 per cent of the entire NHS budget.)

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**Around two thirds of this was expenditure on treating foot ulcers in primary, community and outpatient settings.**

Estimated annual cost	
Primary, community and outpatient care, ulceration	£629,161,354 – £786,451,692
Inpatient care, amputation	£43,797,632
Inpatient care, ulceration	£278,452,386
Post-amputation care	£20,813,777
<b>Total</b>	£972,225,149 – £1,129,515,487

**Table 1:** Total estimated expenditure on diabetic foot disease, England, 2014–2015

**Commissioners and budget-holders may be generally unaware of the large cost of treating foot ulcers in people with diabetes. Understanding the cost of current models of care is an important first step toward building the case for improved services.**

## Improving diabetes footcare services and saving money

Clinical evidence and audit data suggest that there is a great deal of scope for improvement in the quality and outcomes of diabetic footcare in England. On the one hand, there is a large body of evidence indicating that targeted preventive services can identify those at risk of ulceration and improve outcomes, and that early access to multidisciplinary specialist care for patients with ulcers can reduce ulcer duration, improve healing rates, reduce amputations and increase survival rates. On the other hand, national diabetes audits indicate that many patients in England experience long waits for specialist footcare, and that appropriate specialist services do not exist in many areas. Almost two thirds of inpatients with diabetes have no documentation in their case notes of a foot risk assessment during their hospital stay. Almost a third of hospital sites do not have a multidisciplinary footcare team. In many areas of the country there are no clear pathways for referral of patients to appropriate specialist services.

Reducing ulcer duration is key to improving quality of life for patients and reducing NHS costs. We estimate that at least 60,671–75,838 people with diabetes in England have foot ulcers at any given time (2–2.5 per cent of the diagnosed diabetes population), and that the mean weekly cost of caring for each patient is £208. Some ulcers never heal, so quality of life is permanently reduced, and these costs to the NHS are ongoing. The more severe the ulcer, the more difficult it is to achieve healing, and the more costly the care. Patients who wait longer to be seen have, on average, more severe ulcers and longer ulcer duration than those who are seen quickly<sup>7</sup>. We estimate that reducing the prevalence of people with diabetic foot ulcers by one third would save the NHS £210m–£262m a year. If the proportion of people with severe ulcers was also reduced the savings would be greater.

## Case studies

The potential for improved services to deliver better outcomes and cost savings will vary from place to place, depending on baseline standards of care, and on the type of improvement undertaken. Presented here are illustrative cost, benefit and saving estimates from three services, which suggest that early access to specialist care and foot checks for inpatients with diabetes are associated not only with improved outcomes, but also with financial savings for the NHS that substantially exceed the cost of the service.

### Ipswich Hospital NHS Trust

#### Impact of a comprehensive inpatient footcare improvement programme

In 2010 Ipswich Hospital NHS Trust launched an improvement programme aimed at promoting foot checks in diabetes inpatients and reducing ulcers. Promotional videos were produced, featuring patient stories and instructions for the Touch the Toes test. These were shown in all wards by a podiatrist and a diabetes specialist nurse. Monthly random audits were instituted, to check on the percentage of inpatients with diabetes having foot checks, and ward-level results were published on the hospital intranet. Data on foot ulcer prevalence were collected for all patients from 2008 to 2013.

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**This was associated with a reduction of two thirds in the ulceration rate in inpatients with diabetes, averting an estimated 19 ulcers a year. The estimated annual saving from averted bed days was £214,000, more than 20 times the cost of the improvement programme.**

## Somerset CCG

### Impact of a country-wide integrated diabetes foot pathway

In 2011 Taunton and Somerset NHS Foundation Trust, Yeovil District Hospital NHS Foundation Trust, Somerset CCG, Somerset Partnership NHS (community) Foundation Trust, and local GPs established a county-wide integrated diabetes foot pathway. Emergency clinics were established in eight locations, offering appointments within 24 hours for people with active foot disease, and direct referral to the hospital MDT where necessary. Community podiatrists received specialist training and became members of the foot MDT, with regular rotation into the hospital-based diabetic foot services. Patient notes were shared electronically. Training was provided for practice nurses and GPs. The aim was to ensure rapid access to specialist care, robust follow-up and the elimination of inefficiencies arising from poor communication. In 2013 Musgrove Park Hospital introduced the Ipswich Touch Test for all inpatients with diabetes, with a clear referral pathway and a monthly compliance audit.



**The major amputation rate in Somerset fell by 43 per cent, averting an estimated 20 amputations a year. Inpatient days for diabetic foot disease fell by 23 per cent. The estimated annual saving was £926,000, almost six times the cost of the service improvement.**

## Brent CCG

### Impact of a multidisciplinary footcare team

In 2004 Brent CCG (then known as Brent Teaching PCT) and The North West London Hospitals NHS Trust established a multidisciplinary specialist footcare team (MDT). The MDT operates two consultant-led clinics a week and an emergency service five days a week. There are close links with community podiatry services, which can refer patients directly to the specialist service. Patients with recurring ulcers can self-refer to the service. The MDT also works closely with intermediate care services, which operate a Short Term Assessment, Rehabilitation and Reablement Service (STARRS), providing home care to avert admissions and support rapid discharge. Brent CCG now has the lowest diabetes amputation rate in England. The major amputation rate in Brent is 71 per cent below the England rate, and 55 per cent below the rate for demographically similar CCGs. The number of days in hospital for diabetic foot disease is 26 per cent below the England level and 22 per cent below the level for comparator CCGs.

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**Savings from averted amputations and bed-days, relative to the mean for the 10 most similar CCGs, are estimated at £474,000, almost 5 times the cost of the service improvement.**

## Implications for local health economies

Decisions on improvements in prevention and care for foot problems in diabetes will need to be informed by local data on costs, savings and outcomes.

Close collaboration between primary, community and acute care providers will be needed if better outcomes for people with diabetes and cost savings for the NHS are to be delivered. In order to ensure rapid referral to specialist care, it is necessary not only that an appropriate specialist service exists in each area, but also that non-specialist staff understand the diabetic foot, and that clear referral protocols are in place.

The savings from improved care are likely to accrue both to commissioners and acute providers. The excess costs of extended lengths of stay are borne by acute providers, while the costs of amputations and extended ulcer duration are mainly paid by commissioners. It will be important for commissioners and providers of care to consider the distribution of costs and savings arising from improved care, in order to ensure that improved services are appropriately incentivised. It is important to audit new services using patient outcome and satisfaction measures, along with clinical and economic metrics, to ensure that gains in quality and productivity are achieved.

Diabetes prevalence is increasing and, as a result, the absolute number of diabetes-related amputations in England increased by 16 per cent between 2009–2012 and 2012–2015, even as rates per 10,000 people with diabetes were reduced. Unless there is a significant increase in the quality and efficiency of diabetes footcare, it is likely that the cost of ulceration and amputation care for people with diabetes will rise substantially, both in absolute terms and as a proportion of total NHS spending.

Given the high cost of diabetic footcare, and the continuing increase in diabetes prevalence, it is likely that the provision of higher quality cost effective footcare for people with diabetes, and early intervention to avoid complications, are likely to play an important part in attempts to improve the overall quality and productivity of the NHS in the coming years.

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## References

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