What impact will new diabetic foot guidelines have on the delivery of care?

Putting Feet First (www.wounds-uk.com/woundcare/downloads/diabetes_uk_2.pdf) has recently been published by Diabetes UK and a number of partnering organisations to provide guidance for the commissioning of specialist services for the management and prevention of diabetic foot disease in hospitals. One of the key aims of the document is to provide a template for best practice in the management of acute onset or deteriorating disease of the diabetic foot and ultimately reduce the need for amputation. The document highlights the need for partnership working across the NHS to ensure continuity of care for people with diabetic foot disease. This month's debate will focus on the issues affecting this patient group and examine some of the issues which led to the guideline being produced. JT

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Why were the guidelines developed?

CM: The rising prevalence of diabetes mellitus represents a major medical and public health problem in the UK. Foot complications associated with diabetes are among the most serious and the most costly complication of diabetes (Apelqvist et al, 2008). Diabetic foot disease can have devastating consequences for those affected, for instance severe foot deformities, chronic foot ulceration, infection and lower limb amputation, all of which can significantly reduce health-related quality of life. Diabetic foot disease also poses substantial monetary costs for health services. Many foot problems are preventable with appropriate management strategies and, therefore, there is a need for standardised care and access to specialist foot care services across the UK. Previous guidelines on the diabetic foot (i.e. National Institute for Health and Clinical Excellence [NICE], 2004), have primarily focused on the management of the diabetic foot in primary care or in outpatients settings. There is a need for guidelines that specifically outline care pathways for the management of foot disease in hospitals and define the services that should be available for individuals with diabetic foot disease who are admitted to hospital.

PC: There are as many as 2 million people in the UK diagnosed with diabetes (Diabetes UK, 2006). Of these, 300,000 (15%) will develop a foot ulcer and of these 45,000 (15%) will end up with an amputation in any one year. With an ageing population these figures are expected to continue to increase. The challenges currently faced by diabetic foot care services will be intensified by this increase in both diabetes and an ageing population.

Diabetes-related foot complications are a major drain on the NHS. Diabetic foot ulcers and resulting amputations cost up to £502m per year. Despite these depressing statistics there remains disparity in service provision across the UK (Chadwick et al, 2007). *Putting Feet First* gives us the pathways of care for people with new or deteriorating foot disease and when linked with *The National Minimum Skills Framework for Commissioning of Foot Care Services for People with Diabetes* (Foot in Diabetes UK et al, 2006) presents an opportunity for us all to drive up the standards of care for these patients.

ME: Up to 100 people a week in the UK have a limb amputated as a result of diabetes (Diabetes UK et al, 2009). We and others have shown that multidisciplinary foot care can reduce amputations by 50% (Edmonds et al, 1986). The guidelines were thus developed to achieve suitably high standards of care for patients presenting with acute foot problems. Early diagnosis and early intervention of diabetic foot disease by a multidisciplinary service can achieve surprisingly good results. The aim of the guidelines was to set down the benchmarks of what care should be readily available to diabetic patients who present with acute problems in secondary care.

Furthermore, patients with diabetes and neuropathy are susceptible to pressure lesions especially on the

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heel while they are in hospital. These guidelines describe standards of care of the feet of patients with diabetes who are admitted to hospital for unrelated problems so as to avoid the onset of foot disease.

The overall aim of these guidelines is to inform the commissioning of specialist diabetic foot services for both the treatment and prevention of diabetic foot disease in hospital.

What would you say are the key problems with caring for this patient group?

CM: There are a number of key problems that can result in disjointed care for individuals with diabetic foot disease. First, it is imperative that services within primary care and secondary care settings work in synergy. Ideally there should be care pathways in place that allow rapid referrals between the specialist foot care teams in primary and secondary care. This would give people with acute foot problems rapid access to the specialist team in secondary care, and when they are discharged a referral should be made back to the primary care team. This would ensure a more seamless service and continuity of care. However, services differ across the UK and in some locations this does not happen, or cannot happen due to staffing and resource issues.

Second, following admission, a significant number of people develop foot problems that could have been avoided. Foot care can be seen as a lower priority compared with other comorbidities that the patient may present with, particularly by non-specialist healthcare professionals. As a result, the patient's feet may be neglected. The new guidelines advocate risk assessment and that appropriate preventive measures should be implemented while the individual is in hospital and on discharge.

PC: The main problems are:

- The failure of healthcare systems to provide joined-up care which leads to barriers to seamless care
- A lack of knowledge and awareness by general healthcare practitioners of the importance of the condition
- A rising and ageing diabetes population who will require care from a relatively decreasing pot of money.

ME: Three pathologies come together in the diabetic foot: neuropathy, ischaemia and infection. This leads to the diabetic foot syndrome which is complex and has caused problems for every healthcare system in the world. Every break in the skin of the diabetic foot is a portal of entry for bacteria and has the potential for disaster. Patients with diabetic foot problems often have concomitant and overwhelming comorbidities.

These patients need a unique forum to look after them. Treatment is best carried out in multidisciplinary foot clinics that are hospital-based with well-defined referral procedures, an emergency service, active ulcer treatments including casting with readily available surgical debridement, revascularisation and orthopaedic reconstruction. They act as a first aid centre for patients who attend in an emergency without an appointment. This is a crucial part of their role as diabetic foot problems can progress extremely quickly.

The key problem is that such multidisciplinary care is not readily available to all diabetic patients. For such multidisciplinary care to succeed hospital trusts must ensure that diabetic patients have access to emergency same-day care, aggressive treatment of infection, a vascular service which is capable of providing at short notice Duplex Doppler examinations, interventional techniques such as angioplasty, stenting and complex distal bypass procedures, and a casting and orthopaedic reconstruction service for patients with Charcot foot.

One possible suggestion to make such care universally available is that each trust should have a rapid-access diabetic foot clinic but there should also be regional diabetic foot centres, just as there are now trauma centres and stroke centres that can provide the expertise and enthusiasm necessary for complex vascular and orthopaedic interventions.

Why are diabetic foot problems underestimated by healthcare professionals and society?

CM: There may be a number of reasons why diabetes-related foot problems are often underestimated. About 45–60% of people with diabetes have sensory neuropathy (Frykberg et al, 2006). Consequently, many patients do not feel pain and they may be unaware of foot problems such as infection and ulceration. Pain is a key driver for individuals to seek

medical attention, and in the absence of this sensation the severity and seriousness of foot problems may be underestimated by the patient and their carers/family members. With regards society as a whole, there are few national initiatives that are designed to raise awareness of diabetic foot disease across the general population so many people remain ignorant of its serious implications.

In health care the extent of foot problems and the financial implications of diabetic foot disease may be concealed across different budgets (for instance primary care, medical and surgical), so the magnitude of the costs to the health service may not be fully realised and therefore the prevention and management of diabetes-related foot disease may not be given the priority it requires. Furthermore, many non-specialist healthcare professionals may not have received sufficient training in diabetes-related foot disease and they may be unaware of the seriousness of diabetes-related foot problems.

PC: Foot conditions are generally seen as unglamorous within the medical fraternity. The foot usually remains covered and anecdotes suggest that even when screening for diabetic foot complications some practitioners fail to remove the patient's shoes and socks! As Jeffcoate (2009) commented, 'It is hard to remain fired up about a condition that is complex in its aetiology, for which there are no clear evidence-based protocols for management and which is often depressingly unresponsive to intervention'. Within society there is an ignorance regarding the causality, pathology and potential outcomes of diabetic foot ulcerations (Chadwick, 2001). The reasons for this are not clear but may be related to a lack of general awareness of diabetic foot disease in the population and a failure of healthcare providers to raise awareness.

ME: Diabetic foot disease is often a 'silent' disease. It is not appreciated that neuropathy leads to a devastating loss of protection of the lower limbs and the rest of the body. Infection does not lead to tenderness or fever, and gangrene may be completely painless. The patient is not aware of trauma to the foot because of peripheral neuropathy. As the patient has no warning signs of pathology, he is tricked into 'feeling' that all is well. Nevertheless, pathology progresses rapidly and the end stage of tissue death such as extensive gangrene is quickly reached. Furthermore, healthcare professionals and society are also duped by the apparent lack of warnings leading to a delay in diagnosis and treatment.

When pathology becomes so critical that symptoms do become manifest, they may not be appreciated by the patient — who may well be poor, elderly and have a low socioeconomic status and may be unable to access the healthcare they deserve — nor by a society which does not fully understand diabetic foot disease.

Are the recommendations from the Darzi report, *High Quality Care for All: NHS Next Stage Review* (2008), considered in the new guidelines and how can they be incorporated?

CM: The new guidelines address some of the key issues that were raised in Lord Darzi's report. The guidelines clearly state that there is a need to improve education for staff which will in turn improve quality of care. This notion is supported by Apelqvist et al (2008) who advocate periodic education for all healthcare professionals involved in the management of the diabetic foot. The guidelines state that the potential threat of diabetic foot disease should be recognised by non-specialist healthcare professionals and the identity of the specialist team must be known by non-specialist practitioners to ensure rapid referral. This addresses one of the recommendations made by Lord Darzi, which advocates mechanisms that will improve access to healthcare and health promotion.

However, the key challenge is not so much how the recommendations from the Darzi report can be incorporated into the guidelines, but how they can be implemented in clinical practice. Despite the dedication of many staff to deliver high quality care without additional funding and resources, the fact remains that many areas remain under-resourced and understaffed. Staff training opportunities may be restricted as trusts are unable to release staff to attend training events, or they are unable to meet the costs of such training events.

PC: This guideline reflects the principles of Lord Darzi's report. Each dimension of quality is visible. Patient experience is demonstrated in the standards that patients can expect within the first four hours, 48 hours and continues after admission to

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CM: *A patient-centred approach encourages patients to take responsibility for their own foot health and involves them in their own treatment planning.*

hospital. The inclusion of the patient information card and the requirement to share accurate information with family and carers will enhance the patient journey. Patient safety should be improved as recognition and management of problems of diabetic foot disease are highlighted. Clinical effectiveness should be increased as evidence-based guidelines underpin the patient pathway. The ethos of Darzi will have an impact on the three strategies which underpin the implementation of the guidance: a workforce and training strategy, communication and implementation strategy which will use technology to underpin its delivery, and an audit component which will monitor the outcome and processes identified within the document.

ME: The guidelines encompass the principles of the Darzi report in that it promotes high quality care of diabetic foot patients in the NHS and emphasises the importance of the measurement of effectiveness of specialist foot care.

In the review Darzi states that, 'patients and the public were very clear that they had zero tolerance for variations in access to the most effective treatments. As the NHS becomes more personal, patients and the public want to be assured that the most clinically and cost-effective treatments are available everywhere'. The guidelines should encourage universal high standards of care and all diabetic patients should have access to complex interventions, such as distal angioplasty, distal bypass and Charcot foot reconstruction.

The Darzi report further states that, 'Personalising services means making services fit for everyone's needs, not just those of the people who make the loudest demands. When they need it, all patients want care that is personal to them. That includes those people traditionally less likely to seek help or who find themselves discriminated against in some way.' Patients with diabetic foot problems who often present with marked sepsis and undergo long hospital admissions can fall into this category.

Who should assume overall responsibility for the care of diabetic foot patients, and why?

CM: It has long been recognised that the effective management of the foot in diabetes relies on the skills of the specialist multidisciplinary team (Edmonds et al, 1986). The new guidelines advocate the effective integration of healthcare professionals who possess the skills for proper assessment and treatment of the foot in diabetes, even going on to define responsibility for each phase of care. In my opinion a team approach is essential to ensure that appropriate management strategies are implemented. No one healthcare professional is equipped with the necessary skills to effectively address all aspects of management. A patient-centred approach is also essential to try to empower the patient to take responsibility for their own foot health. In terms of overall responsibility for the care of patients with diabetic foot disease, there may be merit in having one lead person who can co-ordinate care. This person should be sufficiently skilled in the management of the foot in diabetes rather than be from a specific medical discipline.

PC: There should be an integrated foot care team. Within the area I work there is a diabetic foot steering group. This has representation from podiatrists, district nurses, diabetologists, tissue viability nurses and ward nurses. This group provides leadership and develops guidelines and education to support seamless management of patients across traditional boundaries. As the guideline states, 'effective management of disease requires effective integration of different healthcare professionals'.

ME: All diabetic foot patients have neuropathy and many have nephropathy. These patients have impaired metabolic control because of their diabetes. They have impaired electrolyte and water homeostasis because of nephropathy. They also lose the fine control of crucial body systems such as the cardiovascular, gastrointestinal and urogenital systems because of neuropathy. Patients with diabetic foot problems are therefore complex and vulnerable. Data from the Eurodiale study reflect the severity of diabetic foot disease, particularly in older people. Many patients have a poor health status and the majority are unable to take care of themselves. The most complicated foot is observed in the patient with multiple comorbidities (Prompers et al, 2007).

Of course these patients need multidisciplinary care from the skills

of podiatrists, orthotists, nurses, diabetologists, vascular surgeons, interventional radiologists and orthopaedic surgeons. They also need holistic, integrated and coordinated care. It is possible for the vascular or orthopaedic surgeon to take on overall responsibility for this, but the expert work of the surgeons as well as podiatrists, orthotists and nurses may benefit from the diabetologist taking ultimate responsibility to act as a gatekeeper, patient advocate, as well as physician to the patients. Whoever it is, they must have enthusiasm, drive and passion for the diabetic foot and compassion for the diabetic foot patient.

Is there a strong prevention message in the guideline and how can this be used to influence patient behaviour?

CM: One principle within the new guidelines suggests that people with active disease of the foot in diabetes (and where appropriate their families) should be at the centre of the decision-making process. A patient-centred approach encourages patients to take responsibility for their own foot health and involves them in their own treatment planning. The proposed information card for patients is particularly useful and equips the patient with the knowledge of what they should expect as a minimum, if they are admitted into hospital with a foot problem.

PC: Within the guideline there is an information card for people with diabetes to inform them of the standards of care they should expect. This is the size of a credit-card and would fit into people's wallets/purses. It provides them with contact details of NHS professionals involved in their care. It gives a strong message about seeking medical advice for any new foot problem. It also identifies ways for the patient to protect their feet. These include attending annual foot screening and the education available to prevent problems.

ME: The report stresses the prevention of new foot disease in patients admitted to hospital for unrelated reasons. It notes that a significant number of people with diabetes develop an avoidable foot problem during their hospital stay. It indicates that all hospitals should have a defined policy to minimise the advent of new-onset foot disease, especially of pressure ulcers in those who are immobilised. This policy should include special reference to the prevention of foot disease in patients with established renal failure. Primarily this should be determined by a change in the behaviour of healthcare professionals.

The report also stresses that after the management of successfully treated foot disease, it is important for the patient to seek help early if they develop new disease, thus ensuring appropriately urgent management of new acute disease.

What is the next step for clinical settings that currently have a disjointed approach to caring for diabetic foot emergencies?

CM: It is important that clinical settings review their current services for diabetic foot emergencies and establish whether their current provision meets the *National Minimum Skills Framework for Commissioning of Foot Care Services for People with Diabetes* (Foot in Diabetes UK et al, 2006) and the new guidelines for *Commissioning Specialist Services for the Management and Prevention of Diabetic Foot Disease in Hospitals* (Diabetes UK, 2009). It is also important to review current pathways for referral to and from primary and secondary care and — if not already established — set up a specialist foot care team. Furthermore, education on diabetic foot disease and raising awareness of the new guidelines is paramount to the successful implementation of the guidelines.

PC: The development of a local implementation group to create a strategy to put into practice the guidance locally. Initially it would need to undertake a baseline audit and review local practice as it stands, identifying areas of weakness and methods to improve service delivery.

ME: It is important to form a 'multidisciplinary foot care team' with the aim of providing rapid and effective treatment for people who develop lower-limb complications as the *National Service Framework for Diabetes* (Department of Health, 2001) has indicated. The multidisciplinary foot care team should consist of highly trained specialist podiatrists and orthotists, nurses with training in dressing diabetic foot wounds, and diabetologists with expertise in lower limb complications. Vascular and orthopaedic surgeons should be invited to join the team.

ME: *Diabetic foot infections are responsible for tissue necrosis in the diabetic foot and should be actively treated.*

PC: *Good patient information and close monitoring are essential to minimise the risk of developing this dreadful infection.*

Is the diabetic foot emergency one case when antibiotic prescribing must take precedence over the need to reduce *Clostridium difficile*?

CM: There is a need for all healthcare professionals to undertake appropriate measures to reduce the incidence of *C difficile*. In addition to standard precautions including hand-washing, there is also a need for judicious prescribing of antibiotics by medical personnel. Foot infection is a common and serious complication of diabetes that can prove to be limb, or even life-threatening, so the prompt recognition and management of diabetic foot infection is paramount. Any person presenting with a diabetic emergency requires a thorough assessment by the specialist multidisciplinary team who should assess the foot for signs of infection. If infection is suspected, timely management strategies must be instigated, including the prescription of appropriate antibiotics.

PC: A foot infection in a person with diabetes is often the final causal pathway to amputation. The need for aggressive antibiotic therapy cannot be understated. The poly-microbial nature of chronic foot ulceration with commonly gram positive cocci mixed with gram negative and anaerobic bacteria requires the use of antibiotics which are high risk for the development of *C difficile* such as clindamycin and ciprofloxacin. When these are used the need for good prescribing practice, reducing risk factors where possible, good patient information and close monitoring are essential to minimise the risk of developing this dreadful infection.

ME: Diabetic foot infections are responsible for tissue necrosis in the diabetic foot and should be actively treated. However, while recommending the aggressive use of antibiotics to treat diabetic foot infections, it is important to keep a close surveillance for side-effects, particularly vomiting and diarrhoea. If this does occur, it is advisable to stop the antibiotics, at least for a short period, to prevent the development of *C difficile* colitis. Stools should be sent immediately for culture. If *C difficile is detected,* therapy should be started immediately with either vancomycin 125mg qds orally (IV vancomycin does not treat *C difficile*) or metronidazole 400mg tds orally. Acidophilus lactobacillus tablets can also be given to help to restore the intestinal bacterial flora. We advise our patients to eat live yoghurt when taking antibiotics. In severe cases of *C difficile* infection, there is abdominal pain associated with diarrhoea, a raised white blood cell count and fever. Patients may need hospitalisation and intravenous fluids. A useful diagnostic investigation is an abdominal computer tomography (CT) scan which will reveal loops of oedematous large bowel and an early surgical opinion should be sought. WUK

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