

Developing an integrated care pathway for the diabetic foot

Paul Chadwick

Wherever there is good evidence about the beneficial nature of a particular sequence of healthcare interventions, it is necessary to put into place organisational arrangements that will maximise the chance that the interventions will be performed and the arrangements are effective. Integrated care and the sharing of appropriate information is particularly important in the management of the diabetic foot to provide optimum care to this vulnerable group of people. This article describes the challenges facing the healthcare service regarding diabetic foot complications and the guidance and recommendations that currently govern its management. As an example, the development of an integrated foot care service in Salford is discussed.

Diabetes currently affects more than 246 million people worldwide and is expected to reach 380 million by 2025. In the UK alone, as many as 2.5 million people are diagnosed with diabetes (Diabetes UK, 2009).

Diabetes-related foot complications are a major drain on the NHS. Each year £600 million is spent on diabetic foot problems and £252 million on amputations. Each amputation costs around £13 500 (Limbless Association, 2009).

The National Minimal Skills Framework (NMSF) (Foot in Diabetes UK [FDUK] et al, 2006) highlighted competencies required from practitioners dealing with foot disease within diabetes. In addition to the required competencies, there need to be structures or pathways of care enabling professionals to apply their knowledge and skills consistently and efficiently. There also needs to be adequate

information for people with diabetic foot conditions to better enable self-care.

Integrated care

Integrated care pathways are structured and formalised agreements made within the multidisciplinary, multi-centred, shared care team. Or, as the National Pathways Association (1998) describes it, integrated care determines locally agreed, multidisciplinary practice that, where available, is based on guidelines and evidence for a specific service user group.

Donohoe et al (2006) describe a journey they took towards integrated care. At the start of their project they recognised sub-optimal understanding of risk status, imperfect conception of high-risk foot status, unclear referral patterns and a lack of knowledge among primary care staff and people with diabetes. They developed a model of integrated diabetic foot care, for identification and clinical

Article points

1. Integrated care pathways are structured and formalised agreements made within the multidisciplinary, multi-centred, shared care team.
2. The multidisciplinary foot care team is very reliant on the other members of the wider team (such as those in primary care) preventing problems and recognising when problems require further investigation and referring the individual to a specialist.
3. The process of integrating care begins by developing communications to facilitate joint working on policies and protocols and sharing experiences.

Key words

- Audit
- Diabetic foot
- Integrated care
- Multidisciplinary team

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Page points

1. For any healthcare system, an integrated system of care needs to be anchored by four core components: communication, local guidelines, education and systematic clinical audit.
2. A common core database containing records that can be accessed by people with diabetes is key when managing the diabetic foot to optimise the clinical outcome – particularly when dealing with an ulcerated foot.
3. National guidance, such as NICE (2004) and the National Minimum Skills Framework (Foot in Diabetes UK, 2006), should be incorporated into the development of guidelines that reflect the local health setting and provide easy-to-follow processes with built-in thresholds for referral on all aspects of diabetic foot care.

management of the high-risk foot, centred on primary care-based annual diabetes review. This approach is reflected in the NHS' current aim for the provision of diabetes services with a move towards a community-based service, where individuals can access the appropriate healthcare professional for their needs (Department of Health [DH], 2005). This philosophy underpins the development of an integrated foot care team and relies on merging the boundaries of primary and specialist care.

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Communication

A common core database containing records that can be accessed by people with diabetes is key when managing the diabetic foot to optimise the clinical outcome – particularly when dealing with an ulcerated foot. Middleton et al (1997) describe a patient-held communication tool that documents each encounter an individual had with a healthcare professional, providing accurate and clear communication of, for example, an individual's ulcer. Using this kind of system enables better monitoring of the individual's progress and facilitates clinical audit as all the information is stored in an accessible way.

The developing information technology, supported by the *NHS Connecting for Health* agenda provides an opportunity for healthcare systems to integrate an electronic patient record to their care pathways. This could potentially provide relevant, transferable data between primary and secondary care settings, such as foot screening, blood monitoring, bacteriology and radiology. In the future it is possible that individuals receiving treatment could access a web-based system that could also be integrated into this model and in accordance with the DH work on personalised care planning (Graffy et al, 2009).

Local guidelines

National guidance, such as NICE (2004) and the National Minimum Skills Framework

(NMSF) (FDUK et al, 2006), should be incorporated into the development of guidelines that reflect the local health setting and provide easy-to-follow processes with built-in thresholds for referral on all aspects of diabetic foot care.

Guidelines should be systematically developed recommendations to assist practitioners and the decisions of people with diabetes (Lohr and Field, 1992). They are viewed as a summary of the best available evidence together with recommendations for practitioners (Davis and Taylor-Vaisey, 1997). It has been acknowledged that evidence-based decision-making using clinical guidelines may reduce practice variation, contain costs and ultimately increase the effectiveness of clinical practice (Woolf, 2000; Bedregal and Ferlie, 2001). Guidelines should cover all aspects of foot care, including foot screening, the at-risk foot, orthotics and footwear, and therapy. Guidelines should also have local ownership and be supported and regularly reviewed by the localities' foot steering group.

Clinical audit

For any service delivery model or care pathway to monitor its progress towards standards, such as the St Vincent's Declaration (1990) or the National Service Framework for diabetes (DH, 2001), and improve the care it provides, the system of care needs to be subjected to continuous clinical audit. An audit should review the number of people receiving foot screening, the number of new ulcers in a year, the number of recurrent ulcerations, the duration of ulcer episodes and the number of amputations.

Education

Central to any system of care is the competencies of the healthcare professionals involved in the various levels of management of the diabetic foot. As discussed earlier, the NMSF (FDUK, 2006) identified essential core competencies required by practitioners. The drivers of *Standards for Better Health* (DH, 2004a) and the *Knowledge and Skills Framework* (KSF; DH, 2004b) should be used to identify where individual healthcare professionals fail to meet the competencies required for their

job role and a personal development plan instigated to remedy any deficiencies. As a healthcare system there should be overarching interprofessional education based on core themes such as risk identification, referral pathways and raising awareness.

The value of interprofessional education has been demonstrated in other health fields by Hammick et al (2007) in a Cochrane Review which stated that “interprofessional education offers a possible way to improve collaboration and patient care”.

Another valuable tool in educating the whole healthcare system is to retrospectively analyse situations that did not go well. In the author’s experience, an amputation is the complication that people with diabetes and foot disease fear most. Reviewing individuals’ case histories on their journey to amputation allows the team to review the system of care as a whole. This process is described by Chadwick and Young (2006) as the critical event analysis.

Multidisciplinary foot care team

It has long been recognised that a limb-threatening foot condition is best managed by a multidisciplinary team (MDT) approach (Edmonds et al, 1986; Larsson et al, 1995; Van Houtum et al, 2004). As foot conditions develop, the need for collaborative and coordinated care becomes greater.

In many cases, arranging a joint clinic to make MDT management decisions more than once per week would be challenging, if not impossible. *Putting Feet First* (NHS Diabetes and Diabetes UK, 2009) has provided the framework for dealing with emergency and urgent situations in secondary care, including out-of-hours staff on-call and in accident and emergency departments.

It is the role of the multidisciplinary foot care team (MDFCT) to be responsive to these problems as they arise. This team should not be seen in isolation but as part of the integrated foot care team that stretches across traditional healthcare boundaries. The MDFCT is very reliant on the other members of the wider team (such as those in primary care) preventing problems, recognising when problems require further investigation and referring the individual to a specialist. The MDFCT also needs to be able to return people to primary care once a crisis has been resolved.

Conclusion

The increasing incidence of diabetes and the subsequent increase in foot disease is testing every healthcare system. The triad of pathologies in the diabetic foot (neuropathy, ischaemia and infection) can be overwhelming and it is key that proportionally more healthcare professionals are involved in the care of the diabetic foot to prevent an epidemic of amputations.

Page points

1. It has long been recognised that a limb-threatening foot condition is best managed by a multidisciplinary team approach.
2. *Putting Feet First* (NHS Diabetes and Diabetes UK, 2009) has provided the framework for dealing with emergency and urgent situations in secondary care including out-of-hours staff on-call and in accident and emergency departments.
3. The multidisciplinary foot care team (MDFCT) should not be seen in isolation but as part of the integrated foot care team that stretches across traditional healthcare boundaries.
4. The MDFCT is very reliant on the other members of the wider team (such as those in primary care) preventing problems, recognising when problems require further investigation and referring the individual to a specialist.

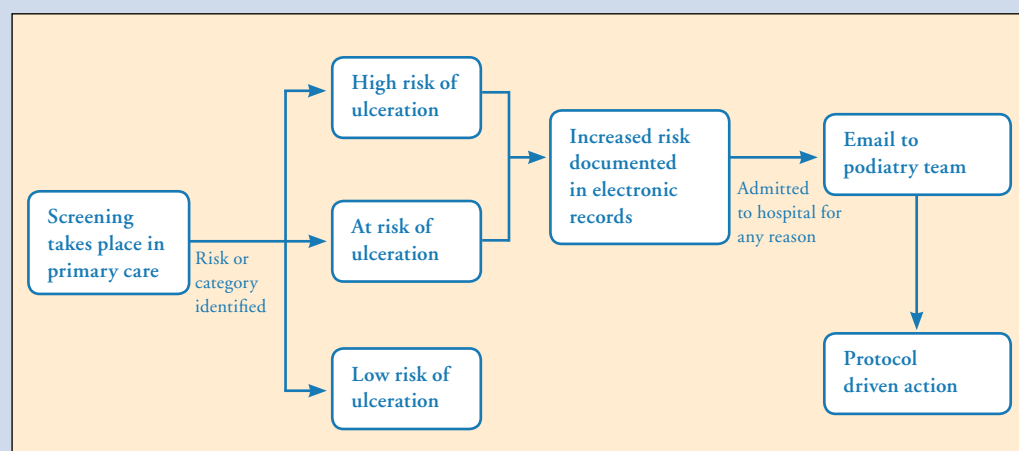


Figure 1. An example of an integrated care pathway for diabetic foot risk assessment and treatment in Salford. A new system is being piloted that allows people at increased risk of ulceration to be documented in primary care within an electronic record database. When such a person is admitted to the local acute hospital for any reason, an email alert is sent to the podiatry team who can take appropriate action to reduce the risk of a them developing a foot ulcer after admission.

Page points

1. By developing an integrated approach we can more successfully manage our diabetes population. The focusing of resources based on risk stratification and away from the traditional model of treating all people with diabetes uniformly is an important step.
2. Failure to produce an integrated foot care team will result in the continuation of current uncoordinated care.

In the present economic climate, further investment is becoming less likely. However, by developing an integrated approach we can more successfully manage our diabetes population. The focusing of resources based on risk stratification and away from the traditional model of treating all people with diabetes uniformly is an important step. An integrated foot care team is a natural progression from shared care, but at this present time is not an easily achievable goal. It requires leadership and a high level of commitment to joint working, which is more difficult in an era of foundation Trusts and “competition”. The process begins by developing communications to facilitate joint working on policies and protocols and sharing experiences.

Failure to produce an integrated foot care team will result in the continuation of current uncoordinated care. This is likely to be

clinically and economically inefficient and may also produce second-rate outcomes for people with diabetes. ■

Box 1. An example of successful audit of Salford’s integrated foot care team.

The paper-based system as described by Middleton et al (1997) has been used in Salford for over 10 years. This has allowed the system of care to be subject to continual clinical audit.

The system was measured against locally developed standards. Deficiencies were noted and an action plan was developed. For example, in 2002 it was recognised that despite a reduction in the number of above-ankle amputations, the number of new ulcers was continually increasing. Although this could be explained, in part, by the increasing diabetes population, it also indicated that the system of care had strengths in preventing people who developed ulcers requiring amputation. However, there was weakness in the prevention of the initial ulceration.

A strategic plan was initiated to try and develop a district-wide foot screening service to identify people at increased risk of developing foot ulceration and referring them to a foot protection programme. National drivers, such as NICE (2004) and the Quality and Outcomes Framework, helped progress the development. A reduction in ulceration was first noted in 2006, followed by a further reduction in 2007 (Figure 2). This is despite an increase in people with diabetes in the local population from around 6000 in 2002 to around 9000 in 2007 (Salford diabetes database).

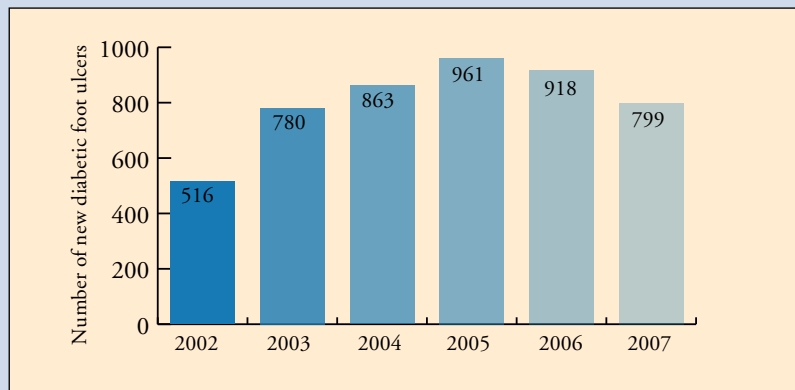


Figure 2. Number of new diabetic foot ulcers each year in Salford residents.

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