

# Diabetic foot screening: Why it is *not* assessment

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## ARTICLE POINTS

**1** Screening should have predetermined objective parameters and be supported by local protocols.

**2** Assessment is a complex process of undergoing frequent evaluation.

**3** National standards should be applied to local screening programmes where possible.

**4** Issues of consensus on screening tests need to be resolved by the professional diabetic foot community.

## KEY WORDS

- Screening
- Assessment
- Workforce development
- Guidelines

## Introduction

**The detection and management of long-term diabetes-related complications, such as the diabetic foot, are supported by the National Service Framework for diabetes (Department of Health, 2001). Frequently, detection is referred to as a screening process; however, in the authors opinion, the interchangeable use of the words screening and assessment over the years has led to a lack of clarity and focus on what people with diabetes require of healthcare workers at the point of first contact with a diabetic foot service. This article explores a number of concepts around screening and assessment while also highlighting important differences.**

**U**K National guidelines suggest that each person with diabetes should have an annual review that includes a foot examination in order to detect risk factors of ulceration (National Institute for Health and Clinical Excellence [NICE], 2004). The expected outcome of the examination is a classification of risk status and referral to an appropriate level of care. However, due to the rise in the number of people with diabetes (Diabetes UK, 2005), providing care in line with NICE guidance means that increased demands will be made on health care in terms of human resources.

### Workforce development

In order to address the predicted shortage of healthcare workers in the NHS, projects are being funded to ensure that workforce development can meet the needs of future healthcare provision (such as those described in: Department of Health [DoH], 2006a; DoH, 2006b). One of the underlying assertions of these projects is that support workers will undertake roles such as diabetic foot screening that have been traditionally performed by healthcare professionals such as podiatrists and practice nurses. It is, therefore, important to consider the different skills and competences required

by a workforce involved in delivering foot care to people with diabetes. The Care Group Workforce Team for Long Term Conditions, through the Diabetes Workforce Group, commissioned Skills for Health to describe the range of competences required to deliver diabetes services (Skills for Health, 2003). Such diabetes competences are based on the services and support that people with diabetes need irrespective of which healthcare professional provides that service, meaning that they are not role specific. From its draft form in 2002 to its launch in 2004, the Diabetes National Workforce Competence Framework underwent consultation across a broad range of professions involved in delivering diabetes care. Eventually the competence framework was evaluated in the work setting by clinicians including diabetes specialist nurses, healthcare assistants and podiatrists (Skills for Health, 2004).

Prior to the Skills for Health project, the experience and training necessary for the healthcare worker undertaking diabetic foot examination had not been described formally at a national level. However, NICE guidance (NICE, 2004) recommends that people with diabetes require a 'trained' healthcare worker to examine their feet. Part of the competence framework outlines the

competences required by the healthcare worker in order that the patient obtains the desired outcome – a risk classification – from a foot examination (Skills for Health, 2004).

The development of the foot-related part of the diabetes competences, from early draft versions to final performance criteria, is, in the author's opinion, analogous to developing an understanding of the difference between screening and assessment. For example, the draft performance criteria included competency in taking a full medical history, usually part of a patient assessment; the final criteria can be performed by an appropriately trained healthcare worker and are now often included within diabetic foot screening programmes.

Appropriate training is an essential part of developing competence. Research has identified problems with current educational models that deliver a podiatric workforce that is competent to perform a diabetes annual review (Hayes, 2005). Research prior to the publication of the NICE guidance (NICE, 2004) had identified problems in risk classification of the diabetic foot among a group of community podiatrists (Fletton et al, 1995). Such research lends support to the theory that screening is a skill that can be acquired separately from the clinical assessment integral to a degree in podiatric medicine. Fry and colleagues (1990) advocate that screening is a specialised procedure in which staff should be trained and have a clear understanding of its importance; this should extend to the supporting policies and protocols.

### Screening

Historically, the definition of medical screening was 'the detection of occult disease or defect by a test' (Hart, 1992). Recently, the National Screening Committee (DoH, 2000) proposed a revised definition:

***'A public health service in which members of a defined population, who do not necessarily perceive they are at risk of, or are already affected by, a disease or***

***its complications, are asked a question or offered a test to identify those individuals who are more likely to be helped than harmed by further tests or treatment to reduce the risk of disease or its complications.'***

It is the common use of the word 'test' that reinforces screening as a definite process and keeps it distinct from assessment. For screening programmes the 'test' must be sensitive, specific and predictive (Hudson et al, 1988). National and international guidelines recommend the 10g monofilament as a test for diabetic sensory neuropathy (NICE, 2004; International Working Group on the Diabetic Foot, 1999a). There are questions of reliability about this test (Booth and Young, 2000) and differing versions of instructions for use (International Working Group on the Diabetic Foot, 1999b; Perkins et al, 2001). Both factors introduce an element of subjectivity into diabetic foot screening. In addition, other diabetic foot screening parameters are sometimes selected in order to identify a tendency to develop disease rather than to detect established disease, for example foot deformity and HbA<sub>1c</sub>. Choosing a cut-off level at which one intervenes to modify these risk factors increases subjectivity in screening programmes. However, screening requires that the screener is working to agreed aims and objectives and collecting objective data that can be directly measured or observed, i.e. tested (Fry et al, 1990). These objective versus subjective parameters contribute to the confusion surrounding screening as opposed to assessment.

### Screening versus assessment

#### Primary screening

Screening is a primary function and if a 'fault' is detected it should, in the author's opinion, lead to a secondary assessment concerned with more specialist investigation (Hart, 1992). Screening is an opportunity to reduce the risk of disease or complications.

When people with diabetes are offered screening they should be made aware that a positive test does not guarantee

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**3** It is the common use of the word 'test' in this revised definition that reinforces screening as a definite process and keeps it distinct from assessment.

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**1** Assessment involves a combination of interview, observation and testing by the clinician with the aim of establishing a diagnosis and planning the management of the disorder.

**2** Screening is a continuous activity and undergoing repeated screening tests at predetermined intervals is termed surveillance.

**3** For those who are free from disease (i.e. those at low risk) the outcome of screening is to remain within the surveillance programme.

**4** Assessment and reassessment of patients may be repeated on an ad hoc basis dependent on the clinical judgement of the healthcare professional.

**5** Ultimately, the expected outcome of assessment for the service user should be the resolution or at least modification of the presenting condition.

a cure (National Screening Committee, 2006). Usually individuals expect that healthcare workers will take some action to relieve or improve their health problem (Merriman, 2002). However, screening itself does not guarantee a diagnosis or management plan. For the screener, decision-making is limited by predetermined cut-off points and by the objectivity of the gathered data.

### Patient assessment

On the other hand, assessment involves a combination of interview, observation and testing by the clinician with the aim of establishing a diagnosis and planning the management of the disorder (Merriman, 2002). In the context of diabetic foot disease, therefore, assessment should be a secondary task concerned with further specialist investigation of the problem detected upon screening. During the assessment interview, subjective data will be collected from information that the patient shares with the podiatrist (Hood and Leddy, 2003). Such information will include details of current medication, medical, family and social histories. Although based on learned theory, the ability to synthesise and evaluate subjective information such as patient needs and preference, as well as objective data, means that making a diagnosis is an artistic as well as scientific process (Higgs et al, 2001): it may be complex and not always straightforward. Further information gathered by observations or tests of vascular, neurological and mechanical or functional status will be used to make a clinical decision regarding a treatment plan. Clinical decision-making may involve generating hypotheses and pattern recognition (Elstein and Schwartz, 2000). Treatment plans and hypotheses may be revised in the light of new information or interpretation.

### Outcomes of screening and assessment

Screening is a continuous activity and undergoing repeated screening tests at predetermined intervals is termed surveillance (Hart, 1992). NICE recommends that patient outcomes

from screening should be a classification for risk of developing foot ulceration (NICE; 2004). For those who are free from disease (i.e. those at low risk) the outcome of screening is to remain within the surveillance programme. Referral from a screening or surveillance examination should be to a predetermined programme of care (Fry et al, 1990; Hart, 1992), so prior agreement of referral pathways is important. In diabetic foot screening this programme of care may be influenced by national guidelines (such as: NICE, 2004).

Assessment and reassessment of patients may be repeated on an ad hoc basis dependent on the clinical judgement of the healthcare professional. Assessment or reassessment will involve evaluation of any change in symptoms or interventions to date and will lead to a management plan tailored to the individual; so, taking effective action depends on the healthcare professional's ability to identify and analyse the problem and its related factors (Higgs et al, 2001). Ultimately, the expected outcome of assessment for the service user should be the resolution or at least modification of the presenting condition. Where this is not possible, for example in long-term conditions such as diabetic foot disease, outcomes may be directed more towards adaptation or coping (McFarland, 1997). Patient expectations may also influence the outcome of an assessment (Ersser and Atkins, 2000). Conversely, patients or the clinical decision-making skills of the practitioner should not influence screening outcomes.

### Implementing screening programmes

#### Foot screening roles

When designing systems and tools for diabetic foot screening it is useful to consider the criteria described by Wilson (1965) and further developed by Hudson and colleagues (1988; see *Table 1*). These criteria break down the screening process into:

- disease
- screening test
- early intervention.

However, the skill-mix of the workforce providing care should be as important a consideration as the programme itself (Fry et al, 1990). Clearly, screening and assessment can be identified as distinct processes (Table 2 shows some distinct differences between the two). Clinical decision-making and diagnostic skills are unnecessary for primary screening. It does not make economic sense to provide such an expensive human resource at this stage of disease detection. Certainly, it confounds the inexpensive testing recommended by Hudson and colleagues (1988).

There are many examples of generic workers or assistant grades performing diabetic foot screening (National Diabetes Support Team [NDST], 2006). Similar roles have been evaluated and show that the quality of foot screening is equitable with professional grades of staff (Roland et al, 2004). One of the advantages of non-podiatrists doing the screening is that the podiatrist's time may be used more effectively; for example, by providing secondary assessment when neuropathy or peripheral arterial disease has been detected.

The majority of the podiatry profession support the development of the podiatry assistant role to allow podiatrists to make better use of their time and skills (MacDonald and Capewell, 2001). In one example, where there is a diabetes specialist podiatry assistant role, podiatrists provide a second-level foot risk assessment for those referred from a primary screening programme performed by primary care staff (Holland et al, 2000). Ultimately, podiatrists' skills could be utilised in foot protection programmes.

**Quality assurance**

The gold standard for a screening programme is to meet the rigorous criteria described by the National Screening Committee (DoH, 2000). One screening model from diabetes care that has attained national recognition is the Retinal Screening Programme (National Screening Committee, 2004). Some of the benefits for staff involved in this programme have been a nationally

**Table 1. Screening criteria as described by Hudson et al (1988).**

<b>The disease:</b>	<ul style="list-style-type: none"> <li>Must have a definite effect on quality of life.</li> <li>Must affect substantial numbers of people.</li> <li>Must have a natural history that is well understood.</li> <li>Must have an asymptomatic period during which early detection and intervention reduce morbidity, mortality or both more than when compared with later intervention.</li> </ul>
<b>The early detection test:</b>	<ul style="list-style-type: none"> <li>Must be sensitive, specific and predictive.</li> <li>Must be safe.</li> <li>Must be inexpensive. Follow-up costs for further evaluation should be considered.</li> <li>Must be easy to administer.</li> <li>Adequate human and equipment resources should be available.</li> <li>Must be acceptable to healthcare providers and service users.</li> </ul>
<b>Early intervention:</b>	<ul style="list-style-type: none"> <li>Must be more effective than late intervention.</li> <li>Must have benefits that outweigh risks.</li> <li>Resources must be available for follow-up diagnostic or therapeutic intervention if required.</li> <li>Must be acceptable to healthcare providers and service users.</li> </ul>

recognised qualification and parameters for achieving and maintaining competence. The National Screening Committee (2004) recommends that, in order to set up a successful national screening programme, the requirements include: a national champion (an enthusiastic and highly committed individual from any background willing to lead the research on the anticipated screening programme); the involvement of people with diabetes; and accreditation of screeners for attaining and maintaining competence. For the service user, the benefits would be integral quality assurance of individual practitioners and the programme as a whole (DoH, 2000).

**Conclusion**

The development of non-role-specific workforce competences raises questions of who should be screening for the diabetic foot. Should podiatrists



**Table 2. Some, in the author's opinion, distinct differences between screening and assessment.**

Screening	Assessment
Detects early disease	Establishes a diagnosis
Involves tests that have predictive value and an agreed cut-off point for referral	Involves clinical decision-making skills and clinical autonomy for onward referral
Requires a healthcare worker trained for competence in screening	Usually requires a healthcare professional
Does <i>not</i> involve a treatment plan	Decides on a future management plan
Patient does not influence outcome	Patient may influence outcome
Is a continuous process at predetermined time intervals called surveillance	Reassessment is patient-led depending on symptoms or response to therapy

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still be involved in primary diabetic foot screening? Would their skills be better utilised by a supervisory or management role for a dedicated foot screener? Is there a role for training and development of support workers (Webb et al, 2004) and how is it quality assured? Issues of consensus on screening tests need to be resolved by the professional diabetic foot community and screening criteria should aim for National Screening Committee standards (DoH, 2000) in order to provide our service users with a workforce that is competent to deliver a quality assured foot screening service. ■

Booth J, Young MJ (2000) Differences in the performance of commercially available 10-g monofilaments. *Diabetes Care* **23**(7):984–8

Diabetes UK (2005) *Diabetes: State of the Nations 2005. Progress made in delivering the national diabetes frameworks*. Diabetes UK, London

Department of Health (DoH; 2000) *Second Report of the UK National Screening Committee*. DoH, London

DoH (2001) *National Service Framework for Diabetes: Standards*. DoH, London

DoH (2006a) *Changing Workforce Programme*. [www.http://www.wise.nhs.uk/cmsWISE/Workforce+Themes/Into.htm](http://www.wise.nhs.uk/cmsWISE/Workforce+Themes/Into.htm) (accessed on 05.12.2006)

DoH (2006b) *Long Term Conditions Care Group Workforce Team*. [www.dh.gov.uk/PolicyAndGuidance/HumanResourcesAndTraining](http://www.dh.gov.uk/PolicyAndGuidance/HumanResourcesAndTraining) (accessed on 05.12.2006)

Elstein AS, Schwartz A (2000) Clinical reasoning in medicine. In: Higgs J, Jones M (eds.) *Clinical Reasoning in the Health Professions* (2nd edition). Butterworth-Heinemann Ltd, Oxford

Ersser SJ, Atkins S (2000) Clinical reasoning and patient-centred care. In: Higgs J, Jones M (eds.) *Clinical Reasoning in the Health Professions*. Butterworth-Heinemann Ltd, Oxford

Fletton JA, Perkins J, Jaap AJ et al (1995) Is community chiropodial/podiatric care appropriately targeted at the ‘at-risk’ diabetic foot? *The Foot* **5**(4): 176–9

Fry J, Jeffree P, Scott K (1990) *The Screening Handbook*. Kluwer Academic Publishers, Guildford

Hart C (1992) The History of screening. In: Hart CR and Burke P (eds.) *Screening and Surveillance in General Practice*. Churchill Livingstone, Edinburgh

Hayes C (2005) Clinical professional practice: a phenomenological study of teaching and learning within podiatric diabetology. *British Journal of Podiatry* **8**(2): 60–6

Higgs J, Titchen A, Neville V (2001) Professional practice and knowledge. In: Higgs J, Titchen A (eds.) *Practice, Knowledge and Expertise in the Health Professions*. Butterworth-Heinemann Ltd, Oxford

Holland E, Bradbury R, Meeking D (2000) Using a team approach to set up a diabetic foot referral pathway. *The Diabetic Foot* **3**(3): 106–10

Hood LJ, Leddy SK (2003) *Conceptual Bases of Professional Nursing*. Lippincott, New York

Hudson TW, Reinhart MA, Rose SD, Stewart GK (1988) In: Hart CR, Burke P. *Screening and Surveillance in General Practice*. Churchill Livingstone, London

International Working Group on the Diabetic Foot (IWGDF; 1999a) *International Consensus on the Diabetic Foot*. IWGDF, Amsterdam

IWGDF (1999b) *Practical Guidelines on the Management and the Prevention of the Diabetic Foot*. IWGDF, Amsterdam

Macdonald E, Capewell S (2001) Podiatry: Cinderella specialty in search of a glass slipper. *Podiatry Now* **4**(11): 518–20

Merriman LM (2002) Assessment. In: Merriman LM, Turner W (eds.) *Assessment of the Lower Limb* (2nd edition). Churchill Livingstone, London

McFarland GK (1997) Nursing Diagnosis: The Critical Link in the Nursing Process. In: McFarland GK, McFarlane EA (eds.) *Nursing Diagnosis and Intervention: Planning for Patient Care*. Mosby St Louis, Missouri

National Diabetes Support Team (NDST; 2006) *Diabetic Foot Guide*. NDST, Leicester

National Institute for Health and Clinical Excellence (NICE; 2004) *Type 2 Diabetes: Prevention and management of foot problems*. NICE, London

National Screening Committee (NSC; 2006) *What is Screening?* NSC, London

NSC (2004) *Essential Elements in Developing a Diabetic Retinopathy Screening Programme workbook 3 UK*. NSC, London

Paton CR (1992) The Economics of Screening. In: Hart CR, Burke P (eds.) *Screening and Surveillance in General Practice*. Churchill Livingstone, London

Perkins BA, Olaleye D, Zinman B, Bril V (2001) Simple screening tests for peripheral neuropathy in the diabetes clinic. *Diabetes Care* **24**(2): 250–6

Roland J, Hood J, Ellis K (2004) The Diabetes Care Technician. *The British Journal of Diabetes and Vascular Disease* **4**(4): 278–80

Skills For Health (2003) *Diabetes Competency Project Newsletter*. Skills for Health, London

Skills For Health (2004) *Diabetes National Workforce Competence Framework Guide*. Skills for Health, Bristol. Available at [www.skillsforhealth.org.uk](http://www.skillsforhealth.org.uk) (accessed 05.12.2006)

Webb F, Farndon L, Borthwick A, Nancarrow S, Vernon W (2004) The development of support workers in allied health care: a case study of podiatry assistants. *British Journal of Podiatry* **7**(3): 83–7

Wilson JMG (1965) *Screening Criteria in Teeling-Smith G Ed Surveillance and early diagnosis in general practice*. Office of Health Economics, London