Participatory action research improves podiatry care in diabetes

Susan Nancarrow

ARTICLE POINTS

1 An accurate assessment of risk of lower limb complications is important to guide treatment and education in patients with diabetes.

2 Clinician input into the design of a lower limb assessment form for patients with diabetes increases rates of adherence to podiatric foot care guidelines.

3 The layout of the diabetes lower limb assessment form is important to enhance adherence to reporting, and to prevent ambiguous results.

4 Participatory action research is a successful way to implement changes in practice.

KEY WORDS
- **Lower limb complications**
- **Podiatric care**
- **Clinical guidelines**
- **Participatory action research**

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Introduction

This study identified current levels of adherence by podiatrists to the *Australian Podiatric Guidelines for Diabetes* and used participatory action research to improve adherence to these guidelines. A retrospective audit of 30 files of people with diabetes showed low rates of reporting on vascular, neurological, biomechanical, dermatological and footwear protocols, as defined by these guidelines. Based on the results, a new clinical assessment protocol was developed. Participatory action research was used to introduce changes into clinical practice. Introduction of the new assessment instrument significantly increased reporting rates of all of the audited items, with the exception of biomechanical and footwear assessments.

Podiatrists play an important role in the maintenance of foot health and education of people with diabetes. The Australian Podiatry Association published the second edition of the *Australian Podiatric Guidelines for Diabetes* (hereafter referred to as the *Guidelines*) in 1997 (Evans and Jones, 1997). These *Guidelines* were designed, in part, to facilitate consistency in levels of patient care by podiatrists. There is, to date, no published data on the efficacy of these *Guidelines* and the level of adherence to the *Guidelines* by podiatrists.

Numerous studies have shown that physicians have poor rates of adherence to foot examinations for people with diabetes (Kenny et al, 1993). Two hospital-based studies found that <50% of people with diabetes admitted for foot problems had undergone a complete foot examination (Deerochanawong et al, 1992; Masson et al, 1992). A retrospective medical record analysis of almost 7000 randomly selected files of patients with diabetes found that foot examinations were undertaken in <50% of cases in a primary healthcare setting (Mayfield et al, 1994). Given these statistics, it is vital that the podiatrist, as the specialist in lower limb care, provides a thorough lower limb assessment and records the results in an accepted format.

The inability to directly attribute quality activities to improved outcomes means that performance standards or indicators must be used, such as an examination of systems of documentation, performance evaluation, changes to support systems and listening for anecdotal evidence (Woolf, 1993; Ennis and Meneses, 1996; Nancarrow, 2001). Significant changes must occur within quality assurance systems to impact on service and user outcomes; however, a great deal can be learnt by examining the systems associated with the quality of healthcare delivery (Reinke, 1994).

A number of studies have investigated the way that changes in practice can be implemented (Grimshaw and Russell, 1994; Grimshaw and Hutchinson, 1995). The least effective method of implementing change is through passive dissemination of information, particularly where guidelines are developed by a group that is external to those involved in the use of the guidelines. Conversely, involving practitioners in the development of their own guidelines can significantly improve both practice and outcomes (Grimshaw and Russell, 1994).

The use of clinical guidelines has been reported to improve both the process of care and the outcomes of care (Grimshaw and Hutchinson, 1995).

This study was designed to identify ways of optimising clinical practice by podiatrists for people with diabetes.

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1 The *Australian Podiatric Guidelines for Diabetes* were developed by two podiatrists and critiqued by professional colleagues.

2 The study was divided into two parts. The first part involved a retrospective file review to ascertain levels of adherence to the *Guidelines*.

3 The second component of the study involved the development and evaluation of a new assessment form to help improve adherence to the *Guidelines*.

4 The purpose of the audit was to determine the quality of recording risk factors for lower limb complications in diabetes by podiatrists, and to identify areas in need of improvement.

Aims of study

This study aimed to improve the quality of podiatric care delivered to people with diabetes by ensuring adherence to the *Guidelines*. As part of the Australian Quality Council initiative to ensure quality improvements to clinical practice, an audit of podiatry records was undertaken within the service to determine the level of adherence to the *Guidelines*. Based on the results of this audit, a new assessment form was developed with a view to increase adherence to the *Guidelines*.

The *Guidelines* were developed by two podiatrists (Evans and Jones, 1997) and critiqued by professional colleagues. The *Guidelines* were distributed through registration boards, professional associations and conferences. They were developed externally, leading to a low chance of utilisation of the *Guidelines*. For this reason, it was decided that a participatory action research approach would be appropriate to enhance their implementation.

This study was based in a government-run, community health organisation that employs a multidisciplinary allied health team. At the time of this study it employed the equivalent of five full-time podiatrists who serviced an eligible population of approximately 30 000 people. The podiatry service was only available to pensioners, and the target population was older people with health problems that place their feet at risk, and people with foot problems that result in reduced mobility.

Method

The study was divided into two parts. The first part involved a retrospective file review to ascertain levels of adherence to the *Guidelines*. Based on the results of this review and in consultation with the podiatrists, the second component of the study involved the development and evaluation of a new assessment form to help improve adherence to the *Guidelines*.

Part 1: file review

One hundred and fifty consecutive patient records were reviewed retrospectively across four community health centres; 30 patient files recorded a diagnosis of diabetes. The purpose of the audit was to determine the quality of recording risk factors for lower limb complications in diabetes by podiatrists, and to identify areas in need of improvement. The items identified by the *Guidelines* that were used as the basis of the audit are summarised in *Table 1*. The items were counted as being present if they had been documented within the past 12 months.

Items that were considered important but not mentioned in the *Guidelines* were diabetes type and duration, the level of glycaemic control and the presence of comorbid disease.

Results of the file review

The style of patient record used at the community health centre at the time of the audit was a single medical record used by all health service providers. All files had a cover page containing personal and demographic details of the patient that was normally completed by the administrative staff. Each health practitioner, including podiatrists, physiotherapists, practice nurses and occupational therapists, had their own standardised, discipline-specific forms but used common progress notes.

The podiatry form in use at the time of the first audit required the practitioner to: complete patient details (name and date of birth); identify health conditions by placing a tick in a box next to a list of named diagnoses; draw identified foot lesions onto a schematic diagram of the foot; and complete two items marked 'vascular test' and 'peripheral neuropathy'.

Table 1 illustrates the poor rate of recording of all items using the old assessment form, with the exception of the type of diabetes. Vibratory sensation, blood glucose levels and ankle-brachial index were not recorded in any of the files. Only five of the 30 files recorded any test for peripheral neuropathy within the past 12 months. Items that were most frequently recorded were the presence of comorbidities and the location of foot lesions. The recording of pedal pulses and a comment on skin integrity were recorded slightly less frequently. In both cases, however, these items were only recorded in around one in four cases.

These results clearly illustrated a need to

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1 Participatory action research is a technique that enables all participants to become actively involved as co-researchers, with a view to bringing about action and change during the research project.

2 Participatory action research was the method adopted to improve practitioner adherence to the use of clinical practice guidelines.

3 As the aim of this study was to bring about changes in clinical practice, the podiatrists became co-researchers in a bid to improve adherence to clinical guidelines.

4 Following the file audit, the podiatrists agreed that steps needed to be taken to make adherence to the *Guidelines* much simpler.

improve podiatric adherence to the recording of clinical data on the risk factors for diabetic ulceration and lower extremity amputation, which led to the second part of the study.

Part 2: development and evaluation of the new assessment form — participatory action research

Participatory action research is a technique that enables all participants to become actively involved as co-researchers, with a view to bringing about action and change during the research project (Hecker, 1997). Through a process of sequential reflection and action, changes that acknowledge the experience and expertise of the participants are brought about (Chesler, 1991).

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Existing barriers to the implementation of the *Guidelines* that were identified by podiatrists were:

- Limited time with each patient, which meant that undertaking a time-

Table 1. Comparison of the frequency of recording variables using the old and new assessment criteria

Item	Frequency of recording (%) using the old assessment form (*n*=30)	Frequency of recording (%) using the new assessment form (*n*=61)*	Odds ratio: the likelihood of recording data using the new assessment over previous assessment	Significance χ^2 (d.f.)
First metatarso-phalangeal joint range of motion	3	92	224.0	χ^2=2640.3 *P*<0.001
Monofilament test	7	98	432.0	χ^2=1183 *P*<0.001
Recording of pulses	23	96	65.8	χ^2=231.7 *P*<0.001
Comment on skin	23	91	20.2	χ^2=201 *P*<0.001
Blood glucose level**	0	46	N/A	N/A
Diabetes type recorded	80	89	6.5	χ^2=1.01 *P*=0.3
Presence of lesions	27	77	6.7	χ^2=92.6 *P*<0.001
Footwear assessment or advice	7	13	2.0	χ^2=5.1 *P*=0.02
Biomechanical assessment	7	3	0.68	χ^2=2.28 *P*=0.16
Comorbidity	27	85	7.7	χ^2=124.6 *P*<0.001

*Seventy-six files were reviewed in the second audit. Of these, the new assessment had been used in 61 files. This column represents the rate of adherence to the audited items in the 61 files. **This item was introduced halfway through the second audit. It was recorded in 100% of the subsequent files audited. d.f.=degrees of freedom; N/A=not applicable.

consuming assessment was difficult.

- Lack of access to the *Guidelines* in each health centre.
- Lack of equipment in some health centres, preventing complete testing.
- Inadequate training, e.g. one podiatrist had never been taught to use the monofilament.
- The existing assessment form was ambiguous and did not prompt for all the necessary information.
- Lack of familiarity with the *Guidelines*. One podiatrist stated 'I know where they are when I need them, but I never use them'.

The priorities for improvements in clinical practice were to standardise the equipment available at each health centre, and then to develop an assessment form that would comply with the *Guidelines*. It was envisaged that an appropriate assessment form would be unambiguous and be easily completed to minimise the time taken.

A new assessment form was developed and piloted for 1 month. The *Guidelines* formed the basis of the information included in the assessment, and the literature was reviewed to identify the appropriate instruments for testing vascular disease and peripheral neuropathy. A number of changes were made to the initial layout and content of the form following further consultation with the podiatrists.

The aim of the development of the new form was to have 100% adherence to the *Guidelines;* practitioner ownership and input were seen as important to help achieve this goal. This study was undertaken solely with the podiatrists employed by the community health service; however, subsequent to this evaluation, all podiatrists (including private practitioners) in the region were invited to pilot and evaluate the form in their own practices.

The layout of the assessment form appeared to influence the recording of items. The items that were recorded most frequently (comorbidity and pulses) required only a single tick or cross to denote a result. The other item that was recorded quite frequently was the location of foot lesions, which was illustrated through the use of a schematic diagram of a left and right foot, with dorsal and plantar projections.

Peripheral neuropathy was poorly recorded in the initial audit. The prompt for the recording of peripheral neuropathy was simply the heading 'peripheral neuropathy', followed by a series of dotted lines for the response. The most common response to this was a '√' with no accompanying explanation, which meant that the results were ambiguous.

The items that were most poorly recorded (vibration tests, glycaemic control and ankle-brachial index) were not included in prompts on the assessment form and were never mentioned in the podiatry casenotes. Following the audit, consultation with the podiatrists highlighted that the absence of a prompt on a form made the recording of an item less likely; thus it was requested that all the necessary items be prompted on the new assessment form.

Podiatric input and the results of the initial audit were used to develop a new diabetes assessment form to include prompts for all the necessary information, including blood glucose levels, footwear and first metatarsophalangeal joint range of motion. For simplicity in the clinical setting, the new assessment form was required to fit onto one A4 page (double-sided). The responses to all items needed to be presented unambiguously and be able to be recorded with a single '√'. The format of the well-recorded items (comorbidity and location of lesions on the foot) was retained.

The new assessment form was introduced into practice, and a second audit of 76 consecutive files of patients with diabetes was undertaken 3 months later. The second audit was undertaken by two podiatrists.

Podiatrists were initially asked to self-audit in order to highlight those items that were identified in the literature as important for assessment, and to enable them to see the quality of the reporting of the items. They were also involved in the audit of other files to verify results. The self-audit approach also provided a useful mechanism for improvement of the assessment instrument. For example, the new assessment form did not provide a prompt for the level of glycaemic control of the patient. As this item was included on the audit sheet, the podiatrists could see that it was not being recorded, and requested a modification to the new assessment form. The modification

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1 The *Australian Podiatric Guidelines for Diabetes* (Evans and Jones, 1997) provide a clear, simple and easy-to-follow manual for diabetic foot assessment.

2 The regular administration of a high-quality instrument should form part of the minimum standard of care by podiatrists for people with diabetes.

3 If a complete assessment has not been undertaken, patients are less likely to have been informed as to their risk status, reducing their own understanding of their condition.

4 The use of an assessment tool is one way of ensuring that clinical practice adheres as closely as possible to podiatric guidelines.

5 The adoption of a standardised instrument by the profession would serve to optimise the quality of care provided by podiatrists.

occurred halfway through this audit, and the change in rates of recording of glycaemic control changed immediately.

In the second audit of 76 files, the new assessment had been completed in 61 (80.3%) cases. The use of the new assessment form increased the rates of reporting for all items, with the exception of the biomechanical and footwear assessments (*Table 1*). The odds ratios for improvement in reporting of the first metatarsophalangeal joint range of motion, the monofilament test and pulses were 224.0, 432.0 and 65.8, respectively (χ^2, $P<0.01$).

Discussion

The 1997 version of the *Guidelines* is the second edition of the guidelines. They refer to the literature relating to podiatric care in diabetes, however, there is not extensive use of recent literature hence the guidelines are not clearly evidence based. Simarly, the guidelines could not be said to be consenus based, as there is no clear consultation referred to in their development. The authors acknowledge that the guidelines need to be constantly reviewed. Nevertheless, the guidelines provide a clear, simple and easy-to-follow manual for diabetic foot assessment. The regular administration of a high-quality instrument should form part of the minimum standard of care by podiatrists for people with diabetes.

The non-recording of data has a number of disadvantages. If a patient is seen by many different clinicians, those practitioners will not know their risk status. This study shows that in many cases, podiatrists must have treated patients without knowledge of their risk status.

Whilst this study examined the frequency of reporting of assessment items, it did not consider the proficiency of the podiatrist's performance of the procedures. Additionally, lack of documentation does not necessarily mean that the domain has not been tested, only that it has not been recorded (Grimshaw and Russell, 1994). If a complete assessment has not been undertaken, patients are less likely to have been informed as to their risk status, reducing their own understanding of their condition. Incomplete assessment reduces the ability of the podiatrist to set appropriate treatment goals. By not documenting an assessment, the podiatrist may place him or herself at risk of litigation if an adverse event occurs.

The use of an assessment tool is one way of ensuring that clinical practice adheres as closely as possible to podiatric guidelines. It is important that an ongoing evaluation takes place to ensure the applicability and suitability of the recording process in clinical practice, and consultation with staff using the instrument is vital to ensure ease of use of the tool.

The adoption of a standardised instrument by the profession would serve to optimise the quality of care provided by podiatrists. The adoption of a standard protocol ensures the ease of transition between practitioners for each patient, sets a basis upon which resources can be allocated if the risk status of the patient is known, and identifies minimum standards through which lower limb risks can be identified. ■

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