

Multidisciplinary diabetic foot care teams: skills and knowledge

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Introduction

Part one of this two-part series (McInnes et al, 1998) explored the educational issues surrounding the multidisciplinary foot care team. The formal educational routes that the team may have experienced were described, together with a brief discussion of the rationale for student-centred learning and other teaching and learning approaches. Part two investigates the specific skills and knowledge required by members of the foot care team and their likely future educational requirements to secure quality foot care for the diabetic population.

Professional education is concerned with the process by which educators translate discoveries into curricula. These, in turn, are taught to practitioners and students, who are ultimately evaluated in terms of the care they provide to people with diabetes (Mazze et al, 1982). The quality of care provided, however, may also be influenced by other factors, e.g. inequalities in the delivery of health care, patient behavioural disorders, and lack of motivation (Mazze et al, 1982).

The British Diabetic Association (BDA) instigated several specialist UK workgroup reports to devise options for implementing the recommendations of the St Vincent Declaration.

The Professional Training and Professional Development in Diabetes Care Group was set up specifically to:

- Review existing facilities for training healthcare professionals in diabetes care in England
- Estimate training needs
- Make recommendations for provision
- Advise on structures for continuing education.

The vast remit of this group resulted in a report (Apfel et al, 1996) that addressed these areas from a broad perspective, and was directed towards the training needs of all those involved in the care of people with diabetes – not specifically the diabetic foot care team.

The Diabetic Foot and Amputation Group (Edmonds et al, 1996) described the role of

the members of the district hospital foot care team in more detail. This report stressed the importance of individual team members being aware of their specific responsibility and acknowledged that overlap of role will occur, depending upon specific training and interests.

The report provides a useful framework for identifying the training needs of the individual. However, the description of roles is quite static, and does not allow for the acquisition of new skills and knowledge regarding diabetes. With the advent of evidence-based practice, and acceleration of the introduction of new technologies, new and specific skill needs are increasingly being identified. Continuing education for the team is therefore imperative to securing quality care for the diabetic population.

Furthermore, the process by which the Diabetic Foot and Amputation Group identified the tasks and skills required of the foot care team was not reported. Identification of the necessary tasks and skills is a complex process, particularly in the absence of evidence-based practice and validated clinical protocols.

Imparting an understanding of chronic illness such as diabetes, in which patient and healthcare professionals are equal partners in management, requires a different educational approach from the traditional model in which the patient plays a more passive role (Heller and Mackinnon, 1998). The traditional model does not emphasise the need for communication skills or an appreciation of the psychosocial aspects of

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1 There is a complex relationship between the skills, knowledge and attitudes of the foot care team, organisation of diabetes foot care, patient outcomes and continuing professional education.

2 High quality diabetes foot care may be delivered by a number of different organisational methods in primary or secondary care.

3 The knowledge, skills and attitudes of the foot care team are constantly changing and not necessarily reflected by patient outcomes.

4 Continuing undergraduate and postgraduate education of team members is essential to secure high quality diabetes foot care.

KEY WORDS

- Foot care team
- Multidisciplinary
- Professional education
- Patient outcomes

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1 Development of the curriculum is a complex process.

2 Identifying the teaching goals is challenging and requires reflection.

3 Ultimately, the effectiveness of the foot care team will be determined by its impact on patient care.

the effects of diabetes, which are essential for effective management of the disease.

The General Medical Council, in its 1993 document *Tomorrow's Doctors*, invited specialist societies such as the BDA to define what medical undergraduates need to learn about their particular topic.

The Medical Education Working Group of the BDA made recommendations regarding the knowledge, skills and attitudes required by healthcare professionals in order for undergraduate medical education to effect quality diabetes care (Dornan et al, 1997). It is not known how many medical schools have adopted the recommendations. Other healthcare undergraduates and their postgraduate colleagues have similar requirements.

Curriculum development

Curriculum development is a complex process (Table 1). Identifying the teaching goals, in terms of the knowledge, skills and attitudes required of each member of the multidisciplinary diabetes foot care team, is challenging and requires reflection.

The team roles described in the report of the Diabetic Foot and Amputation Group (Edmonds et al, 1996) included a number of responsibilities which reflect the optimum care that should be provided by the foot care team. However, as previously stated, it is the impact on patient care that will ultimately determine the effectiveness of the team.

A review of the pertinent literature may help to illustrate the processes required for needs assessment to facilitate curriculum development and determine its relationship with outcomes of patient care.

Literature review

Over a 3-year period, 202 nurses and dietitians

attended professional education courses at the Diabetes Research and Training Centre, Washington University School of Medicine, St Louis, Missouri, USA. The courses were designed to develop skills and knowledge for diabetes management, and to guide the expansion of patient education programmes (Warren-Boulton et al, 1986).

In a follow-up survey, 61% per cent of participants reported improvements in counselling and teaching skills, satisfaction with the course, and significant change in knowledge.

An important aspect of the course curriculum was encouraging participants to develop improved patient education programmes, in addition to clinical skills. The delivery of diabetes care is complex and the development of patient education programmes requires the collaboration of a diverse group of healthcare professionals.

The courses encouraged participants to recognise the complexity of healthcare organisations and interprofessional relationships. The interest shown by the course team in the problems associated with patient education programmes experienced by the course participants led to further development of the curriculum. Responding to participants' experiences is a vital part of curriculum development, and demonstrates the need for continuing professional education.

Barriers to the implementation of patient education programmes are complex. However, as a result of the strategies employed by the course participants, some of the barriers were identified: these included administrative hierarchies, departmental interactions, budget restrictions and patient follow-up procedures.

Knopf et al (1988) documented the development and evaluation of diabetes continuing education courses over 8 years. This provides further useful evidence of the nature of the relationship between learning needs, course curriculum and patient outcomes. Fifteen continuing education courses attended by 943 healthcare professionals were evaluated using meta-analytic techniques.

In 1975, the National Commission on Diabetes (USA) reported to Congress that most persons with diabetes were receiving suboptimal care. Healthcare professionals

Table 1. Key elements of curriculum development

- Profiling of the audience
- Identification of the teaching goals
- Selection of appropriate teaching strategies
- Development of a means to evaluate the curriculum
- Institution of the curriculum
- Monitoring of feedback to alter the curriculum (Mazze et al, 1982)

responsible for diabetes care had been found to be inadequately informed about diabetes (Scheiderich et al, 1983) and several studies had indicated that healthcare professionals were concerned about their educational skills, and desired more effective training in patient education techniques (Pichert et al, 1981).

In 1979, the Michigan Diabetes Research and Training Centre responded to these issues by commencing a series of postgraduate education courses on diabetes for healthcare professionals based in the community. The objectives are shown in *Table 2*.

Evaluation of these courses showed that they were successful in providing current diabetes knowledge and improving practice for the healthcare professionals working in the community (average increase of 36 percentile points, $P < 0.001$). A survey conducted 6 months later indicated that more than 80% of participants improved the educational and psychosocial aspects of their practice. In common with previous research (see above), participant response resulted in major additions to the curriculum, particularly with regard to teaching methods and learning behaviour.

However, one of the problems identified by participants was teamwork. Healthcare professionals surveyed after returning to work reported difficulty in implementing an interdisciplinary team approach to patient care and education. The effectiveness of continuing education programmes in changing behaviour in interdisciplinary team diabetes care has yet to be determined.

In 1980, the Stockholm County Diabetes Education and Training Unit (DETU) was established in the Endocrinology Department at Karolinska Hospital in Stockholm, Sweden. From inception of the DETU, GP and nurse teams from 86% of the neighbourhood health centres have attended a 2-week educational course which teaches a comprehensive approach to diabetes care. (Rosenthal et al, 1988)

Aware of the problems in delivering effective continuing medical education (CME) courses, the developers of the DETU, selected different teaching strategies, which included case presentations and problem-solving techniques.

The courses were evaluated by direct

telephone communication, by visits to the health centres, and by a 6-month follow-up visit to the teams attending the courses. The DETU therefore evaluated its courses by observation in practice, rather than by assessment of retention of knowledge after the course. Improvements in practice were indicated by the implementation of support routines, which underpin the organisation of diabetes care. Over a 5-year period, 50% of the 108 health centres in Stockholm adopted four or more support routines in their practice.

Some of the barriers to implementation of the support routines identified in the research were poor communications among staff, infrequent staff meetings, little staff in-service training, and dissatisfaction with the level of staff teamwork. In an attempt to overcome these barriers, the DETU has developed a series of field-interactive strategies that encourage intensive discussion and self-analysis.

These significant research findings of the DETU have had an impact on CME in both the USA and other countries. However, the effect of the CME programmes on patient outcomes is less clear. The relationship between CME, improved practitioner practices, and patient outcomes is difficult to establish. The issues are complex, and include the nature of the CME programme, the process of knowledge transfer, organisational characteristics, and patient behaviour.

Rosenthal et al (1988) in Stockholm found that CME alone is insufficient to alter physician practice and affect patient outcomes. The recommendations for directors of CME suggested in the Swedish report are summarised in *Table 3*.

The educational research described above clarifies the route to identifying the skills and knowledge required by the diabetic foot care team.

The existing centres of excellence are evaluated by their practices, acknowledged skills, and patient outcomes. The report of

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- 1 Several studies have indicated that health professionals want more effective training in patient education.
- 2 These have led to the development of a variety of continuing medical education courses.
- 3 Course participants reported difficulty in implementing an interdisciplinary team approach to diabetes care on return to work.
- 4 The relationship between CME, improved practitioner practices and patient outcomes is difficult to establish.

Table 2. Objectives of the Michigan Diabetes Research and Training Centre postgraduate education courses on diabetes

- To train healthcare professionals in the treatment and management of diabetes
- To review teaching and learning strategies to assist patient education
- To transfer findings of new research into improved diabetes care programmes

Table 3. Recommendations for directors of continuing medical education (Rosenthal et al, 1998)

- Address the quality of the continuing medical education programmes
- Attend to the organisational barriers in the clinical environment
- Devise strategies to change the clinical environment
- Where possible, include the patient in the entire process
- Stimulate providers and patients to create their own innovations so that they 'own' the change process itself.

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1 The core competences required by the diabetic foot care team can probably be agreed by a team of experts.

2 Identification of the specific knowledge, skills and attitudes required, however, remains elusive.

3 The different protocols and different models of care delivery will require specific skills.

4 The important issues are how to ensure that foot care teams have the skills and knowledge currently required and how to provide for the future.

5 Both undergraduate and postgraduate institutions need to forge strong links with clinical teams and services in order to keep up with new developments that might enhance foot care.

the Diabetic Foot and Amputation Group (Edmonds et al, 1996) clearly states that, in order to care effectively for people with diabetic foot problems, unified and documented care plans have to be agreed, and the specialties have to work in collaboration.

Research has identified a number of factors that affect patient care, and these require further investigation. Indicators of best practice have been suggested in guidelines from various professional bodies, including the Royal College of General Practitioners (1994), and more recently from the Third International Symposium held in Amsterdam (International Working Group on the Diabetic Foot, 1999).

Conclusion

The core competences required by the diabetes foot care team can probably be identified and agreed by a team of acknowledged experts, e.g. The Diabetic Foot and Amputation Group (Edmonds et al, 1996). Identification of all of the specific knowledge, skills and attitudes, however, remains elusive. While positive patient outcomes can be universally agreed upon, there are many variables within different models of service delivery, and many different clinical protocols that will require specific skills.

The important issues are how to ensure that foot care teams have the skills and knowledge currently required, and how to provide for the future.

Educational institutions, both undergraduate and postgraduate, will have to develop appropriate strategies to assure the quality of the educational process, and to forge strong links with clinical teams and services. This will facilitate the capture of any new developments that may enhance diabetes

foot care, and enable educators to adapt the curriculum accordingly. Failure to address these issues will result in the ad hoc development of diabetic foot care teams, which may fail to secure quality foot care.

It is pleasing to note the development of CME in diabetes care. There is increasing evidence that educational institutions are linking with NHS trusts to facilitate interprofessional education. Measurable standards of diabetes training can be audited alongside patient outcomes, and the results will inform and improve curriculum development (Fenn, 1999).

The advent of clinical governance — a framework through which NHS organisations are accountable for the continuously improving quality of their services — means that health purchasers must invest in education in order to secure quality diabetes foot care and hence save limbs and lives. ■

Apfel J, Cole C, Crace C et al (1996) Training and professional development in diabetes care. *Diabetic Medicine* **13**: 65-76

British Diabetic Association Working Party (1990) *Diabetes and Chiropodial Care*. BDA, London

Dornan TL, Grenfell A, Heller SR et al (1997) Diabetes in the undergraduate medical curriculum: a response to 'Tomorrow's Doctors'. *Diabetic Medicine* **14**: 275-8

Edmonds ME, Boulton AJM, Buckenham T et al (1996) Report of the Diabetic Foot and Amputation Group. *Diabetic Medicine* **13**: 27-42

Fenn P (1999) Integrating local diabetes courses to facilitate a structured continuing programme of inter-professional education. *Diabetic Medicine* **16**: 56

Heller S, Mackinnon M (1998) Educating health-care professionals. *Diabetes Reviews International* **7**: 16-18

International Working Group on the Diabetic Foot (1999) *Practical Guidelines on the Management and Prevention of the Diabetic Foot*. PO Box 9533, 1006 GA Amsterdam, The Netherlands

Knopf RF, Kittel PR, Funnell MM et al (1988) Development and evaluation of diabetes continuing education courses for health professionals: a synthesis of eight years of experience. *Diabetes Educator* **14**: 136-41

Mazze RS, Rosen S, Rifkin H (1982) Professional education in diabetes mellitus. In: Ellenberg M, Rifkin H, eds. *Diabetes Mellitus: Theory and Practice*. 3rd edn: 1071-83

McInnes A, Booth J, Birch I (1998) Multidisciplinary diabetic foot care teams: professional education. *The Diabetic Foot* **1**(3): 109-15

Pichert JW, Lorenz RA, Turner AL et al (1981) Perceived needs of diabetes patient educators. *Diabetes* **29**: 28A

Rosenthal MM, Carlson A, Rosenqvist U et al (1988) Beyond CME: diabetes education field-interactive strategies from Sweden. *Diabetes Educator* **14**: 212-17

Royal College of General Practitioners (1994) *Guidelines for the care of patients with diabetes* RCGP, London

Scheiderich SD, Freidbaum CN, Peterson LM (1983) Registered nurses' knowledge about diabetes mellitus. *Diabetes Care* **6**: 57-61

Warren-Boulton E, Hershey PS, Hopper SV et al (1986) Impacts of professional education in diabetes on trainees' reports. *Diabetes Educator* **12**: 116-21