

Multidisciplinary diabetic foot care teams: professional education

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Introduction

This article is part one of a two-part series which explores the educational issues surrounding the multidisciplinary team and its management of diabetic foot disease. Part one reviews the formal educational experience that the diabetes foot care team may have traditionally followed as well as discussing the current philosophy on teaching and learning strategies. Part two will investigate the specific skills and knowledge required by each member of the foot care team, and the rationale for specific teaching and learning strategies. It will also discuss educational research and the future educational requirements to secure quality foot care for the diabetic population.

Neuropathic and neuroischaemic foot ulcerations are a costly problem for both the patient and society (Boulton, 1996) and may lead to a chronic limb-threatening condition accounting for many amputations. Up to 50% of all non-traumatic lower limb amputations are performed on patients with diabetes (Most and Sinnock, 1983) and over 80% of these are preceded by the presence of a foot ulcer (Pecararo et al, 1990).

The average annual cost of treatment for a foot ulcer is £3600, and the average cost of a lower limb amputation is £10,960 (York Health Economics Consortium, 1997). It has been reported that there are more hospital bed days for foot problems than for all of the other diabetic complications put together (Levin, 1995). The economic impact is obvious and the impact on the person with diabetes is devastating.

The St Vincent Declaration

In 1989, representatives of Government health departments and patient organisations from all European countries met with diabetes experts in St Vincent in Italy. The meeting was convened by the World Health Organization and the International Diabetes Federation. A number of recommendations were unanimously agreed upon in an attempt to ensure quality provision of care for the diabetic population.

The British Diabetic Association (BDA) was one of the signatories to the Declaration, and subsequently set up 11 independent multidisciplinary groups to identify options to implement the recommendations. One of the five-year targets was to reduce by one half the rate of limb amputations for diabetic gangrene. The Diabetic Foot and Amputation Group identified that the prevention of amputation required an investigation of the aetiology and associated factors to enable choice of appropriate effective intervention. Dramatic reductions of foot ulcerations and lower limb amputations have been achieved by several multidisciplinary foot clinics throughout the world (Runyan et al, 1980; Davidson et al, 1981; Thomson et al, 1991; Spraul et al, 1991).

Patient education is a key intervention in the reduction of foot ulceration along with early treatment of infection, preventative foot care and the provision of appropriate footwear. The multidisciplinary foot care teams have to possess a wide range of knowledge and skills in order to provide such care.

Education requirements

The acquisition of skills and knowledge to enable the provision of high quality diabetes care was recognised by the St Vincent Declaration. The Training and Professional

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1 Patient education is a key intervention in the reduction of foot ulceration.

2 It is debatable whether the formal education experiences of team members enables them to develop the clinical skills and expertise required.

3 Good teamwork relies on mutual trust, confidence in and respect for each other's skills, and effective communication.

4 The combination of biomedical, psychosocial and educational elements represents an exemplary therapeutic model.

5 One of the core skills required by the foot care team is to facilitate the patient's learning.

KEY WORDS

- Problem-based learning
- Expert team
- Behavioural outcomes
- Accreditation

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Development in Diabetes Care Group was challenged to consider the options by which the recommendations on professional training from the St Vincent Declaration could be implemented. The Group's published report (Apfel et al, 1996) considers many issues and has made widespread recommendations with regard to education.

To identify training needs of a multidisciplinary foot care team requires extensive investigations into the educational experiences of the team members, current philosophy of educational methods and the identification of the knowledge and skills required to be effective.

The education experiences of the foot care team

The foot care team may include a podiatrist, physician, nurse, surgeon and shoe fitter. The educational experiences to which the team will have been exposed will be varied. It is debatable whether these experiences enable the team to develop the clinical skills and expertise required. However, educational experiences are not confined to their formal training, as learning from experience is often considered to be fundamental to acquiring the clinical skills that are particularly required.

A brief review of the formal training that members of the foot care team may have experienced may be helpful to enable the identification of future educational requirements necessary to optimise diabetes care.

Medical education and training, both at undergraduate and postgraduate level, is constantly under scrutiny in the light of greater public accountability and the requirement for evidence-based practice.

The undergraduate physician

The Training and Professional Development Group Report (Apfel et al, 1996) suggested that the medical undergraduate's experience of diabetes is determined by three factors:

- The amount of space in an already crowded curriculum.
- The prominence of the subject in the final examinations.
- The quality of the teaching and the

opportunities to gain practical experience provided by the teaching, and the district general hospitals.

It is unlikely that the experience is sufficient to equip the newly qualified physician, working within a multiprofessional team, with the skills to manage the complications of the diabetic foot.

The postgraduate physician

Most medical schools provide a structured training programme which includes diabetes. However, there may not be a particular emphasis on the management of the diabetic foot. Management of diabetes and diabetic emergencies are the most frequently addressed topics.

The vocational training schemes include day release programmes. The trainee GPs may only be exposed to one day on the study of diabetes. However, GP training practice gives a trainee a chance to be actively involved with the care of patients with diabetes and will therefore further develop their problem-solving skills.

The GP's exposure to diabetic foot problems will be dictated by the organisation of the practice and the number of diabetic patients registered. The clinical skills of the GP to successfully manage diabetic foot complications may be dependent upon experience and the structure of diabetic foot care provided by the hospital sector.

Consultant physician

Consultants will have spent a total of 5 years at registrar and senior registrar level and will be accredited specialists in diabetes and endocrinology. However, as a result of the controversial Calman Report, the consultants may have more protected time to introduce new content into the curricula. For those consultants specialising in diabetes and endocrinology, specific learning objectives could be made explicit in reference to the diabetic foot. This may enable the consultant physician to acquire the desired skills and knowledge accordingly. There is no guarantee, however, that they will possess all the necessary skills that are required for their role in successful multidisciplinary foot care. Part two of this article will explore the skills that are required.

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1 The nurse may be the first health care professional consulted by the diabetic patient with foot complications.

2 With the advent of the diabetes specialist nurse (DSNs), diabetes care has improved enormously.

3 The postgraduate podiatrist's experience with diabetes will depend upon the health care setting and whether it is in private practice, the community or the hospital sector.

The surgeon

The surgeon has to undertake technical training, often on an apprenticeship basis. The quality of the training will depend upon the teaching skills of the trainers and the teaching equipment available. Many of the advanced vascular procedures that are performed on the ischaemic diabetic patients will be carried out by vascular surgeons. However, it is often a general surgeon who performs many of the vascular procedures. The scope and skills of the surgeon may be varied.

The nurse

Nurse education at preregistration level includes the study of diabetes. This is usually provided by nurse tutors in Colleges or Faculties of Nursing. Practical training occurs both in the hospital and community setting. The involvement of the local diabetes centre and team is actively encouraged.

Nurses work in a variety of settings and the postregistration experience will be influenced accordingly. For example, practice nurses are based in the primary care sector, and are therefore exposed to all the health care needs of the community. The diabetic patients may represent only a small proportion of their caseload. However, the nurse may be the first health care professional consulted by the diabetic patient with foot complications. The clinical skills demonstrated by that nurse will be dependent upon their interest, the training programmes attended, and the structure of care that has been organised with the hospital diabetes teams. This will obviously vary across the country.

The community nurse will be expected to care for many housebound patients, some of whom will be diabetic with tissue complications. Once again, the expertise in dealing with foot problems will vary among different nurses.

With the advent of the diabetes specialist nurse (DSNs), diabetes care has improved enormously. The range of clinical duties has increased commensurately and their clinical skills in the management of diabetic foot complications will depend upon their workload and the other factors that have been previously mentioned. However,

most DSNs work closely with the other members of the diabetes team, and will have speedy access to further opinion and treatment. The specific learning objectives that are required by nurses working in different healthcare settings will be discussed in part two of this article.

The podiatrist

The undergraduate experience of diabetes and its management will depend upon a number of factors. While the subject is part of the curriculum in all the institutions that provide the three-year, full-time graduate route that leads to state registration, the specific learning outcomes of the students will be influenced by the teaching and learning strategies adopted, the input from the local providers of diabetes care, and the nature of the student's 'hands-on' experience.

The postgraduate podiatrist's experience with diabetes will depend upon the health care setting and whether it is in private practice, the community or the hospital sector. The skill level of the qualified podiatrist in the management of diabetic foot problems will be influenced by the interest of the individual, quality of courses attended, the experience of working with a multidisciplinary team and the local organisation and structure of diabetes care.

The orthotist

There are a limited number of training programmes available for the prosthetist/orthotist in the UK. The ultimate aim of the International Society for Prosthetics and Orthotics is to develop training course to degree standard. The Society has promoted the idea of the 'orthopaedic technologist', who would be a professional with a structured training programme lower than degree level, but still able to address the needs of disabled people, including those with diabetes.

The Society has developed an information package for the orthopaedic technologist which specifies the professional profile of the individual, the learning objectives of the course and guidelines on methods of examination process. The education and training programmes encourage cooperation with medical and paramedical professionals (Hughes, 1997).

The expert team

The report from the Diabetic Foot and Amputation Group of the St Vincent Joint Task Force comprehensively describes the roles and tasks of the team members. However, while the report acknowledges the requirement for further education of the team members, it is difficult to identify the particular training needs of individuals. The expertise of the team may only be measured by the outcomes of their efforts.

The definition of an expert as described in the Oxford English dictionary is 'having special knowledge of or skill in a subject'. The nature and level of expertise that is required by the members of the team will include both knowledge and skills. The cultural context in which the team works will influence the nature of these skills.

Dreyfus and Dreyfus (1985) propose a model of the development of expertise as a transition between five stages of development:

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert.

The expert uses intuition and may stumble when there is recourse to formal rules. The degree of expertise that each member of the multidisciplinary foot care team has may not be the only factor that influences their effectiveness.

It has been widely recognised that the multidisciplinary team is effective in diabetes foot care (Edmonds et al, 1986). However, good teamwork relies on mutual trust, confidence in, and respect of each other's skills and effective communication. If any of these components are missing, it is unlikely that clinical expertise alone will effect quality care.

Teaching and learning strategies

The Training and Professional Development in Diabetes Care Report recommends that

'all professional training programmes in diabetes should contain significant components which are multi-disciplinary'.

There are very few diseases that require the lifelong commitment of the patient, the

family and the health care professional to the acquisition of new knowledge and skills regarding diabetes (Mazze et al, 1982). It has taken almost 50 years for the beneficial effects of patient education to have finally and unequivocally been proven (Assal et al, 1985). Traditionally, the emphasis on diabetic education for health professionals has been on the biomedical sciences rather than the psychosocial aspects of care. It is, however, the combination of the biomedical, psychosocial and educational elements that represents an exemplary therapeutic model (Assal, 1985).

One of the core skills required by the foot care team is to facilitate the patient's learning. Teaching patients how to practise foot care in order to prevent foot complications and amputations is widely recognised as an important part of diabetes education programmes (Barth et al, 1991). The impact of patient education has been measured and is a vital component of care (Malone et al, 1989; Litzelman et al, 1993). There are, however, different outcomes to measure following a foot health education programme. The indicators of knowledge, compliance and the number of foot problems do not necessarily provide all the answers to the effectiveness of such programmes.

Day (1995) exposed the difficulties in identifying the nature of the relationship, if any, between the acquisition of knowledge and behavioural outcomes. In contrast, many psychosocial factors have been shown to have stronger relationships with behavioural outcomes. The 'gold standard' foot education model has yet to be identified.

Day points out that the major contact between patients and professionals is always likely to be on a one-to-one basis. The evidence from Kaplan et al (1985) suggests that it is the interaction between the patient and doctor (or nurse) that is critical in determining outcome. The less controlling the professional, the more the patient learns. It is important that the professional is able to reflect on such interaction and learn from it; otherwise poor practices will persist, resulting in disappointing outcomes.

There is extensive literature demonstrating the need to move from the traditional

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1 The most appropriate strategy is to adopt a totally integrated, problem-based curriculum.

2 Patient education takes place in many different environments and the health care professional has to develop good listening skills and reflective practice.

3 The accreditation of foot care services from appropriate professional bodies and organisations would help to secure quality provision of care.

didactic methods of learning to the more student-centred approach (Apfel et al, 1996). The challenge lies not only in the identification of the learning outcomes desired but in an assessment of the quality of teaching and learning methods selected. In addition, evidence that the outcomes have been achieved is required. To develop a responsive curriculum, flexibility must be incorporated into the planning in order to reflect the ever changing patterns of care and roles of health providers.

The most appropriate strategy is to adopt a totally integrated, problem-based curriculum. The philosophy is discussed by Barrows and Tamblyn (1980).

The concept of problem-based learning is the presentation of 'trigger' materials to the students, e.g. taped interviews with patients, hand-outs, etc. so that students have to identify their own learning needs. The students hypothesise, analyse and discuss issues using an existing, often limited, knowledge base. The outcomes are:

- Define further learning necessary for understanding.
- Suggest next step in clinical encounter.
- Exposure to process of clinical reasoning.
- Exposure to process of structuring learning.

There have been many recommendations suggested by the Training and Professional Development in Diabetes Care Group. Significant progress has been made by the medical profession, and the implementation of the Calman Report will improve specialist training for hospital doctors. Academic institutions are being encouraged to forge greater links with the providers and purchasers of health care to enable students from the health care professions to develop appropriate levels of knowledge and skills.

It is important to recognise the potential source of difficulty between the need for the individual to develop further their professional training through award-bearing courses of study and the requirement for better diabetes care. This difficulty can be overcome with the collaboration of all the interested parties to enter into a dialogue which results in an appropriate course of study that fulfils both requirements.

Conclusion

The conclusions that can be drawn from part one of this article are that:

- The formal education programmes that the members of the foot care team have experienced are often variable in their course structure, teaching and learning strategies, and learning objectives. The majority of the programmes tend not to involve other disciplines.
- Specific learning objectives have to be identified. This is probably best achieved by the introduction of problem-based learning.
- The teaching and learning strategies have to be tailored to the requirements of the patients and the students.
- Patient education takes place in many different environments and the health care professional has to develop good listening skills and reflective practice.

Accreditation

The current provision of multidisciplinary foot care is not standardised throughout the NHS. Indeed in the Clinical Standards Advisory Group Report (1994), which visited 11 districts, podiatry input was significantly reduced in nine of these districts. The quality of a foot care service can be measured in a number of ways. However, it is an ominous start when key members of the team are not even in post. The level and mix of manpower must be adequate in any district that purports to provide optimum care. With the new emphasis on provision of diabetes care from the primary care sector, GPs have the responsibility to provide an appropriate route of care for patients who present with complex foot problems. There is a constant requirement for practice nurses to update their skills in the management of diabetes. These skills enable the nurse to refer the patient to other members of the primary care team in a timely and appropriate fashion.

The recognised hospital diabetes team should be invited to participate in the planning of these services. The accreditation of foot care services from appropriate professional bodies and organisations would help to secure quality provision of care.

'Where there is no vision the people perish' (Proverbs).

Provision of care in the NHS for people with diabetes is ever changing. There is evidence that multidisciplinary care is effective. The new skills required by modern health professionals include the need to practise evidence-based medicine, to audit their activities and to work effectively with other members from different health care professions.

The members of the foot care team have to remain motivated, dedicated, and be equipped for life long learning. This can only be achieved by their recognition as important contributors to health, their active engagement in policy making, adequate remuneration, and the opportunity to continue with their education. It is unethical practice to consider the provision of education as a luxury indulgence when the student relinquishes part of their clinical duties in order to study. It is of paramount importance for health care professionals to continue their education to enable them to deliver quality care. ■

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