Can the use of new generation dressings aid patient involvement?

Fiona Murray

Summary

This article describes the treatment of diabetic wounds in two patients to assess whether use of new generation dressings can improve patient compliance by increasing self-care behaviour and in turn making the dressings more economically viable.

Diabetic foot disease is recognised as one of the major complications of diabetes and it is estimated that up to 15% of people with diabetes are affected (Mancini and Ruotolo, 1997). Some aspects of the physiology of wound healing in the diabetic foot are abnormal (Boulter et al, 1993). A greater understanding of the 'science' of wound management and the importance of providing the optimum wound healing environment has led to a significant improvement in the range of treatments (Clark, 1995). Evidence based study into the amount of time and effort invested in wound healing is currently limited; although it is growing steadily.

With this focus on science, there has been little consideration of the person with diabetes and the ulcer. Diabetic foot ulcers are a chronic complication within the spectrum of chronic disease associated with diabetes. Therefore, other aspects of the patient's life need to be taken into account during treatment. It is this aspect of becoming more patient-centred and considerate of the individual that has become recognised as vital to healthcare in the 21st century. This is central to the recent initiatives of the NHS Plan and Expert Patient programme:

'Patient self management programs or Expert patient's programs are not simply about educating or instructing patients about their condition and then measuring success on the basis of patient compliance. They are based on developing the confidence and motivation of patients to use their own skills and knowledge to take effective control over life with a chronic illness.' (DoH, 2001)

Any professional working within the field of diabetic foot disease will recognise the frustrations associated with such an endeavour. Traditional efforts to educate and advise patients will often seem to fall on deaf ears. Despite repeated interventions and frequent attendances at foot clinics, ulcers will often recur.

Effective self-management

One of the difficulties is that the effective management of diabetic foot ulcers will frequently require the patient to change their behaviour. These changes might include not bathing to keep a dressing dry or not walking to aid pressure relief. Although these changes may be simple for some, others will find them difficult and may perceive them as detrimental to their quality of life, whereas the professional will view them as improving their treatment and ultimate outcome. This difference of perspective can lead to conflict between the patient's and the healthcare professional's agendas, leading to frustration for both parties.

There are many factors that affect peoples' health states: their health beliefs, adherence to treatment regimens and willingness to change behaviours that are detrimental to their health, e.g. smoking (DiClemente et al, 1983). It has been established that just passing on information or knowledge to a patient does not correlate with an increased level of adherence or behaviour change. This is particularly relevant for chronic conditions where living day-to-day with the condition and treatment is needed (Anderson RM, 1991).

'Any professional working within the field of diabetic foot disease will recognise the frustrations associated with such an endeavour. Traditional efforts to educate and advise patients will often seem to fall on deaf ears. Despite repeated interventions at frequent attendances and foot clinics, ulcers will often recur.'

Fiona Murray is a Lead Podiatrist, at Northumbria Diabetes Service

Psychological factors

It has increasingly been recognised that people with diabetes are more likely to have depression. It is estimated that the prevalence of depression and anxiety is about three times higher than in the general population (Rubin R, 1997).

In a landmark paper, Kimmond et al (2003) described the psychological aspects of caring for people with diabetes and foot ulcers. Kimmond et al explored the suggestion that patients with chronic illness experience major psychological and social difficulties associated with their illness. Kimmond et al identified that participants related to the four major psychological conditions that lead to an exacerbation of the 'loss of self'. This is consistent with the framework described by Charmaz (1983): living a restricted life; existing in isolation; experiencing discredited definitions of self; and becoming a burden. Kimmond et al illustrate some of these negative impacts and the guilt that patients feel by providing patient narratives. It is therefore not surprising that these major life changes impact on patients' perceptions and acceptance of treatment.

These issues have led me to consider whether, with the advent of new technologies in wound care, the healthcare professional can use them in such a way as to include the patient in their care. Will empowering the patient improve compliance rates and improve the psychological well being of the person with diabetes and chronic ulceration? Furthermore, does this aid the healing process itself?

Economic factors

Another major consideration of using the new generation of dressings is the economic impact. These dressings have a significantly increased initial cost which is off putting. However, by involving the patient in their own care, reducing their need to attend for dressings in an outpatient situation and by improving patient compliance, there is the possibility that the new generation products actually achieve better value for money.

A number of new dressings are currently available to aid the healthcare professional manage chronic wounds. The following two case studies illustrate use of one of these dressings Acticoat 7. Acticoat dressings provide a fast acting, long-lasting antimicrobial barrier which prevents and reduces infection, thus assisting faster healing. The antimicrobial barrier is accomplished by a unique nanocrystalline silver coating on both sides of the dressing. When Acticoat is used in partnership with patients it can help to reduce the number of clinic appointments and help engage patients in health services in a way that is acceptable to both the patient, the healthcare professional and the wound. This forms the basis of the following case studies.

Case study 1

A 69-year-old man with type 2 diabetes had a fall at home, causing the development of a large haematoma to his right shin around the fibula head of approximately 15 cm in length. He was sent home from the accident and emergency department with analgesia. Three days later the patient was reviewed, admitted, and underwent a surgical debridement. The lesion became increasingly infected and failed to heal. Over the course of the next 4 weeks, the patient remained an inpatient on intravenous antibiotics, with regular reviews by the tissue viability team. However, the wound continued to deteriorate, even after two applications of larval therapy. The wound was now MRSA positive and tracking to the peroneal fascial plane. When the podiatry team became involved the patient had been a ward patient for 6 weeks.

The wound was complicated, with a relatively clean superficial area that showed signs of granulation tissue. The remainder of the wound was very sloughy and considerably deeper with tracking sinuses to the peroneal fascial plane (indicated on *Figure 1* by the

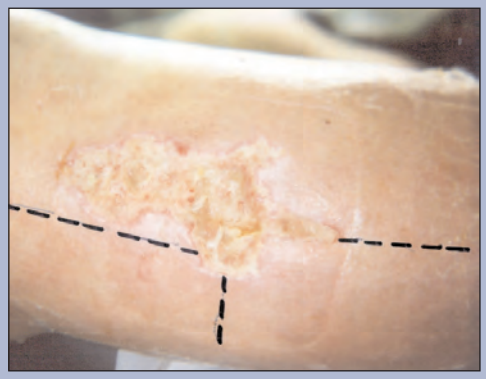

Figure 1. Initial picture of wound; dashed lines indicate tracking sinuses (patient 1)

'It is increasingly recognised that people with diabetes are more likely to have depression. It is estimated that the prevalence of depression and anxiety is about three times higher than in the general population.'

Figure 2. Acticoat 7 in situ (patient 1)

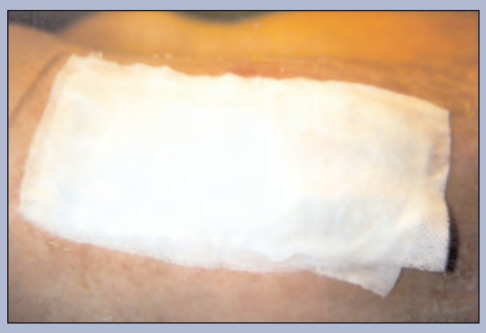

Figure 3. Secondary dressing in place (patient 1)

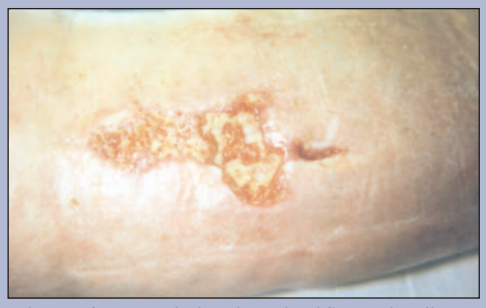

Figure 4. Wound showing significant healing (patient 1)

Figure 5. Wound in final stages of healing (patient 1)

Figure 6. Wound completely healed (patient 1)

'The patient was unhappy about the amount of time he had already spent as a ward patient. He was keen to "get back to his life as he felt like a vegetable just sitting on the ward."'

dashed lines). The wound had a heavy exudate, mainly tissue fluid via the deep sinus to the peroneal fascial plane. It was therefore decided to attempt to treat these areas as two separate wounds due to their very different stages. The smaller cleaner superficial wound was dressed with polyurethane foam (Allevyn non-adhesive). The deeper sloughy wound was dressed with Iodoflex (cadoxemer iodine paste) to absorb the exudate and to treat the local infection. This was fiddly and time consuming at dressing changes. After 2 weeks it was felt necessary to find one dressing that could be used to treat 'both' wounds. Acticoat 7 was the dressing of choice. The wound was aggressively sharp debrided prior to the initial application of Acticoat 7. The wound was dressed with Acticoat 7 which had been soaked with sterile water, soaked gauze was then applied with a final non-adherent dressing over the top. Ward staff were instructed to remove the non-adherent dressing and gauze on a daily basis and re-dress to manage the level of exudate, but to leave the Acticoat 7 in situ (*Figure 2 and 3*).

The patient was unhappy about the amount of time he had already spent as a ward patient. He was keen to 'get back to his life as he felt like a vegetable just sitting on the ward.' He had also noticed deterioration in his ability to move. Intravenous antibiotics were stopped at this time and the patient felt that there was very little point in him being in hospital as he felt they were not doing anything. The patient found it difficult to appreciate that bed rest is an important factor in treating wounds. At the time the dressing was changed to Acticoat 7 the patient began to express very strong wishes to return home as he had been an inpatient for 7 weeks and was considering the option of self-discharge.

The situation was discussed with the healthcare team who felt that as the wound was responding extremely well continued use of Acticoat 7 was desirable. The patient was keen, once at home, to keep the number of appointments to a minimum. He was also reluctant to allow a district nursing team, with whom he was not familiar, to become

involved in his care. It was explained to the patient that the top dressings had to be replaced due to the level of exudate from the wound to avoid the problem of maceration as had previously happened. Following discussions over a period of days, when the patient watched ward staff carry out the dressing changes, he was keen to be allowed home and to try to self-care. He was confident that because he did not have to touch the actual wound, which was covered with the Acticoat 7, he would be able to change the secondary dressings himself.

Home care

The patient was shown how to change his dressings himself and provided with the required dressings. He was allowed home with a self-care routine and plans for weekly follow-up as a podiatry outpatient. This was made possible by the 7 day lifespan of Acticoat 7. This plan was received very positively by the patient and he became increasingly more engaged with the healthcare team. Questions about his wound, its progress and the effect of improved glycaemic control were all discussed at his weekly visits.

Once the level of exudate from the wound decreased to the point where the Acticoat 7 required daily irrigation the patient was again given the opportunity to carry this out for himself. It should be noted that this collaborative approach was made possible by the use of Acticoat 7, which can be left in situ safely for 7 days with continuous provision of silver to the wound bed to maintain its antimicrobial action. The wound bed itself was protected, and only re-dressed by the healthcare professional. The resolution of a wound of this complexity with the use of Acticoat 7 must indicate that there is a place for this technology in the management of wounds.

In this way the patient was able to remain at home, with limited contact with the healthcare system. The patient felt that his views were valued as part of the team and his compliance with the dressing regimen was good. By involving the patient in his own treatment, he felt useful, involved, and became increasingly knowledgeable about his situation. This solution was time and cost effective for the podiatry team as the patient only required an appointment at weekly intervals rather than the 2-3 times weekly that would have been expected given the complicated nature and level of exudate from this wound. This treatment regimen not only allowed the patient to self treat but also allowed the wound to progress to complete healing (*Figures 4–6*).

Case study 2

The second patient was a 40-year-old man, with a history of alcohol abuse, liver cirrhosis, and type 2 diabetes. This patient was well known to the healthcare team because of his poor attendance for appointments and general lack of engagement with any healthcare professional on a long-term basis. The patient had a tendency to access healthcare services for emergency treatment and then, once the immediate situation was resolved, to ignore any long-term follow up.

He presented as an emergency, describing his toe as gangrenous (*Figures 7 and 8*). On examination, he had a severely infected right 1st toe with surrounding cellulitis, which could be probed to bone. His diabetes control was unknown at that time – the only available HbA_{1c} result was 2 years old. However, the patient did admit he thought his blood sugars were high as 'his eyes were going funny'.

The patient was adamant he would not be admitted despite the fact that he had a heavily infected toe and was feeling unwell. He also expressed his reluctance to having to attend for his toe to be dressed and asked 'couldn't

Figure 7. Initial wound (patient 2)

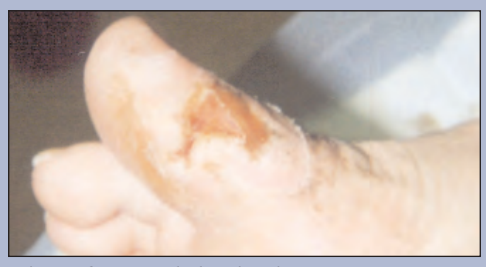

Figure 8. Wound showing improvement (patient 2)

'By involving the patient in his own treatment, he felt useful, involved and became increasingly knowledgeable about his situation. This solution was time and cost effective for the podiatry team as the patient only required an appointment at weekly intervals rather than the 2–3 times weekly that would have been expected given the complicated nature and level of exudate from this wound.'

Table 1. Weekly costs

Costs per week	Acticoat 7 (1 x week)*	Acticoat 7 (3 x week)†	Allevyn and IntraSite (3 x week)‡
Dressing costs	£16.44	£14.92	£15.71
Staff costs	£6.50	£19.50	£19.50
Transport costs	£110	£330	£330
Total costs	£132.94	£364.42	£365.21
Difference in costs		£231.48	£232.27

* *Secondary dressing changed by patient and once weekly at the OPD visit.*

† *Secondary dressing changed by podiatrist and three times weekly at the OPD visit*

‡ *Dressing regimen by podiatrist and three times weekly at the OPD visit.*

his fiancée manage it'.

After discussions with the patient and his fiancée, it was decided to use Acticoat 7 and moistened gauze and non-adherent secondary dressing. The secondary dressing was to be changed by his fiancée every 2 days and the patient would attend weekly for a supervisory visit at a time suitable to him.

The patient attended for three consecutive visits for the Acticoat 7 to be replaced. The lesion after this time had made a dramatic improvement and was nearly healed. The patient failed to attend for his fourth appointment and follow up with a telephone call elicited the response that 'as they could see it had healed there was no point in attending further appointments.'

Discussion

These cases highlight two major points:

- Involving the patient in decisions about their care and agreeing a plan that is appropriate to all is important. In these case studies, patients that could hitherto be considered as being poorly compliant and difficult, became engaged in their care, at least temporarily to achieve healing. In the second case study, we can hope that the more positive experience the patient had this time may mean that he seeks attention sooner next times
- New generation dressings such as Acticoat 7 can facilitate this engagement of patients in their care by allowing the interval between specialist dressings to be expanded. The reduced healthcare professional involvement and clinic attendances mean this is ultimately more cost-effective, although the exact costing is not yet clear. Even if there is a small increased cost this is outweighed by the improvements in the patient experience.

Costs

The cost benefit of involving patients in their care as opposed to them being dependent on outpatient department (OPD) appointments has been calculated on an approximate basis, excluding overheads. The costs are based on dressings ordered via NHS supplies, a senior podiatrist working in outpatients and transport costs of a wheelchair patient using an ambulance.

The dressings used in conjunction with Acticoat 7 were Melolin 10 x 10 cm, gauze swabs 5 x 5 cm and a K Band bandage. The standard dressing regimen used was Allevyn 10 x 10 cm and IntraSite Gel 15 g Applipak and K band. By utilising the 7-day life span of the Acticoat 7 and by the patient changing the secondary dressings, the cost savings particularly in transport costs means that the Acticoat 7, although individually more expensive, becomes cost-effective.

Both of these case studies illustrate the benefits of using a dressing regimen that allows patients to actively participate in their care. It allows patients greater autonomy and in the second case, the patient's tolerance for follow up was extended by being able to keep the appointments to a once weekly basis.

Despite the fact that foot ulceration is the most common reason for an inpatient admission in people with diabetes, there is a lack of recognition and research into the specific effects of foot ulceration on the psychosocial aspects and the quality of life (Reiber G, 1998).

If by using these new generation dressings in a collaborative way, involving and engaging patients in their care, reducing bed days and outpatient appointments as well as improving patients quality of life, then the cost is not only justifiable, but becomes good value for money. ■

The author would like to acknowledge support from Smith and Nephew

Anderson RM (1991) The challenge of translating scientific knowledge into improved diabetes care in the 1990's *Diabetes Care* **17**: 37-41

Boulter KP, Storm AJ, de Groot RRM et al (1993) The diabetic foot in Dutch hospitals: epidemiological features and clinical outcomes. *European Journal of Medicine* **2**: 215–18

Charmaz K, (1983). Loss of self: a fundamental form of suffering in the chronically Ill. *Sociology of Health and Illness* **5**:168–95

Clark RA (1995) Wound repair: overview and general considerations in: Clark, RA(ed) *The molecular and cellular biology of wound repair* 2nd ed. Plenum Press New York

DiClemente CC, Proschaska JO (1983). Stages and processes of self-change in smoking toward an integrative model of change. *Journal of Consultative Clinical Psychology* **5**: 390–95

Kimmond K, McGee P, Gough S, (2002) Loss of self: a psychosocial study of the quality of life of adults with diabetic foot ulceration. *J Tissue Viab* **13**(1): 6–16

Mancini L, Ruotolo V (1997) The diabetic foot: epidemiology. *Rays* **22**: 511–23

Reiber G, Lipsky B, Gibbons G (1998) The burden of diabetic foot ulcers. *American Journal of Surgery* **176**(suppl 2A): 5S-10S

Rubin R (1997) *Psychotherapy in diabetes mellitus seminars in clinical neuropsychiatry* **2**(1): 72-81

Department of Health (2001) *The expert patient: a new approach in chronic disease management for the 21st century*. London: DoH

Department of Health (2002) *The NHS plan – creating a 21st century health service*. London: DoH