Pressure ulcers are an area of localised injury to the skin and/or underlying tissue, usually over a bony prominence, as a result of pressure or pressure in combination with shear (European Pressure Ulcer Advisory Panel/National Pressure Ulcer Advisory Panel [EPUAP/NPUAP], 2009). Most pressure ulcers develop when soft tissue is compressed between a bony prominence; such as the sacrum, and an external surface, such as a chair or a bed. Ulceration develops when the pressure against the soft tissue is either applied with great force over a short period of time or with less force over a relatively longer period, but enough to disrupt the blood supply to the surrounding tissues. The area is deprived of oxygen and nutrients, leading to local ischaemia and eventual cell death (EPUAP/NPUAP), 2009).

The literature, as well as the authors’ clinical experience, demonstrates that the cost of healing a category 4 pressure ulcer is constantly on the increase, particularly with indirect costs being incurred, such as ambulance transfer to hospital due to septicaemia (Touche, 1993; Diamond, 2003; NHS Institute for Innovation and Improvement, 2010).

The same literature revealed that the healing of pressure ulcers remains problematic and challenging for patients, healthcare professionals and the NHS — both in terms of their effect on patients, but also on ever-tightening health budgets.

**FAECAL INCONTINENCE**

The causes of faecal incontinence are numerous and multifactorial. However, it is largely a result of neurological disease — it is also important to recognise that loose stool is not caused by infection (Beldon, 2008). In older people, it is useful to eliminate faecal impaction with overflow as a cause of incontinence.

Faecal incontinence increases the bioburden on the wound bed, although this is not necessarily a sign of wound infection or spreading infection. However, this is sometimes misunderstood by clinicians and as a result, patients may end up being prescribed antibiotics, which may also lead to loose stool.

**Faecal management systems**

Faecal management systems consist of a soft silicone catheter that is inserted into the patient’s rectum and held in place by an air-, water- or saline-filled balloon. The catheter is in turn attached to a collection bag (Johnstone, 2005).

The system helps to divert loose stool from the perianal area, consequently reducing the damage to the surrounding skin as well as the development of wound infection in patients with faecal incontinence (Safaz et al, 2010; Whiteley, 2010). The system can be left in place for up to 29 days (Johnstone, 2005).

**BACKGROUND**

Members of the authors’ tissue

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*This article aims to explore the perception that treatment of sacral pressure ulcers is costly and time-consuming, especially when faced with faecally incontinent patients with loose stool. The authors’ tissue viability service used a faecal management system to prevent faeces from coming into contact with the wound bed for 12 weeks, while simultaneously allowing a conventional dressing to perform to its maximum ability. A total cost and wound-healing comparison was carried out in two community patients who were faecally incontinent and bed-bound. One patient was managed with a faecal management system and the other with incontinence pads. The authors found that although the purchase of the faecal management system was initially costly, the frequency of dressing change was reduced, the patient felt more comfortable and fewer visits from the community nurses were necessary. Also, faster healing rates were demonstrated by reductions in wound size. This technique requires further studies with a larger sample size to ascertain its true benefits, particularly around wound healing.*

**KEYWORDS:**

Continence ■ Faecal incontinence ■ Sacral pressure damage
viability service were concerned about dressing choice and cost, as well as the frequency of dressing changes in patients with faecal incontinence and wounds in the sacral area. Patients with category 4 sacral pressure ulcers in particular were having their dressings changed two or three times per day due to faecal soiling. Other related problems included:

- Excessive use of silver dressings or other antimicrobials because of fears about infection from faecal matter
- Inappropriate microbiology swabbing — the technique was being performed correctly by nurses, however, the accuracy of swabbing as a test for infection in wounds has been questioned (Patel, 2010)
- Increase in community nursing visits
- Increased prescribing of antibiotics
- Rise in hospital admissions: staff were often recommending patients for inappropriate hospital admission due to wound size and malodour.

Other major issues related to these late-stage pressure ulcers were the psychological stress to patients caused by the odour, the constant risk of infection, a lack of dignity and privacy, and the elongated healing time.

The same patients sometimes experienced poor appetite due to malodour as well as inadequate sleep because of the constant disruption caused by incontinence pad changes, wound dressing changes, being hoisted so that bed sheets could be changed, and irritation to the skin due to incontinence (Benbow, 2009).

THE STUDY

This was a small comparative study, which aimed to look at the difference in costs and healing rate...
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in two patients with category 4 sacral pressure ulcers — one treated with a faecal management system in conjunction with conventional dressings; and the other with incontinence pads and conventional dressings.

The authors selected two patients who had loose stools or diarrhoea and who consented to participate in the study. All of the treatments were applied by the same clinicians and all other factors maintained constant. For example, in order to monitor the efficacy of the system both patients were assessed by the service lead on a weekly basis, and information on wound progress and general reassurance was provided to both patients.

The study was performed over a 12-week period and both of the patients were visited three times a day throughout.

Inclusion and exclusion criteria
In this cost comparison study only two patients were selected according to the inclusion criteria listed below.

- Patients were both housebound, and living alone in their own accommodation
- Both had restricted mobility and were bed-bound
- Both patients were over 75 years old and female
- Both were eating and drinking normally
- Both patients were faecally incontinent
- Both patients could tolerate being turned in bed and were being treated on pressure-relieving mattresses
- Both patients had a diagnosis of insulin-dependent diabetes
- Both had category 4 pressure ulcers (EPUAP/NPUAP, 2009)
- The patients had to meet the treatment requirements demonstrated in Figure 1.

The exclusion criteria consisted of patients with a complicated medical history, including rheumatoid arthritis or chronic heart disease, for example, or any condition that could lead to them being haemodynamically unstable, such as the presence of a pacemaker or diagnosis of congestive cardiac failure.

The patients
Patient A
Patient A was a 76-year-old housebound woman with a diagnosis of insulin-dependent diabetes, restricted mobility through multiple sclerosis and a category 4 pressure ulcer in her sacral region (Figure 2), which demonstrated extensive slough and exudate. Her multiple sclerosis had left her bed-bound and she was incontinent of faeces but able to tolerate turning on a pressure-relieving mattress.

During the 12-week study, patient A was treated without a faecal management system. Instead, her faecal incontinence was managed with incontinence pads and conventional wound dressings (a barrier film, gel dressing and Hydrofiber as the primary layer, secured by a foam dressing).

As well as the inconvenience and discomfort of repeated dressing changes throughout the study, patient A’s bed had to be changed repeatedly during the day. Malodour remained present and specialist dressings had to be prescribed for this.

The negative effect of incontinence pads on pressure distribution was also a feature in patient A’s treatment, a phenomenon reflected in research identifying that pressure can be as much as 20–25% higher underneath the skin of a patient wearing an incontinence pad (Fader et al, 2004).

Figure 3 shows patient A’s pressure damage at week 12 when the treatment was stopped. Over the period of the study, there was a 10% reduction in wound size, the slough had cleared and the wound bed was epithelialising.

Figure 4. Patient B’s sacral pressure ulcer at the start of the 12-week study.

Figure 5. Patient B’s sacral pressure ulcer at the end of the 12-week study period and after treatment with a faecal management system and wound dressings.
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Patient B

Patient B was a 79-year-old housebound woman also with a diagnosis of insulin-dependent diabetes. Like patient A, she demonstrated restricted mobility and a category 4 pressure ulcer in her sacral region (Figure 4). She was also bed-bound through multiple sclerosis and was incontinent of faeces, but able to tolerate turning on a pressure-relieving mattresses.

Throughout the study, patient B was treated with a faecal management system as well as conventional dressings (a barrier film, gel dressing and Hydrofiber as the primary layer, secured by a foam dressing). There was a reduction in malodour and less frequent bed changes compared with patient A.

Figure 5 shows patient B's wound at week 12 when the treatment was stopped. There had been an 80% reduction in wound size with a healthy epithelialising wound bed compared to week one, where the wound bed had exhibited slough and high volumes of exudate. The wound depth had also reduced significantly.

Throughout the 12-week study the faecal management system reduced the hidden cost of bed linen changes. The patient also related to staff that she was reassured that the ongoing problem of faecal incontinence impacting on her wound had been temporarily eliminated.

Cost-effectiveness

As mentioned above, cost-effectiveness is becoming increasingly important in modern health care, with the pressure of budgets creating an expectation of value for money as well as good clinical outcomes (NHS Institute for Innovation and Improvement, 2010).

Table 1 illustrates the unit cost of a 15-minute visit by various healthcare staff and the dressings involved, which shows the level of financial commitment involved in caring for housebound patients who, in the case of the patients featured here, required three visits per day.

Table 2 illustrates the total cost of clinical care for the patients selected for this review, excluding indirect costs, such as costs of incontinence pads, or carer input. Overall, Table 2 demonstrates that the financial savings of using the faecal management system were significant. The system also reassured the nursing staff that they could organise their day without the pressures of continual dressing changes.

The data demonstrate that over a 12-week period, the use of the faecal management system, in combination with the appropriate wound dressings, was less expensive than conventional dressings alone, even though the cost of incontinence pads was not taken into consideration in the costings for patient A.

**DISCUSSION**

In this small study the use of a faecal management system significantly reduced the community nurses’ workload, freeing them up for other clinical tasks. However, given the invasiveness of faecal management systems (Johnstone, 2005), patient consent must be sought before they are used.

Mobile patients may feel uncomfortable initially, simply because the product was designed for bed-bound patients with pressure ulcers or those with a severe case of diarrhoea. However, this does not mean that mobile patients cannot sit out in a chair for a few minutes with the system in situ, although caution should be exercised as there is a risk of detaching the bag from the tubing (Evans et al, 2010).

Studies have shown the effectiveness of these systems in preventing faecal matter from contaminating sacral pressure ulcers (Saizal et al, 2010; Whiteley, 2010). However, in the UK faecal management systems are not...
Currently listed for community prescription, which means it can be difficult to acquire them. Similarly, although in this small study the cost of treatment and total wound healing time were reduced, nurses may need to argue the case for using any item of equipment where the initial outlay is relatively expensive, despite the positive end result.

These systems may also require input from members of a continence team as they may be more familiar with the anatomy and physiology of the bowel. However, in theory, any clinician could be trained to insert and monitor a faecal management system.

CONCLUSION

Further large studies are needed to confirm the findings of this study. The facilitation of wound healing rates is difficult to quantify as pressure ulcers are not scientifically induced — they develop in different shapes, sizes and locations of the body, which makes it difficult to assess if a particular system aids wound healing.

In this small study, appropriate use of faecal management systems allied to the correct dressing selection improved the patient’s comfort and healing rate. The use of the faecal management system proved cost-effective, however, their availability for community prescription (on drug tariffs) in the UK would enable easier access for nurses.

On the basis of this small sample, it is difficult to claim that faecal management systems directly aid wound healing in category 4 pressure ulcers, although there was a marked reduction in wound volume in the patient with the system in situ.

The system also reduced the elements that prolong the wound-healing process and can cause further skin damage, such as faecal contamination and regular dressing changes, enabling the wound to reach its optimal healing state. The system also significantly reduced the community nurses’ workload, freeing them up for other clinical tasks.

Overall, the authors conclude that although a positive development, the use of such these systems requires further study to explore their full efficacy and cost-effectiveness in category 4 pressure ulcer management. JCN

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KEY POINTS

- The authors of this article explore the perception that treatment of sacral pressure ulcers is costly and time-consuming, especially when faced with faecally incontinent patients with loose stool.

- The authors’ tissue viability service used a faecal management system to prevent faeces from coming into contact with the wound bed for 12 weeks, while simultaneously allowing a conventional dressing to perform to its maximum ability.

- A total cost and wound-healing comparison was carried out in two community patients who were faecally incontinent and bed-bound

- One patient was managed with a faecal management system and the other with incontinence pads.

- The authors found that although the purchase of the faecal management system was initially costly, the frequency of dressing change was reduced, the patient felt more comfortable and fewer visits from the community nurses were necessary.

- Also, faster healing rates were demonstrated by reductions in wound size.

- This technique requires further studies with a larger sample size to ascertain its true benefits, particularly around wound healing.


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Date of preparation: February 2014  RXAN140038
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