

ADERMA™ DERMAL PADS IN THE PREVENTION OF PRESSURE ULCERS

Key words

- ▶▶ Pressure ulcer
- ▶▶ Prevention
- ▶▶ Aderma
- ▶▶ Dermal pads

Pressure ulcers have a significant impact on both patients and health service budgets. Many pressure ulcers are avoidable through improved prevention. Aderma (Smith & Nephew) dermal pads are a simple, intuitive technology that can help contribute to the prevention of pressure ulcers. An evaluation of Aderma dermal pads was conducted across four wards in a single hospital in the UK. The incidence of hospital-acquired pressure ulcers following the introduction of Aderma was compared with the incidence prior to the introduction. The results show that there was a reduction of approximately 70% in the incidence of hospital-acquired pressure ulcers following the introduction of Aderma. The hospital estimates that this resulted in savings of approximately £140,000 in pressure ulcer treatment costs over a three-month period. The findings suggest that Aderma has the potential to contribute to reducing the incidence of pressure ulcers when integrated into pressure ulcer prevention protocols. **Conflicts of interest:** This evaluation was supported through a grant from Focus Product Developments. Aderma has since been acquired by Smith & Nephew and is now a registered trademark of Smith & Nephew.

Pressure ulcers are a common problem in hospital settings, with estimates from studies conducted in the UK suggesting that between 4–10% of people admitted to hospital develop a pressure ulcer (National Institute of Health and Clinical Excellence [NICE], 2005) and that prevalence in hospitals ranges from 5–32%, depending on case-mix (Kaltanhaler et al, 2001).

These ulcers create a significant burden both to the patient and the health service. Pressure ulcers can cause significant pain, discomfort and anxiety for a patient (Fox, 2002). For the health service,

pressure ulcers lead to a significant yet largely avoidable resource use, including extended hospital stays, readmissions and significant nurse time to manage the wounds (Dealey et al, 2012). The Department of Health (DH) pressure ulcer productivity tool estimates that the cost of managing a pressure ulcer ranges from around £1,500 for a grade 1 ulcer, to over £14,000 for a more severe grade 4 ulcer (DH, 2010).

Increasingly, policymakers are looking at ways of incentivising risk management strategies that can help to reduce the incidence of pressure ulcers. For example, in England and Wales, the

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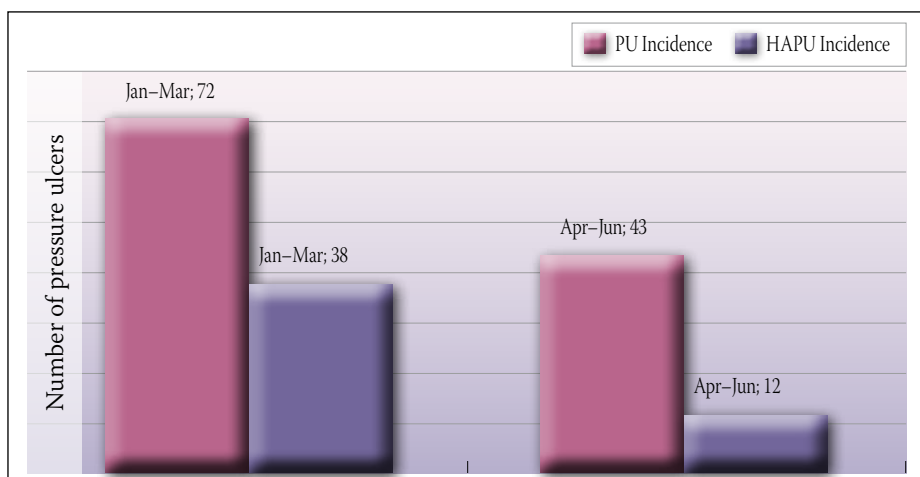


Figure 1: Total pressure ulcers and hospital-acquired pressure ulcers (HAPU): pre-evaluation and evaluation periods.

DH has identified a number of High Impact Actions for nurses and midwives, which are intended to contribute to the overall efficiency goal of the NHS (NHS Institute, 2010). These actions include an ambitious target to eliminate avoidable pressure ulcers.

These targets are incentivised through the Commissioning for Quality and Innovation (CQUIN) framework. Negotiated locally, CQUIN targets make specific reference to pressure ulcer prevention and achieving locally defined targets can lead to significant incentive payments for individual hospitals (Newton, 2010).

Furthermore, hospitals are coming under increasing pressure from commissioners to avoid hospital-acquired complications, which might result in excess bed days or re-admissions. Like many international healthcare systems, the NHS is looking at ways of making readmissions financially punitive to hospitals, which introduces a 'stick' to complement the 'carrot' offered by the CQUIN incentive payments.

The result of this is that hospitals are looking for ways to reduce the risk of pressure ulceration. In many instances, the solution is improving the basic quality of nursing that is provided to patients, such as regularly repositioning patients to distribute pressure.

There are detailed guidelines available both from international bodies, such as the European Pressure Ulcer Advisory Panel (EPUAP, 2009), and domestic organisations such as NICE (NICE, 2005).

These highlight the importance of monitoring patients for the signs of skin damage, grading damage accordingly and putting in place improved nursing protocols. However, there is also a role to play for technologies that can complement good quality nursing.

Aderma

Aderma dermal pads are simple and intuitive pressure-relieving devices that can be applied to bony prominences to help distribute pressure evenly and thus reduce the risk of skin damage.

The dermal pads are non-adhesive gel pads available in a range of shapes and sizes, which are suitable for widespread use but are most commonly used on the sacrum and heel. The pads are intended for single-patient use but can be washed and reused multiple times by the same patient.

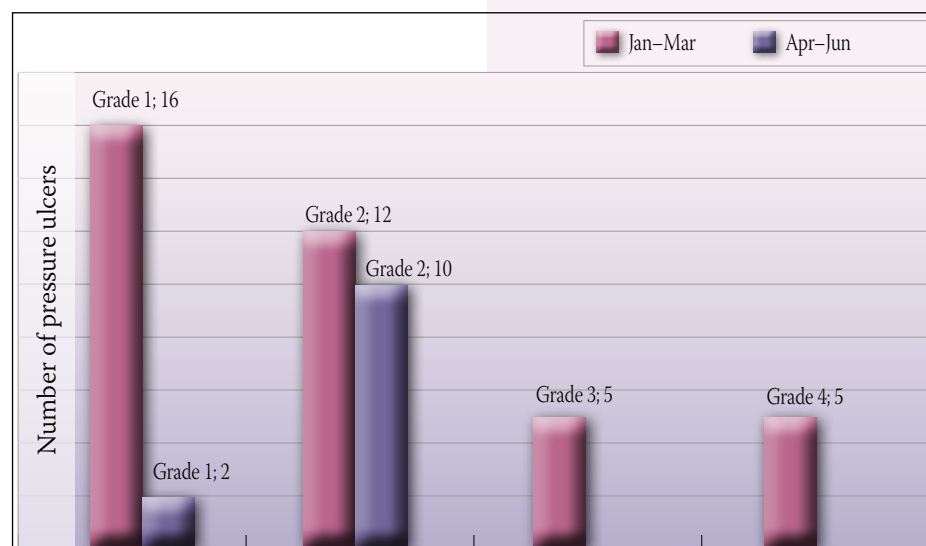


Figure 2: Hospital-acquired pressure ulcers by severity.

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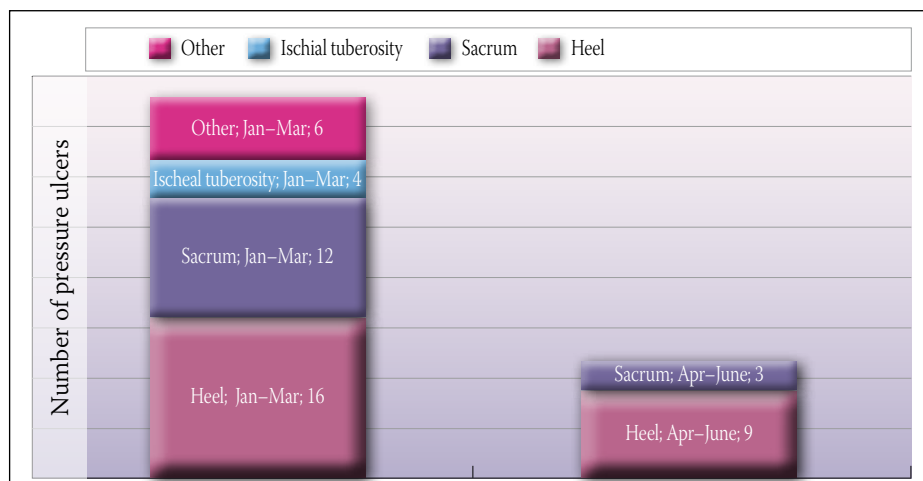


Figure 3: Site of pressure damage.

An evaluation of Aderma dermal pads was conducted at a single hospital in the UK to determine whether their use, combined with existing nursing practices, could reduce the incidence of pressure ulceration. The results are reported below.

METHODS

A three-month evaluation was conducted over the course of 2008. Aderma dermal pads were introduced to four wards, comprising elderly medicine, orthopaedics and general surgery. The wards had historically high levels of pressure ulceration ($\approx 2.5\%$), due to the high-risk nature of many of the admissions.

A total of 80 sacral and heel dermal pads were provided to help reduce the risk of pressure ulcers across these wards. Some basic training was provided in the use of the dermal pads, but otherwise staff were expected to adhere to standard nursing protocols established by the hospital, including risk assessments using the Waterlow score and grading skin damage according to the EPUAP grading system.

The effectiveness of Aderma was established by considering the impact on pressure ulceration across the four wards over a period of three months post introduction, compared with the three month period prior to introduction. Pressure ulcer incidence was derived from existing patient information systems.

RESULTS

There was a significant reduction in the incidence of pressure ulcers in the three months following the introduction of Aderma. In the three-month period prior

to the evaluation, there were a total of 72 pressure ulcers across the four wards, of which 38 (53%) were hospital-acquired. In the three-month evaluation period, the total number of pressure ulcers fell to 43, a reduction of over 40%, and the number of hospital-acquired pressure ulcers fell to just 12, a reduction of almost 70%.

The proportion of all pressure ulcers identified that were hospital acquired fell from approximately 53% in the pre-evaluation period to 28% in the evaluation period. Pressure ulcer incidence across these wards was reduced from approximately 4.5% to 3.5% and the hospital-acquired pressure ulcer incidence was reduced from approximately 2.5% to 0.5% over the course of the evaluation period.

Almost 90% of the reduction in total pressure ulcers is attributable to the reduction in hospital-acquired pressure ulcers observed during the evaluation period (Figure 1).

The reduction in incidence was seen across all grades of pressure ulcers. The largest absolute reduction occurred in grade 1 ulcers, although notably, there were no grade 3 or grade 4 ulcers in the three months following the introduction of Aderma, compared with 10 in the three months prior to its introduction (Figure 2).

The reductions in incidence reported above were identified across all common pressure ulcer sites, as reported in Figure 3. While pressure ulcers at all sites were reduced, the most notable reductions were in sacral and heel pressure ulcers.

In the three-month period prior to the introduction of Aderma there were 16 pressure ulcers on heels and 12 on the sacrum. In the three months following the introduction of Aderma, there were nine pressure ulcers on heels (a 44% reduction) and just three on the sacrum (a 75% reduction) (Figure 3).

The findings indicate that Aderma can contribute to a reduction in pressure ulcer incidence when used as part of a pressure ulcer prevention protocol. When examined over a three-month period, the introduction of Aderma resulted in a significant reduction in pressure ulcer incidence, reducing the incidence of hospital-acquired pressure ulcers to less than 1%. Given that the patients involved in the evaluation were recruited from high-risk wards with a historic rate of hospital-acquired pressure ulceration of around 3%, this represents a significant improvement.

DISCUSSION

The avoidance of pressure ulcers clearly delivers a substantial benefit for patients, in terms of avoidable morbidity. However, it also delivers a substantial cost saving to the hospital trust. The estimated cost of treating pressure ulcers, stratified by severity, derived from the NHS Pressure Ulcer Productivity Calculator are presented in Table 1 (DH, 2010).

Applying these unit costs to the pressure ulcers reported in the study, it is estimated that the cost of treating hospital-acquired pressure ulcers in the three months prior to the introduction to Aderma was approximately £208,000. In the three months following the introduction of Aderma, this fell dramatically to approximately £62,000 — a saving of £146,000 — as a result of fewer ulcers occurring and a reduction in the severity of those that did occur.

The total acquisition cost of all the Aderma dermal pads used in this evaluation was approximately £2,500. Taking this into account, the introduction of Aderma led to a net saving of over £140,000.

The NHS is currently undergoing a period of intense austerity and 'spend-to-save' investments are increasingly difficult to justify unless they can be shown to produce significant cash savings over a short time frame.

The potential return on investment indicated by this evaluation meets these requirements. While there is a robust body of evidence on more intensive technologies to help reduce pressure damage, such as pressure-relieving mattresses (Nixon et al, 2006), in many cases these require a significant investment, as well as comprehensive training of nurses and carers.

In contrast, Aderma represents a modest investment, requires minimal training and can result in rapid improvements in outcomes and productivity. This offers hospitals real potential to improve their pressure ulcer performance with a view to achieving the ambitious targets set by the DH efficiency agenda.

Clearly, it needs to be acknowledged that a technological solution, no matter how simple, is not a panacea for pressure ulcers in hospital settings. It needs to be recognised that the reductions in pressure ulcer incidence identified in this evaluation may be attributable not only to Aderma but also improvements elsewhere in the care pathway. It is also the case that monitoring pressure ulcer rates as part of the evaluation may have had the effect of improving nursing care either consciously or subconsciously (often referred to as the Hawthorne effect).

It is important that pressure ulcer prevention initiatives first focus on the fundamentals of education, monitoring and repositioning. Once these are firmly established, then technologies, such as Aderma, can be appropriately accommodated into care pathways as a means of further reducing the risk of skin damage.

CONCLUSION

In a single hospital evaluation, the introduction of Aderma dermal pads was associated with a reduction in the incidence of hospital-acquired pressure ulcers in patients at high risk of ulcer damage of almost 70%.

Aderma dermal pads are a simple, intuitive technology that can be easily incorporated into existing care pathways with minimal training and disruption. Aderma dermal pads offer real potential to generate net savings to the health service, by reducing the treatment costs associated with pressure ulcers, while also reducing the impact of pressure ulcers on patient quality of life. **WUK**

Table 1
Cost of treating pressure ulcers by severity

Pressure ulcer severity	Estimated cost of treatment
Grade 1	£1,000
Grade 2	£6,000
Grade 3	£10,000
Grade 4	£14,000

Source: NHS Pressure Ulcer Productivity Calculator