A clinical audit of the Softform Premier Active™ mattress in two acute, care of the elderly wards

This article reports on the findings of a study which was carried out to compare the effect of the Softform Premier Active mattress™ (a foam mattress with a dynamic, alternating underlay), versus a standard air mattress on pressure ulcer incidence in two acute, care of the elderly wards over a 6-month period. The results revealed a pressure ulcer incidence of 8% in both patient groups, which was considered to be unexpectedly low in such a vulnerable, high risk population. It was concluded that the Softform Premier Active mattress was as effective as the standard air mattress in pressure ulcer prevention, but had the advantages of dual functionality and lower randomised, controlled trial (RCT) in which it was compared to a standard hospital mattress (a slab foam with non-stretching cover) on orthopaedic, trauma, medical, oncology and surgical wards over a one-year period. This study identified a statistically significant lower incidence of pressure ulcers in high-risk patients when they were nursed on the Softform Premier mattress compared to the standard foam mattress. These findings demonstrated that the additional cost of the new mattresses could be justified on the basis of the reduced pressure ulcer incidence rate, and resulted in all mattresses throughout the hospital being replaced with Softform Premier mattresses.

In 1998, Gray et al conducted a clinical audit of the new mattresses’ performance on the same wards as the RCT (Gray and Campbell, 1994), and identified that the original hospital mattresses were no longer in use and that the Softform Premier mattresses were still performing as well clinically as they had done in the RCT three years before.

In 2001, Gray et al carried out a 6-month clinical audit to investigate the use of the Softform Premier mattress in conjunction with an electric bed frame in two high dependency units. The results showed a low level of pressure ulcer development in the high-risk patient
This article details a study carried out to determine the effect of using the Softform Premier Active™ Mattress versus a standard air mattress on pressure ulcer incidence in two acute care of the elderly wards.

The Softform Premier Active Mattress, which consists of a Softform Premier foam mattress with a dynamic underlay, is designed for use in both acute and community settings. The underlay, which alternates on a 10-minute cycle, can be activated through connection to a portable pump, which is activated by a simple on/off switch. The pump features software which is able to assess a patient’s weight, and subsequently supply the appropriate level of air to create an alternating surface for use in patients at very high risk of pressure ulcer development. When the alternating surface is not required, the pump can be disconnected, and the mattress becomes static. The pump can then be stored away or used elsewhere with another Softform Premier Active mattress. The ability to use the mattress as either a dynamic or static surface means the patient can stay on the mattress throughout the course of their treatment, minimising the need for moving and handling, and allowing their care to be stepped up or down as appropriate.

Acute care of the elderly wards were selected for the evaluation to ensure that the mattresses were used in a population at very high risk of pressure ulcer development. The majority of patients admitted to the wards normally require nursing upon an alternating-pressure air mattress on admission and in the days afterwards. As their condition stabilises or improves, the patient can then be moved off the alternating system and onto a static foam mattress.

Clinical audit
Before starting the study, a clinical audit of practice was undertaken to establish if the standard of care provided on the two wards was in line with best practice as defined in the best practice statements Pressure Ulcer Prevention (Cooper and Gray, 2005) and Care of the Older Person’s Skin (Cooper et al, 2006) and to identify any deficiencies in care. The previous studies by Gray et al (Gray, 1992; Gray and Campbell, 1994; Gray et al, 1998; Gray et al, 2001) failed to take into account the influence of the nursing care provided, in addition to mattress provision, on the pressure ulcer incidence rates. This could have potentially created biased results, and so the pre-study audit was carried out to address this.

Two major issues were identified as a result of the audit; the amount of time the patient spent sitting out of bed varied across the wards, as did the availability of pressure-reducing cushions for these patients. These issues were rectified via the provision of pressure-reducing seat cushions and all staff being advised that a patient should sit out for two hours, before being returned to bed for a minimum of one hour. As a result of these interventions both wards had a comparable level of care provision before the start of the study, that was in accordance with best practice.

The study
Aims
The aims of this study were to determine the effect of the Softform Premier Active mattress versus a standard alternating pressure air mattress on pressure ulcer incidence on two high-risk acute care of the elderly wards over a 6-month period, and to determine the staff’s opinion of the mattresses’ performance.

Method
Two acute wards from within a large Care of the Elderly Hospital were used for the study. All the admissions into the wards were emergencies with a variety of causes, the most common of which was acute infection.

At the start of the 6-month study period, each ward was provided with five Softform Active mattresses and pressure-reducing cushions (Softform Premier Active Cushions; Invacare, Cardiff) for use by all study participants if required, regardless of mattress allocation.

On admission to the ward, patients were assessed using the Waterlow risk assessment calculator and clinical...
judgement in accordance with local policy. Patients considered to be at high risk of pressure ulcer development were randomly allocated to a Softform Premier Active or standard air mattress. Preventative care such as repositioning and regular skin inspection was carried out according to best practice (Cooper and Gray, 2005; Cooper et al, 2006) and the individual’s plan of care, and findings documented in the patient’s notes. Any pressure ulcers that developed during the study period were graded by a member of the tissue viability department.

At the end of the 6-month period, the patient’s notes were analysed retrospectively to extract information relating to their skin condition. As each ward was also required to complete a weekly pressure ulcer incidence report, these were obtained for the 6-month study period and used as a cross reference with the study findings to ensure that no ulcers were missed.

An anonymous questionnaire was issued to each member of staff working on the wards to establish their opinion on the performance of the Softform Active Premier mattress in relation to the existing standard air mattress in terms of ease of moving and handling, cleaning, acceptability to the patient and set-up.

Results
During the study period, 50 subjects used the Softform Premier Active mattress (mean age=82.4 years; mean number of chronic conditions = 3.2; mean Waterlow risk score = 22.2 [range=17–29]) and a further 50 subjects were managed on a standard air mattress (mean age=84.0 years; mean number of chronic conditions = 3.1; mean Waterlow risk score = 21.6 [range=17–29]).

Of the 50 patients using the Softform Premier Active Mattress, four developed superficial, grade 2 (EPUAP, 2001) pressure ulcers (sacral ulcer; n=3; heel ulcer; n=1) while four patients using the air mattresses also developed grade 2 (EPUAP, 2001) ulcers (sacral, n=2; heel, n=2). This resulted in a pressure ulcer incidence of 8% in both groups individually and collectively. The findings of the staff questionnaire are outlined in Table 1.

Discussion
Various studies into the Propad Premier Mattress Overlay and Softform Premier Mattresses have been carried out in the department of tissue viability in Grampian over a 16-year period. Only in this most recent study has the impact of nursing care and co-morbidities on pressure ulcer incidence been considered. The retrospective collection of data removed the potential for bias resulting from the presence of a researcher in the clinical area. By conducting a full audit of care before the study and addressing the deficits identified, the provision of preventative care was of a high standard and in accordance with best practice in these wards before the study began.

The results of this study showed that in both patient groups, there was a high rate of co-morbidities recorded, in addition to the reason for admission. This, coupled with the mean ages of the patients resulted in an acutely ill elderly study population at very high risk of pressure ulcer development, as indicated by the mean Waterlow scores. Therefore a pressure ulcer incidence rate of 8% in such a vulnerable population was surprisingly low.

Meaume (2005) reported a pressure ulcer incidence of 15.7% in an elderly population (aged 65 years and above) and a study of all hospitals (excluding university hospitals) in France identified an 8.9% prevalence (Barrois et al, 2008). As the study population would have included a number of younger, healthy subjects in the analysis, it suggests that the pressure ulcer incidence rate would have been much higher in an older population.
An 8% incidence rate in both study groups indicates that the Softform Premier Active mattress was as effective as the standard air mattresses in preventing pressure ulceration.

The staff response to the equipment was very positive and a post-study questionnaire confirmed that they found the new equipment performed as well as the standard air mattresses in terms of moving and handling, ease of cleaning and set up and patient acceptability.

The dual functionality of the Softform Premier Mattress was an advantage in the clinical setting since when the patients treated on this mattress no longer needed an alternating surface, the pump was removed converting the mattress to a static foam mattress. The Softform Premier Active mattress also costs less than many available alternating air mattresses, giving trusts the option to reduce the expenditure associated with the purchase or hire of such equipment.

The effectiveness of the mattresses used in this study cannot be viewed in isolation, however, must be considered in the context of the nursing care provided. The pre-evaluation audit pointed towards a high level of preventative care being provided in the wards, and the changes in practice post-audit will have further enhanced this provision. It is clear that this high level of care will have played a significant part in ensuring that the pressure ulcer incidence rates in such a vulnerable, high risk group were so low.

Conclusions
In an elderly and acutely ill population at high risk of pressure ulceration the Softform Premier Active Mattress was found to be as effective in reducing pressure ulcer incidence as the standard alternating pressure air mattress. It should be recognised that this study was conducted in an environment that provided high levels of nursing care, indicating that where there is effective equipment available and motivated, well-informed staff, pressure ulcer incidence can be kept relatively low even in the most high-risk populations.


