

[EP131] THE USE OF NEW CERAMIDE 2-CONTAINING HYDROCOLLOID DRESSING ON BONE PROMINENCE SITES FOR PRESSURE ULCER PREVENTION

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E-poster session: Prevention 1

Aim: Previous challenges have revealed that the use of commercially-available ceramide 2-containing hydrocolloid dressings (CHCDs) can help to prevent pressure ulcers in patients at risk of developing shear force-related tissue damage. However, the use of adhesive tape around CHCDs is normally required because of its low initial tack force. Healthy skin is consequently damaged by the strong adhesive properties of the tape. The aim of this study was to prepare and evaluate a new CHCD containing tackifying agents.

Method: The adhesive properties of the new CHCD, including initial tack force and peeling force, were evaluated. A case series was conducted involving 12 bedridden patients in two Japanese acute hospitals. The mean age was 81.4 ± 13.1 , and Braden score was 11.9 ± 1.5 . The new CHCD was applied to the sacrum ($n = 6$), ilium ($n = 7$), heel ($n = 8$), and other area ($n = 1$), without adhesive tape. The procedure in this study was explained, and informed consent was obtained from all the patients or their families.

Results / Discussion: Initial tack force and peeling force of the new CHCD was significantly higher than commercially-available CHCDs ($p < 0.05$). The wearing time on sacrum, ilium and heel was 6.0 ± 0.5 , 6.7 ± 0.2 and 2.2 ± 0.7 days, respectively. None of the patients in this study developed pressure ulcers or related tissue damage during the intervention periods.

Conclusion: The new CHCD can be applied to bone prominence sites in bedridden patients for extended periods, and contributes to preventing pressure ulcers.

[EP132] A 26 PATIENT EVALUATION OF A NEW HEEL ZONE MATTRESS

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E-poster session: Prevention 1

Aim: To evaluate a new design of standard mattress replacement in relation to:

- The occurrence of pressure ulcers (PU)
- The use of additional heel protection
- Patient comfort

Method: An existing static air mattress was modified to increase the length when profiled and improve the pressure reduction allowing virtual flotation at the heel. This was tested by ability to remove a sheet of paper from beneath the heel without force or causing friction. Before fully evaluating the heel protection zone a measure of equivalence with the existing mattress was carried out. Governance procedures were followed.

The number and category of and hospital acquired PU was identified in the previous 8 weeks. The mattresses were put in situ on the ward and the number and category of pressure ulcers followed prospectively for 8 weeks. No changes were made to the PU protocol so patients had additional foot protection if required and were moved up to alternating equipment if required.

Results / Discussion: Over 8 weeks the mattress was used by 26 patients. There was no increase in the number of PU that occurred. No heel protection was used. Patients identified the mattress as being comfortable (average 3.8 where 1 is poor, 5 is excellent).

Conclusion: Ward staff work in a busy environment, patients needs are multiple and varied. Using additional equipment increases the likelihood of preventative measures being forgotten, misused or overlooked. This mattress aims to combine features of a good quality replacement mattress with additional PU preventative measures.

[EP133] CURRENT FOAM MATTRESSES ARE TOO SHORT FOR PROFILING BEDS - INCREASING THE CONFORMABILITY RESOLVES THIS ISSUE

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E-poster session: Prevention 1

Aim: To retain a normal mattress whilst providing additional length – allowing for contouring over the profiling bed frame and reduction in need for add on equipment.

Method: With the introduction of profiling bed frames it seems that mattresses become too short resulting in patients becoming at risk of pressure damage to the heel or plantar surface of the foot. Manufacturers recommend extending the bed base and inserting mattresses extenders this rarely happens in practice and may mean that patients are losing the benefit of specialist heel sections of mattresses.

Simple alterations to the foam were made (deep cuts in the U core) and the new version tried under 3 volunteers (heights of 5'2, 5'7 and 6'5).

Results / Discussion: The adjustments resulted in an increased length of between 6 and 12 cms when the foam was profiled compared to the non adjusted foam. Thus the 6'5" volunteer still had their heels resting on the mattress rather than overhanging the edge.

Conclusion: The issue of mattresses being too short has been discussed by clinicians for a long time and has previously been raised* yet no company has looked at ways of preventing patients heels dangling over the edge of the mattress. Once a company did listen and engage with the issue by collaborative working between a clinician and an engineer a simple, cost effective solution was found. This illustrates clearly the benefits of collaborative working.

*Fletcher J (2011) Do your mattresses fit your beds? – Poster presentation, Wounds UK Conference, Harrogate 2011

[EP134] A COMPARISONS BETWEEN ADHESIVES AND SKIN SENSITIVITY

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E-poster session: Prevention 1

Aim: In this study we compared the physical characteristics of 3 types of skin/wound adhesives; acrylics, silicones and polyurethane (PU) gels.

Method: Moisture vapour transfer rate (MVTR) was measured along with peel adhesion. Peel adhesion was performed at a constant known speed and angle using a 25mm width of adhesive material. The trauma on removal of all adhesives was investigated using a porcine skin model. The effect of adhesive removal on the stratum corneum was visualised macroscopically and also quantified.

Results / Discussion: MVTR testing demonstrated that the PU gel adhesive had the highest moisture vapour transfer rate when compared to the silicone and acrylic adhesives. Silicone was proven to have a high level of occlusiveness. Peel adhesion demonstrated that silicone gel adhesives had the lowest peel strength. The PU gel also exhibited relatively low peel strength. Visual analysis of the stained porcine skin model indicated that the silicone and PU adhesive removed less stain when compared to an acrylic adhesive. Absorbance data verified this result.

Conclusion: The high MVTR level of PU gel adhesive proves that this adhesive is breathable and thus potentially more comfortable when worn for extended periods of time. The acrylic adhesive had the greatest adhesion level however they also removed the highest amount of dye indicating that they caused the highest level of skin trauma on removal. Both the silicone and the PU gel adhesive indicated that they caused low trauma to skin on removal and were deemed to be more 'skin-friendly' than acrylic adhesives.

[EP135] THE USE OF A FRICTION REDUCING SILICONE DRESSING IN THE MANAGEMENT OF CHILDREN WITH EPIDERMOLYSIS BULLOSA

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E-poster session: Prevention 1

Aim: Increasingly biofilms have been linked to delayed healing in chronic wounds.¹⁻⁴ The slow growth of mature biofilms and host components (protein, red blood cells and serum) inhibit antimicrobial activity.⁵⁻⁸ In this study two wound dressings were evaluated in an *in vitro* model against mature biofilms grown in both simple and clinically relevant growth medium.

Methods: Antibiofilm efficacy of silver Hydrofiber antibiofilm (SHFAB) and Cadexomer iodine (CI) dressings was assessed in an *in vitro* biofilm model using wound simulation media (WSM) containing damaged tissue protein, red blood cells and serum, and a simple medium (n=4 for each dressing on each media type). Slow growing mature biofilms (72 hours old) of *Staphylococcus aureus* and *Pseudomonas aeruginosa* were challenged with the dressings for 24 and 72 hours. Antibiofilm effect was then assessed by replicate plating.

Results: Antibiofilm activity was classified as Good (eradication), Limited effect (minimal re-growth) and No effect (Biofilm growth). CI demonstrated good antibiofilm activity (both organisms) in the simple media, and against *S. aureus* in the WSM. SHFAB had no/ limited effect in all conditions.

Conclusions: Good antibiofilm effect was observed with the CI dressing compared to the SHFAB across all conditions. Although wound proteins provide a higher challenge to topical antimicrobials, activity was more prominently impeded in the silver dressing.

Previous clinical evidence indicates that CI has a significant effect on bioburden in chronic wounds,^{9,10} accompanied by higher healing rates compared to standard care,¹¹ and reduced treatment costs and surgical revision requirements.¹² Such evidence combined with known antibiofilm efficacy *in vitro* suggests a role for CI in successful treatment against biofilms in chronic wounds.

CI = IODOFLEX[◊], SHFAB = AQUACEL[™]Ag+Extra,

◊Trademark of Smith & Nephew, [™]All Trademarks acknowledged

References:

1. James GA, Swogger E, Wolcott R et al. Biofilms in chronic wounds. *Wound Rep Regen.* 16: 37-44. (2008)
2. Bjarnsholt T, Kirketerp-Møller K, Østrup Jensen P et al. Why chronic wounds will not heal: a novel hypothesis. *Wound Rep Regen.* 16:2-10. (2008)
3. Roche ED, Renick PJ, Tetens SP et al. Increasing the presence of biofilm and healing delay in a porcine model of MRSA infected wounds. *Wound Rep Regen.* 20:537-54. (2012)
4. Schierle et al Staphylococcal biofilms impair wound healing by delaying re epithelialisation in a murine wound model. *Wound Repair and Regeneration* 17(3) 354-359. (2009)
5. Costerton, J. W., Stewart, P. S. & Greenberg, E. P. Bacterial biofilms: a common cause of persistent infections. *Science* **284**, 1318–22 (1999).
6. Nickel, J. C., Ruseska, I., Wright, J. B. & Costerton, J. W. Tobramycin resistance of *Pseudomonas aeruginosa* cells growing as a biofilm on urinary catheter material. *Antimicrob. Agents Chemother.* **27**, 619–24 (1985).
7. Kapalschinski, N. *et al.* Albumin reduces the antibacterial activity of polyhexanide-biguanide-based antiseptics against *Staphylococcus aureus* and MRSA. *Burns* **39**, 1221–5 (2013).
8. Pitten, F. –, Werner, H.-P. & Kramer, A. A standardized test to assess the impact of different organic challenges on the antimicrobial activity of antiseptics. *J. Hosp. Infect.* **55**, 108–15 (2003).
9. Schwartz J A, Lantis JC, Gendics C, Fuller AM, Payne W, Ochs D. A prospective, non comparative, multicenter study to investigate the effect of cadexomer iodine on bioburden load and other wound characteristics in diabetic foot ulcers. *Int Wound J.*;10(2):193–9 (2013).
10. Skog, E. *et al.* A randomized trial comparing cadexomer iodine and standard treatment in the out-patient management of chronic venous ulcers. *Br. J. Dermatol.* **109**, 77–83 (1983).
11. O’Meara, S. *et al.* Antibiotics and antiseptics for venous leg ulcers. *Cochrane database Syst. Rev.* **1**, CD003557 (2014).
12. Apelqvist, J. & Ragnarson Tennvall, G. Cavity foot ulcers in diabetic patients: a comparative study of cadexomer iodine ointment and standard treatment. An economic analysis alongside a clinical trial. *Acta Derm. Venereol.* **76**, 231–5 (1996).

[EP136] CRITERIA FOR A HIGHER SPECIFICATION FOAM MATTRESS

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E-poster session: Prevention 1

Aim: The new guideline (NPUAP, EPUAP & PPPIA 2014), has tried to define what are the properties of a higher specification foam mattress (HSFM). A lack of robust trials of different foam mattresses results in a call for agreement among scientists and manufacturers on how to specify different foam mattresses.

Method: We share our nearly 100 years, combined experience of polyurethane foam production, of research on mattress development, mattress manufacturing and research on PU development*. This is supported by extensive review of literature.

Results / Discussion: HSFM needs to fulfill three user specifications: 1) it needs to possess good pressure relieving properties and 2) the patient is able to change his or her position, 3) it is easy for the nursing staff to change the patient's position or move the patient. The mattress needs to have good immersion and envelopment control to prevent the high pressure peaks and tissue strain. Currently all of these properties are impossible to achieve by using only one type of polyurethane foam. On the other hand a foam mattress with multiple layers is not automatically HSFM.

Conclusion: Definitive meanings and characteristics/qualifications designating standard/conventional foam mattresses and HSFMs can be determined. The data reviewed provides also a basis for further research. The authors hope their findings improve the essential requirements of mattresses in the implementation of patient care globally.

*Soppi E, Lehtiö J, Saarinen H. An overview of polyurethane foams in higher specification foam mattresses. *Ostomy Wound Management* 2015, in press.

[EP137] A RANDOMISED CONTROLLED TRIAL INVESTIGATING THE IMPACT OF PRESCRIBED SEATING IN PRESSURE ULCER PREVENTION FOR NURSING HOME RESIDENTS

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E-poster session: Prevention 1

Aim: While guidance is available on most aspects of pressure ulcer prevention and management, there has been little information on addressing these issues in seated patients. The issues most often addressed include the use of pressure-redistributing beds and mattresses, risk assessment, repositioning and management of established pressure ulcers. The role of specialised seating can often be overlooked. This research investigates the effectiveness of prescribed seating and its impact on pressure ulcer incidence in long term care.

Method: A mixed methods design was ethically approved and employed. Participants were recruited from three long term care settings before random allocation. The control group continued to use their existing seating while the intervention group was provided with seating tailored to their individual needs following a complex assessment. Participants were observed for pressure care, saturated oxygen levels, posture, function and comfort.

Results / Discussion: Seven of the intervention participants who had red skin areas at the beginning of the trial no longer presented with these at the end of the 12 week trial period. None of the intervention participants developed skin redness. One participant in the control group developed a pressure ulcer in their existing seating and those with redness noted at the beginning of the trial remained following the trial period.

Conclusion: This research demonstrates that prescribed seating can contribute to a reduction in pressure ulcer incidence for patients in long term care. It highlights that the needs of each patient are different, requiring individualised evaluation of seating needs before making recommendations for an appropriate seating system.

[EP138] THE INTRODUCTION OF A NOVEL SKIN CARE REGIMEN IN AN ELDERLY IN-PATIENT POPULATION

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E-poster session: Prevention 1

Aim: To improve the skin care regimen and subsequent skin integrity of an elderly in-patient population.

Method: The elderly in-patient population suffer from dry skin due to the aging process, frequent skin cleansing and the temperature and lack of humidity in the hospital environment.

The current method of skin cleansing involved using a non-perfumed skin cleanser along with water, there is no routine application of emollients post skin cleansing. This resulted in clean skin which lacked hydration. Emollients were sometimes used if an individual had very dry skin or hyperkeratosis.

A regimen was introduced using a monofilament fibre pad post cleansing to remove dry skin prior to the application of an emollient containing urea and ceramide 3. The emollient is a daily application which rehydrates the epidermis by drawing water from the dermis.

Results / Discussion: The introduction of the regimen has resulted in an in-patient population that routinely has a skin care regiment that does not stop at cleansing. There are fewer incidences of skin tears to limbs potentially due to the improved integrity of the skin. There have been fewer complaints of dry itchy skin and staff have commented on the visual improvement in the hydration and condition of patients' skin.

Conclusion: The removal of dry skin and subsequent application of a urea based emollient have become routine practice, this facilitates the skin being in the optimal condition to benefit from the emollient therapy.