

Managing the wound with Hydration Response® Technology

Advanced dressing technology offers contemporary approaches to wound management that can deliver benefits in quality of life for the individual, together with cost-savings to the healthcare provider. The wide range of wound dressings available present challenges in choice; dressings that reduce pain, prevent cross-infection, provide cost-effective treatment and improve healing. At the same time, optimal performance is dependent on wound characteristics and knowledge of the wound healing process. Managing the wound environment means that the wound should be free from heavy exudate, necrotic tissue and pathogens, and remain moist and warm.

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KEY WORDS

Hydration Response®
Technology
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Exudate
Quality of Life
Biofilm

If a (chronic) wound is to make progress, barriers to healing need to be identified and addressed. Persistent inflammation found in chronic wounds is a consequence of elevated levels of pro-inflammatory cytokines, proteases and neutrophils (Wolcott et al, 2008). This is often accompanied by increased production of exudate. The high levels of exudate combined with the pro-inflammatory mediators result in a detrimental effect on healing, including wound enlargement and damage to the periwound skin, such as maceration and excoriation (Nelson, 1997; Vowden and Vowden, 2003). It has been suggested that the wound bed preparation (WBP) model may assist in overcoming these barriers to healing when targeted therapeutic measures (Schultz et al, 2004), such as removing necrotic tissue and the high bacterial burden, (Panuncialman and Falanga 2007) are initiated.

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Hydration Response® Technology

A recent publication by Evans (2010) shows how sorbion sachet S utilises the concept of Hydration Response® Technology (HRT), specifically its value in managing infection in a recalcitrant pressure ulcer.

Hydration Response Technology was created specifically to meet the challenge of wounds which produce moderate to high levels of exudate. The HRT dressing product, sorbion sachet S (sorbion Aktiengesellschaft, Senden, Germany) is a combination of physically modified cellulose fibres and gelling agents, which absorb and retain large quantities of wound exudate and corrosive agents which are damaging to the wound (Kramer and Maassen, 2009). Dehydration of the wound bed, or saturation of the periwound skin is thus avoided. At the same time, maintenance of the hydro-balanced environment is accomplished (Doughty, 2005).

Clinical performance and related evidence

Hydration Response Technology using sorbion sachet S enables effective wound bed preparation and can lead to a significant reduction in overall treatment costs (Romanelli et al, 2009; Evans, 2010), such as a reduction in the frequency of dressing changes (Chadwick, 2008; Cutting, 2008) and by enabling rapid WBP (Schultz et al 2004). Efficient exudate management extends beyond mere absorption and includes

(Armitage and Macaskill, 2009; Cutting, 2009; Romanelli et al, 2009; Evans, 2010):

- ▶ Extended dressing wear time (Chadwick, 2006; Cutting et al, 2008; Romanelli et al, 2009)
- ▶ Excellent fluid retention properties (Chadwick, 2006; Cutting et al, 2008; Romanelli et al, 2009)
- ▶ Dressing form stability ensuring wound edge protection
- ▶ Matrix metalloproteinases (MMPs) modulation avoiding extracellular matrix (ECM) degradation
- ▶ Bacterial sequestration (immobilisation), lowering the bacterial burden
- ▶ Maintenance of hydro-balance, avoiding too wet or too dry an interface even under compression
- ▶ Debridement of moist, devitalised tissue on the wound surface and improving quality of life for patients (Chadwick, 2006; Romanelli et al, 2009) by removing odour and preventing leakage of exudate (Chadwick, 2008).

The clinical performance of a HRT dressing (sorbion sachet S) is illustrated in a recently completed case report.

Case report

Mr S, an elderly, obese male patient was admitted for assessment and management of bilateral lateral malleolar leg ulcers. The patient's legs were grossly oedematous with virtually circumferential, severe, bilateral, sloughy,

malodorous, maceration of the peri-wound skin (Figures 1–3).

In the first few days following admission, the difficulties with managing these ulcerated limbs became clear. Topical antiseptics, chloromycetin ointment together with a myriad of dressings that included gauze, foams, non-adherent pads, large absorbent pads with zinc-impregnated bandages were all tried with little or no success. The production of exudate was unrelenting so that dressings and bed linen required at least daily changes and sometimes night changes as well. Dressing change took more than an hour each time to complete, often requiring the assistance of a second nurse.

Following an assisted shower, Mr S's legs were dressed with sorbion sachet S (from below knees to toes) and retained with crepe bandages. To avoid compromising the multi-level occlusion in his lower limbs (previously diagnosed), compression bandaging was not used. Interdigital spaces were dressed with gauze. Bed rest was 'prescribed' and the patient was placed on an alternating pressure air mattress to prevent additional pressure ulceration. Mr S had already sustained bilateral heel



Figure 1. Left leg on day 0.

ulcers before admission. Although he was able to mobilise with assistance, he was unable to roll from side to side in bed because of his obesity. Mr S was allowed to sit out of bed for meals and to visit the toilet. The patient was malnourished; serum albumin was low at 27g/L (normal range 33–48g/L), and he was anaemic (haemoglobin 118g/L, normal range 130–180g/L). Following assessment by a dietician, high protein drinks were provided. No antimicrobial agents (topical or systemic) were administered following admission, as these had been ineffective. Following discussion with the general practitioner, a decision was made to try the HRT sorbion sachet S dressings and review the patient every day.

On day one the most immediate and startling observation was the absence of malodour in the room. There was no sign of strikethrough on the bandages, thus indicating dressing change was not required.

Forty-eight hours after the initial dressing application (day two), strikethrough was visible on the bandages of the left lower leg (Figure 4), so the bandages and dressings were removed.

The slough (biofilm) that had been clearly visible on day 0 had considerably reduced (Figure 5). The exudate had been efficiently absorbed and retained within the dressings. The periwound skin maceration was noticeably reduced and appeared less red and inflamed.

It is clear that a significant change had taken place in the overall condition of the lower limb ulceration after 48 hours: slough had diminished without the need for sharp debridement; wound exudate had been absorbed into the dressings and retained; malodour was not present; maceration had decreased and ulcer healing had begun; epithelialisation was observed and oedema was visibly reduced.

By day four the slough from the lateral malleolar ulcers had almost disappeared and the black necrotic cap of the heel pressure ulcer simply came off with the sorbion sachet S dressing (Figure 6).



Figure 2. Left lateral malleolus.



Figure 3. Right leg on day 0.



Figure 4. Strikethrough is visible on the bandages on day two.

Within 14 days (Figure 7) the legs had made such good progress that sorbion sachet S dressings were no longer required and alternative dressings were applied. Observation of both legs indicated reduced oedema.



Figure 5. Leg ulcers show a reduction in slough on day two.

Conclusions

Efficient exudate management is achievable in clinical practice if the relevant resources are utilised. Dressing performance should not only be judged by volume of exudate absorbed, but should also include fluid retention (Chadwick, 2008; Evans, 2010), dressing form stability (Chadwick, 2008), modulation of MMPs, management of bioburden (Schultz et al, 2004), continuing debridement and extended dressing wear time (Chadwick, 2008). The combined effect of these features will lead to improvements in patient quality of life and reduction in overall costs.

Sorbion sachet S is a wound dressing specifically designed to prepare the wound bed and to manage wound exudate. Hydration Response Technology offers a specialised and useful approach to exudate management and provides clinicians with the opportunity to reassess the need for sharp debridement and/or topical antiseptics. **WUK**

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Figure 6. Left lateral malleolar ulcer and heel pressure ulcer on day four.

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Figure 7. Legs at 14 days.

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Key points

- ▶▶ Efficient management of exudate is achievable in clinical practice if the relevant wound dressings are used.
- ▶▶ Exudate is absorbed and retained within the sorbion sachet S dressing, thus lowering the exposure of nursing staff to the wound, an important infection control consideration.
- ▶▶ Dressing performance, volume of exudate absorbed, management of bioburden, continuing debridement and extended dressing wear time improved this patient's quality of life.
- ▶▶ Hydration Response® Technology offers a unique and extremely useful approach to exudate management.