Versiva® XC™ Gelling Foam Dressing and the control of moderate to high exudate

The management of excessive wound exudate from either acute or chronic wounds is one of the greatest challenges facing wound care clinicians. Patients rightly expect to receive appropriate treatment and it is essential for clinicians to be aware of the range of wound dressings available which can absorb excess exudate while maintaining an optimum environment for healing. Versiva® XC™ Gelling Foam Dressing provides absorbency and helps to protect the peri-wound skin, qualifying as a valuable inclusion into a wound care formulary.

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KEY WORDS
Exudate management
Health economics
Quality of life
Pain
Maceration

Wound exudate can proliferate from both acute and chronic wounds, causing great misery to patients who suffer due to soiled clothing, malodour, depression and social isolation (Jones, et al, 2006). The management of heavily exuding wounds can be expensive due to the cost of dressings and the staff hours spent on treating them. This expense increases the burden of responsibility on the healthcare professional to provide both clinically-effective and cost-effective care. It is imperative that all those responsible for the implementation of a wound dressing formulary understand that cost-effective does not necessarily mean selecting the cheapest dressing available, however, neither does it mean that it is wrong to demand a good price for a dressing (Posnett, 2006). Any wound dressing formulary should include a range of products which have been proven to be fit for purpose by rigorous evaluation by a team of responsible healthcare professionals such as tissue viability nurses (TVNs), pharmacists and procurement personnel as this will ensure that all aspects of clinical and budget responsibilities are addressed.

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Wound exudate

Exudate is fluid which has leaked from blood vessels within and surrounding the wound bed, the volume of which is determined by the permeability of the capillaries and the hydrostatic and osmotic pressures across the capillary walls (The World Union of Wound Healing Societies, 2007). Inflammatory mediators such as histamine increase capillary permeability and therefore increase the volume of wound exudate (WUWHS, 2007).

In acute wounds the volume of exudate will be at its most prolific during the inflammatory and proliferative phases of wound healing (Cutting, 2004), where its role will be vital in assisting with autolytic debridement of necrotic/sloughy tissue by facilitating the ingress of white cells, transportation of essential nutrients for epithelial cells and preventing desiccation of the wound bed which could lead to further deterioration of local tissue viability (Hinman and Maibach, 1963). However, in chronic wounds such as venous leg ulcers, pressure ulcers and diabetic foot ulcers, the exudate produced may be detrimental to wound healing and may be a major cause of delayed healing or non-healing due to both its volume and the fact that it has a different make up to that of acute wound exudate.

Differences between acute and chronic wound exudate

Acute wound exudate is beneficial to wound healing since it is rich in growth factors which facilitate the growth and migration of fibroblasts, endothelial cells and keratinocytes (Chen et al, 2003). Although acute wound fluid contains metalloproteinases they are inactive, being at the pro-enzyme stage, and so cause no harm to viable tissue within the wound bed (Wysocki, 1996). In addition, polymorphonucleocyte (PMN) elastase levels are normal within acute wounds and fibronectin remains intact, but within chronic wounds PMN elastase levels are high and the fibronectin is degraded (Rao et al, 1995), resulting in delayed healing and continuing chronicity. Some of the differences between the two types of exudate are shown in *Table 1*.

Chronic wounds are a result of chronic inflammation due to the underlying pathology of the individual patient. The chronic wound fluid produced contains active degrading proteolytic enzymes which have a vital role to play in wound healing by destroying devitalised tissue via autolysis. However if the activity of these proteolytic enzymes continues for longer than necessary then they may actively deter or damage the growth of new tissue and contribute towards the wound's chronicity (Moore, 2003).

Clinical implications of excessive exudate

Difficulties arise when excessive amounts of acute wound fluid are produced and present the danger of maceration and excoriation to the peri-wound skin/tissue (Cutting and White, 2002), consequently it is desirable that acute wound fluid is held within the wound area. The management of excessive amounts of acute wound fluid may rely upon the appropriate treatment being applied, e.g. compression bandaging to treat a venous leg ulcer. Failure to manage exudate sufficiently will lead to maceration of the skin, increasing the risk of infection and causing the patient great distress (*Figure 1*).

Maceration of the peri-wound area is caused by prolonged exposure to exudate, whether excessive amounts or inappropriately managed exudate (Hampton and Stephen-Haynes, 2005) (*Figure 2*). Causes of maceration include:

- Overhydration of the epidermis when moisture/exudate is held against the skin
- Use of inappropriate dressings or incorrect wear time
- Failure to protect the skin
- Destruction of the tissues through the effects of proteolytic enzymes in chronic wound exudate (Hampton and Stephen-Haynes, 2005).

Integrated exudate assessment

There are a plethora of absorbent wound dressings available, reflecting the difficulty which healthcare professionals face when managing exuding wounds. The World Union of Wound Healing Societies' *Principles of Best Practice Statement on Wound Exudate and the Role of Dressings* (2007), is invaluable in directing the healthcare professional in choosing appropriate treatment. An integrated exudate assessment ensures that the patient and carers are enabled to participate in the process and delivers vital information regarding how current dressings perform regarding degree of leakage of exudate, discomfort, pain, sleep disturbance, emotional distress and related social or financial difficulties (WUWHS, 2007). By involving the patient and/or carer factors may be determined which influence exudate production, such as the site of the wound, the patient's daily routine, nutritional status and existence of influential co-morbidities.

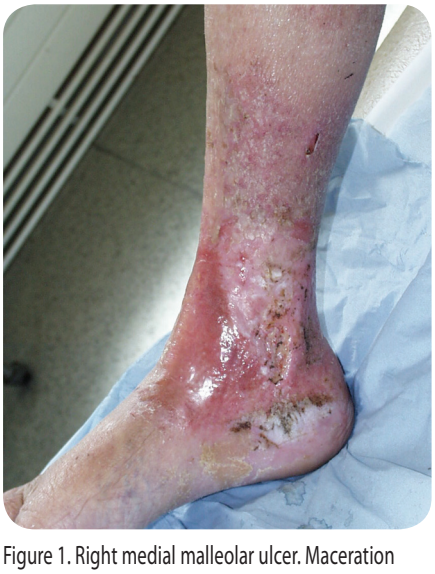

Figure 1. Right medial malleolar ulcer. Maceration of the peri-ulcer skin caused by poorly managed exudate.

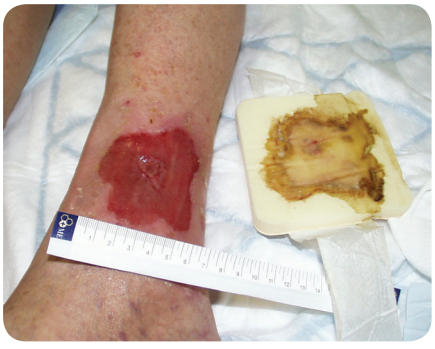

Figure 2. Lateral spread of exudate under the foam dressing has led to excoriation of the peri-ulcer skin.

The best practice statement (WUWHS, 2007) enables the healthcare professional to assess the wound in order to evaluate the interaction between the current dressing, the wound and the exudate. It advises the assessment of the current dressing to determine:

- Evidence of leakage and whether the patient has made modifications to the dressing when self-managing the treatment
- The efficacy of secondary dressings/bandages by looking at strike-through, weight/wetness, colour, consistency and odour of exudate
- Ease of dressing removal; whether it has adhered to wound bed or peri-wound skin, any pain or discomfort experienced on removal
- Frequency of dressing change and whether this is appropriate for the individual patient and their wound and how quickly strike-through occurs after the dressing has been changed
- Dressing type and fixation; whether it is appropriate, conformable, comfortable and safe for the patient's skin (WUWHS, 2007).

Table 1
Some differences between acute and chronic wound fluid (Cutting, 2004)

Acute fluid	Chronic fluid
Fluid supports cell proliferation	Fluid does not support cell proliferation
Fluid does not damage peri-wound skin	Fluid damages peri-wound skin
Fibronectin intact Neutrophil, elastase, serine and MMP levels are normal	Fibronectin degraded Neutrophil, elastase, serine and MMP levels are high
Fibroblast mitosis is present	Fibroblast mitosis altered

Versiva® XC™ Gelling Foam Dressing

Versiva® XC™ Gelling Foam Dressing is an addition to the Versiva® range produced by ConvaTec (Princeton, New Jersey, USA). It represents an evolution of their Hydrofiber® Technology which is a feature of AQUACEL® dressing. It is indicated for moderate to heavily exuding acute or chronic wounds.

Versiva® XC™ Gelling Foam Dressing combines foam with Hydrofiber® Technology in a thin, easy-to-use dressing. Unlike traditional foam dressings which absorb fluid into the air pockets of the foam structure, Versiva® XC™ Gelling Foam Dressing absorbs fluid into the interior of the fibres, causing them to swell and merge with each other to form a cohesive gel. This gelling action is specific to the area where fluid is absorbed; where there is no fluid the fibres remain dry. Because fluid is absorbed and retained directly into the fibres, rather than just being taken into air gaps or pockets between fibres or inside a foam, the fluid is effectively retained when pressure is applied. Versiva® XC™ Gelling Foam Dressing is therefore a versatile product which may be applied to a wide range of wounds; acute wounds such as

dehisced surgical wounds, open wounds left to heal by secondary intention or donor site wounds. In addition its application to chronic wounds may result in absorption of exudate containing chronic matrix metalloproteases, excluding these harmful proteases from the local wound area.

Review of clinical evidence for Versiva® XC™ Gelling Foam Dressing

Vanscheidt et al (2007) performed a prospective study of 46 subjects with moderate to heavily exuding leg ulcers of unspecified duration. Each of the subjects were treated with Versiva® XC™ Gelling Foam Dressing in addition to standardised compression therapy when it was clinically indicated for a period of up to four weeks or until healed. The mean wear time was 3.2 days. Previously, 61% of the patients had been treated with compression therapy but their wounds had failed to heal.

The patients' experience of the dressing was examined in respect of ulcer pain using a visual analogue scale (VAS), with the dressing in situ and on removal in comparison with the previous dressing used. The mean pain ratings decreased by 50% after the first Versiva® XC™ dressing change compared with the pre-study dressing, both with the dressing in situ and upon removal. Comfort was rated as 'excellent' by 25 of the 46 (56%) subjects and 'good' by 13 (29%).

On the final evaluation 38 (84%) of the subjects reported less pain and seven (16%) reported comparable pain and none of the 46 subjects reported increased pain. On commencing the study only four (9%) of the 46 subjects had healthy peri-ulcer skin and upon completion of the study 45 subjects were evaluated, 14 (31%) of which had healthy peri-ulcer skin. The skin condition had improved in 11 (24%) or remained stable (73%; n=33) in all but one subject who was lost to follow-up (2%) (Vanscheidt et al, 2007).

With regard to exudate management; there were 509 clinic and home dressing changes performed, the main reason for this was routine study protocol (98%). None of the subjects required additional dressing changes outside the study protocol and none of the wounds increased in depth. While evidence of maceration was observed at least once during the study in 17 of the 46 subjects, this had resolved in nine of these subjects by the final dressing change (Vanscheidt et al, 2007). In addition, the ulcers of five subjects had healed, while the ulcers of 35 subjects had decreased in size from the baseline measurements, however, the ulcers of four of the subjects remained unchanged and one subject's ulcer had mildly deteriorated. Vanscheidt et al (2007) concluded that a leg ulcer regimen which included Versiva® XC™ Gelling Foam Dressing in addition to compression therapy bandaging when considered appropriate, managed moderate to heavy exudate well, improved pain and discomfort and was user-friendly.

Parish et al (2007) reported on a prospective, non-comparative study of 23 subjects with exuding pressure ulcers, greater than 2cm^2 and grade 2,3 or 4 using the National Pressure Ulcer Advisory Panel scale (Black et al, 2007). Investigators reported healing or significant improvement in 61% of subjects after being treated with the adhesive Gelling Foam Dressing. The mean dressing wear time was 4.2 days and clinicians assessed the dressing's ability to protect the peri-ulcer skin as good to excellent in 73% of subjects (Parish et al, 2007). However, seven subjects developed adverse incidents related to the dressings. Of these, three withdrew from the study due to wound deterioration, infection and development of a red/hot/swollen rash under the dressing respectively, another one suffered an enlargement of their pressure ulcer and a further three experienced maceration (Parish et al, 2007). Although these adverse incidents may cause concern, it is possible that maceration was due to the investigators error in not effecting a dressing change promptly. It does not state in the exclusion criteria whether the subjects were questioned for known skin sensitivities which may explain the rash. It would be advisable to use a non-bordered dressing to prevent irritation for patients with known skin sensitivities.

Smith (2008) reported using Versiva® XC™ Gelling Foam Dressing on a woman with known recalcitrant, bilateral, venous ulceration that had been present for two years. The patient had been known to be previously non-compliant with medication or dressing regimens. On admission to hospital for palliative care due to gynaecological cancer her legs ulcers were dressed with Versiva® XC™ Gelling Foam Dressing three times per week for two weeks to manage exudate. After two weeks Smith (2008) reported almost 80% epithelialisation of bilateral leg ulcers and significant relief from heavy exudate, concluding the gelling foam dressings had proved effective in providing symptomatic relief.

Button (2007) reported on an 82-year-old woman with a 20-year history of venous leg ulceration. The right anterior tibial tendon was exposed and the wound was extensive and measured approximately 25 x 15cm. The patient was admitted to hospital, given systemic antibiotic therapy and placed on bed rest with the lower limbs in high elevation for 14 days. AQUACEL® Ag Hydrofiber® dressings were applied and Versiva® XC™ Gelling Foam Dressing used as a secondary dressing. Over a period of 20 weeks the wound improved until the tendon became covered with granulation tissue and reduced dramatically in size. Button concluded that the Versiva® XC™ Gelling Foam Dressing, used in this instance together with AQUACEL® Ag dressing proved efficacious in both relieving local pain and providing a positive healing outcome.

Case reports

Figure 3 illustrates a very large right trochanteric pressure ulcer in a 33-year-old man with paraplegia who also had a mental health condition. The man had dragged himself around his home and consequently developed severe pressure damage. Following debridement of necrotic tissue, a large heavily exuding cavity was revealed and the head of the trochanter was barely covered with connective tissue as can clearly be seen in *Figure 3*. Topical negative pressure was not tolerated by this patient due to his mental

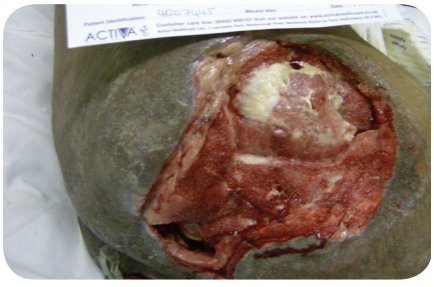

Figure 3. Large pressure ulcer, right trochanter extending to ischial tuberosity. Using Versiva® XC™ dressing in combination with AQUACEL® dressing extended dressing wear time to alternate days in this heavily exuding wound.

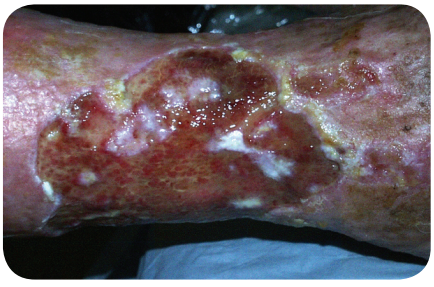

Figure 4. Long-standing venous leg ulcer. Using Versiva® XC™ dressing under compression bandaging reduced frequency of dressing change from four per week to two per week.

health condition. Initially AQUACEL® Hydrofiber® dressing with a foam as a secondary dressing was chosen. However, this necessitated a daily dressing change as the foam dressing became saturated. On replacing the foam dressing with Versiva® XC™ Gelling Foam, the dressing frequency was reduced to alternate days.

Figure 4 shows a venous leg ulcer in an elderly woman. On referral to the ulcer clinic her leg was macerated and consequently she suffered neuropathic pain. On using Versiva® XC™ non-adhesive dressings under her compression bandaging the exudate was sufficiently controlled to allow re-epithelialisation. As a consequence the cause of her neuropathic pain was removed, eventually allowing her to reduce her analgesia and mobilise freely.

In both the above case reports the patients benefited by a reduction in dressing frequency due to the successful management of their heavily exuding wounds. Other benefits include a reduction of the risk of infection and a saving of time spent by nursing staff.

Conclusion

Stringent evaluation of any dressing by both patient and healthcare professional is important in order to ensure that a dressing is fit for purpose, causes no discomfort or harm to the patient's skin and is easily applied and removed. It must also be competitively priced within the market. Exudate management remains one of the greatest wound care problems for healthcare professionals and the emergence of Versiva® XC™ Gelling Foam Dressing not only fit for the purpose of managing exudate, but caring for peri-wound skin will make it a valuable product for inclusion within a wound care formulary. WUK

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Key Points

- Poorly managed heavily exuding wounds cause pain and discomfort.
- Involvement of the patient/carer within the assessment process engages and aids development of a concordant nurse/patient relationship.
- Stringent evaluation of wound dressings is vital to provide quality care for patients.
- Versiva® XC™ Gelling Foam Dressing has been shown to be effective at managing excessive wound exudate.

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