

# Flivasorb® and the management of exudate

Wound care provides many challenges but none moreso than the management of high levels of exudate. The challenge is not only to be cost-effective and prevent maceration, but to improve the quality of life for the patient. Chronic wound fluid can be damaging to the wound healing process giving an added problem. This article examines the properties of Flivasorb® (Activa Healthcare), a wound dressing containing super absorbent polymer particles which not only absorbs high levels of exudate, but can retain the damaging particles in exudate, locking them inside the dressing.

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## KEY WORDS

Flivasorb®  
Exudate management  
Super absorbent polymer particles (SAP)  
Quality of life

Healthcare professionals working in the field of wound care on a regular basis will undoubtedly agree that the management of exudate is one of their biggest challenges.

The cost implications of managing heavily exuding wounds create concerns for both clinicians and budget managers (Beldon, 2007).

The management of wound exudate requires the clinician to have an understanding of what it is, why it is present and how to monitor and assess it accurately (White and Cutting, 2006).

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Wound exudate was described as nature's balsam many years ago (White and Cutting, 2006) and is the fluid produced by an open wound. It is derived from fluid that has leaked from capillaries into body tissues (World Union of Wound Healing Societies [WUWHS], 2007). Exudate is produced at varying levels throughout the lifetime of a wound (Cutting, 2009). It is a complex phenomenon that requires careful nursing management if it is to assist healing (Adderley, 2008).

**Jones et al (2008) confirm that exudate in chronic leg ulcers disrupts patients' lives and restricts their social lives, leading to social isolation and depression.**

Exudate contains a variety of substances including water, electrolytes, nutrients, inflammatory mediators, white cells, protein-digesting enzymes (e.g. matrix metalloproteinases [MMPs]), growth factors and waste products (WUWHS, 2007).

There appears to be a difference between exudate from acute and chronic wounds. Acute wound fluid supports the stimulation of fibroblasts and the production of endothelial cells, as it is rich in

leucocytes and essential nutrients (Dowsett, 2008). In chronic wounds, there is a tendency for the inflammatory response (an important element in the initial wounding response) to become exaggerated (European Wound Management Association [EWMA], 2008). Chronic wound fluid therefore has a high level of inflammatory mediators and activated MMPs (WUWHS, 2007), which are more corrosive than acute wound fluid to the wound and the surrounding skin. As a consequence of this theory (Mast and Schultz, 1996), new dressings have been developed that are designed to reduce protease levels (Schultz et al, 2005).

Excessive exudate can bring misery to patients' lives, involving:

- ▶▶ Soiling of clothing and bedding
- ▶▶ Malodour, which is distressing, socially embarrassing and inconvenient
- ▶▶ A contributory factor to malnutrition, which leads to reduced appetite, protein deficiency
- ▶▶ Maceration and excoriation of the surrounding skin, which is painful and demoralising
- ▶▶ Reduced quality of life
- ▶▶ Leg elevation which while lessening exudate, also reduces mobility and increases discomfort
- ▶▶ Dressings which absorb exudate may be bulky and heavy.

(Adderley, 2008)

Jones et al (2008) confirm that exudate in chronic leg ulcers disrupts patients' lives and restricts their social lives, leading to social isolation and depression. They conclude that healthcare professionals should better understand the impact of symptoms such as odour and exudate leakage on patients' mental health, physical health and wound healing.

Beldon (2007) also points out that thorough assessment of the patient by a sufficiently knowledgeable practitioner is essential to ensure that all underlying causes, such as malnutrition, are identified and addressed.

### Flivasorb®

Flivasorb® is a wound dressing presented by Activa Healthcare for the management of highly exuding wounds. The word 'Flivasorb' ('Vliwasorb' in continental countries) has its origins in *vlies* meaning non-woven, and *watte* meaning cotton.

It absorbs exudate by exerting an osmotic effect and retains chronic wound exudate along with other damaging components such as MMPs, keeping them locked away.

It is designed to be used in heavily exuding superficial wounds, for example, pressure ulcers, arterial ulcers, venous leg ulcers, leaky legs due to cellulitis and lymphoedema, diabetic foot ulcers, postoperative wounds which are healing by secondary intention, and fistula exit sites. It can also be used as a secondary dressing to cover a primary contact layer or dressing. It is available on drug tariff under the section protease modulator.

Flivasorb is made up of a sandwich of four layers.

- ▶▶ Layer one is the wound contact layer, a smooth polyethylene which is flexible, skin friendly and reduces the possibility of wound adherence
- ▶▶ Layer two is the polypropylene distribution layer which facilitates the even distribution of exudate into the absorbent cellulose core layer

- ▶▶ Layer three is the main absorbent layer which contains super absorbent polymer particles or SAP. SAP are polymers that can absorb several times their weight in liquid. Chemically, a SAP is a long-chain polymer consisting of a polyacrylate (typically sodium polyacrylate). When a liquid comes into contact with a SAP, it will attach to these polymer chains and form a complex network structure, resulting in visible swelling and gelling
- ▶▶ Layer four is a blue outer layer which is a non-woven polypropylene cloth protection layer preventing penetration of wound exudate and soiling of the patient's clothes. Wound exudate increases the risk of infection if it strikes through the primary and secondary dressing and can be a portal for the access of pathogens. The dressing has flat edges to help with conformability and facilitate application.

Flivasorb is available in three sizes: 10x10cm, 10x20cm and 20x20cm.

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#### Application

The wound is firstly cleansed following local wound cleansing policy and the skin around the wound is dried. It is important to select the correct size of dressing that allows an overlap of the wound by 2–3cms. The white side is placed facing the wound with the blue side uppermost. Flivasorb may be secured with an adhesive secondary dressing/bandage (retention or compression), or secured at the edges with tape. It is suitable under compression because the dressing has a low rewet and the fluid stays locked in the dressing. Compression does

not force the exudate out onto the wound, surrounding skin or clothing. However, as in any other wound dressing, the maximum absorption capacity will be reduced under compression.

Flivasorb, like other wound dressings, has to be changed when its absorption capacity has been reached. In the clinical environment the usual dressing change interval is two to three days on heavily exuding wounds. In some cases, the dressing may need to be changed more frequently.

The dressing can be used in combination with antiseptic wound cleansers if they are required, but ideally should not be used with ointments as they may interfere with the absorption capacity of the dressing.

Flivasorb will retain some bacteria or pathogens in the dressing but it will not kill them and it is primarily designed for exudate management. It should never be used as the only treatment for critically colonised wounds (or localised infection), spreading infection or systemic infection as defined by WUWHs (2008).

#### Evidence

The high absorption capacity of polyacrylate as super-absorber has been beneficially employed in a broad range of feminine hygiene products, and since the mid-1980s has been extensively used in babies' nappies. Such use has been successful because of the ability of super-absorber to absorb more than twice the volume of traditional materials, such as cellulose without super-absorber (Steinlechner et al, 2008). The polymer network structure retains liquids permanently inside the dressing and hardly releases them, even under compression (Steinlechner, 2008). Steinlechner (2008) also demonstrated that the bacterial load on the wound contact surface of Flivasorb is distinctly lower than in the traditional materials such as cellulose without super-absorber.

Wiegand et al (2008) show that Flivasorb is able to bind large amounts of the inflammatory proteases, elastase and MMP-2, *in vitro*. Elution of the wound dressing revealed a strong, possibly irreversible binding of both proteases. The decrease of these matrix degrading proteases should aid the establishment of a physiological wound milieu *in vivo* and thus support the healing process, especially in high exuding wounds.

In clinical practice, Tadej and Colbourne (2009) found Flivasorb particularly useful in a young obese lady with a large venous leg ulcer. They found that she was unable to tolerate compression bandaging and many wound dressings. High exudate was her main problem causing the lady distress and embarrassment. Flivasorb was capable of absorbing the exudate from the wound and it was decided to move to the next stage of management and to use an antimicrobial dressing (Suprasorb® X +PHMB [Activa Healthcare]) to eliminate or control the proliferation of bacteria in the wound with a foam dressing.

Fumerola (2009) used Flivasorb to manage a sacral pressure ulcer where application and securing the dressings had been particularly challenging (Box 1, p.66). She found that Flivasorb conformed well in the sacral area and was covered with a semi-permeable film dressing to keep it in place. Exudate was controlled and the nursing staff found it easy to manage with minimal supervision. Fumerola (2009) also stressed that the correct application, i.e. selecting the correct size of wound dressing for the size of the wound was important to the success in this wound.

### Conclusions

As wounds heal, the level of exudate gradually decreases, and the exudate management plan will need to change (Dowsett, 2008). Vowden and Vowden (2003) suggest that an understanding of the systemic and local conditions influencing exudate production, and knowledge of the potential damaging

chemical constituents of exudate as previously outlined, should inform a management strategy.

Flivasorb is a cost-effective way of managing high levels of exudate while being safe, effective and of good quality. It will prove to be a useful addition for healthcare professionals in the management of exudate both in primary and secondary care settings and will go a considerable way to help patients regain their quality of life. **WUK**

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### Key points

- ▶ High levels of exudate can be one of the biggest challenges for healthcare professionals.
- ▶ Exudate can have a huge impact on patients' quality of life.
- ▶ Flivasorb contains super absorbent polymer particles and can manage high levels of exudate.
- ▶ Flivasorb can retain the corrosive particles found in chronic wound exudate.

Box 1

Case report: when a foam dressing isn't enough: exudate management in a surgically debrided pressure injury

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Figure 1. A surgically debrided grade 4 (EPUAP) pressure injury, highly exudating and difficult to manage.



Figure 2. Application of Flivasorb which was secured with a film dressing. Easily applied and contours well to the patient's body.



Figure 3. Exudate management at 24 hours. The dressing has coped well with a high volume of exudate and remained intact despite frequent patient repositioning.

A 75-year-old gentleman presenting with a surgically debrided grade 4 (European Pressure Ulcer Advisory Panel [EPUAP] scale) tissue injury to the sacrum (Figure 1). Wound measurements were 11x7cm, and 5cm deep. The wound was undermining more than 5cm in all directions, with exposed bone at the base. There was no cellulites and only mild malodour. The challenge for the nursing staff was exudate management. The wound was packed with a hydrofiber dressing and covered with an adhesive secondary foam dressing. The patient had insulin-controlled diabetes mellitus and was receiving nasogastric nutrition. He was nursed in bed on an alternating pressure mattress replacement system (Duo<sup>®</sup> 2, Hill Rom).

A temporary colostomy was fashioned to protect the wound from faecal contamination during healing, with the intention to initiate topical negative pressure (TNP) post-operatively. However, residual drainage from the rectum made this difficult initially because of the limited distance from the wound margin to the anus. Despite twice-daily dressing changes, the high level of exudate proved difficult to manage with subsequent excoriation to the periwound skin. The secondary dressing was changed to Flivasorb, containing a core of absorbent polymer particles (Figure 2). The dressing was secured with a film dressing and was changed daily (Figure 3).

Following 19 days of management the patient was ready for topical negative pressure therapy (TNP), and the V.A.C.<sup>®</sup> system (KCI) was applied. There was clear demarcation and breakdown of previous maceration, however, no further tissue injury developed and the wound remained stable (Figure 4).

Topical negative pressure was initiated and the patient was able to transfer out of secondary care to the rehabilitation setting.



Figure 4. Previous maceration from exudate is clearly visible, however, no further tissue injury has developed.

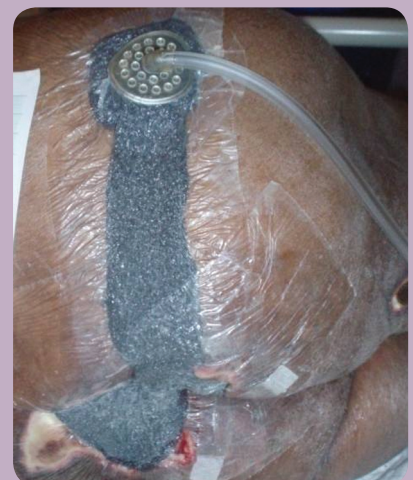


Figure 5. The wound is stable and requires no further debridement. TNP is initiated.