Zetuvit Plus Silicone Border made easy

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Introduction

Exudate plays a key role in wound healing, yet appropriate exudate management poses a significant challenge in clinical practice. Exudate in excess requires frequent dressing changes and nursing visits, resulting in pain, inconvenience and anxiety for patients and high healthcare-associated costs. Suboptimal management can result in further tissue damage, leakage and slower healing times. It can also negatively impact patient quality of life.

Superabsorbent polymer (SAP) dressings absorb and retain fluid, reducing the risk of leakage and minimising the chance of maceration. SAP dressings lock-in large volumes of exudate while retaining their structure (Ousey et al, 2013). This Made Easy focuses on the use of the atraumatic SAP dressing Zetuvit Plus Silicone Border in the management of exudate.

Causes of inflammation

Exudate is produced during the inflammatory phase of wound healing. It has a number of important roles, as it:

- Provides a moist wound environment
- Enables growth factors, immune mediators and tissue-repairing cells to cross the wound bed
- Supplies the nutrients needed for cell metabolism
- Promotes autolytic debridement (World Union of Wound Healing Societies [WUWHS], 2007).

During the normal healing trajectory, a moist wound bed is critical in order to decrease the length and intensity of the inflammatory phase and to shorten the proliferative phase, resulting in faster healing (Swezey, 2014). However, when in the wrong amount, in the wrong place, or of the wrong composition, exudate can delay healing (Box 1; WUWHS, 2019).This is usually accompanied by maceration of the periwound skin, which increases the risk of infection and skin tears. It also increases the risk of leakage and malodour, which are significant concerns for patients. It is therefore important to optimise moisture levels to avoid dehydration and cell death, increase angiogenesis, enhance autolytic debridement, increase re-epithelialisation and decrease pain (Orsted et al, 2017).

Box 1. Problems associated with excess exudate (WUWHS, 2019)

- Leakage and soiling
- Malodour
- Increased infection risk
- Frequent dressing changes
- Pain and discomfort
- Protein loss and fluid/electrolyte imbalance
- Maceration and erosion of the periwound skin
- Wound expansion
- Psychosocial effects

How to assess exudate for optimal healing

Patients should be holistically assessed to determine the best way of achieving and maintaining suitable conditions for healing (WUWHS, 2019). Factors that may contribute to delayed healing (e.g. an associated chronic disease or poor nutrition) or excess exudate production (e.g. oedema or infection) need to be identified and – where possible – addressed or managed to optimise wound bed moisture levels.

Clinicians should aim to consistently assess a wound's exudate so that changes can more easily be detected and possible issues identified (WUWHS, 2019). Exudate should be assessed by:

- Amount
- Type, colour and consistency
- Odour
- Effectiveness of current exudate management dressing/device.

Studying a dressing or device before it is applied and after it is removed remains one of the most used methods to understand the nature of exudate and performance of treatment (WUWHS, 2007): if saturated, a more absorbent dressing or more frequent dressing changes may be needed; if leaking but not saturated, a dressing with a better seal or retention is appropriate (WUWHS, 2019). Determining and classifying exudate level in an objective and meaningful way can be difficult unless a canister-based negative pressure wound therapy (NPWT) device or an ostomy/fistula appliance is used to collect wound drainage.

Although several approaches to assessment have been proposed over the years, Falanga's Wound Exudate Score (Falanga, 2000) is favoured by the WUWHS Expert Working Group (2019) due to the relative simplicity and clinically helpful nature of the three-level classification (Table 1).

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Managing wound bed moisture level

Dressings are the mainstay of moisture management, however various factors affect selection (WUWHS, 2019), including:

- Patient needs and preference
- Wound bed tissue type
- Exudate volume
- Wound depth
- Odour
- Wound infection or biofilm
- Cost
- Availability
- Patient needs and preference
- Clinician preference.

During the course of exudate management, clinicians should be prepared to step treatment up or down as needed. Fluid-handling capacity and wear times should be considered when selecting a treatment. Various strategies can be used to adjust moisture levels to aid healing (Table 2).

Protecting periwound skin

The presence of excess moisture and proteolytic enzymes, such as matrix metalloproteinases (MMPs), delays the healing process and can cause maceration to the periwound skin, resulting in pain and discomfort and risk of wound enlargement. It is important to regularly assess the periwound colour for signs of maceration (pink is healthy, white suggests maceration and red can indicate infection) and to select a dressing or device that draws exudate away from the skin and prevents leakage (WUWHS, 2019).

The risk of trauma during dressing/device change should be minimised to reduce the likelihood of damage to the wound bed, erosion/excoriation or tearing the periwound skin and pain (WUWHS, 2019). Low-adherent contact layers or dressings, and periwound skin protectant will help prevent periwound skin damage or maceration.

The presence of oedema will increase the amount of exudate produced. Compression therapy and manual lymphatic drainage should be considered in suitable patients, such as those with venous leg ulcers, as it effectively reduces exudate production (WUWHS, 2019).

Table 1: Wound Exudate Score (Falanga, 2000; WUWHS, 2019)

Wound Exudate Score	Extent of control	Exudate amount	Dressing requirement
1	Full	None/minimal	No absorptive dressings required. If clinically, feasible dressing could stay on for up to a week
2	Partial	Moderate amount	Dressing changes required every 2–3 days
3	Uncontrolled	Very exudative wound	Absorptive dressing changes required at least daily

Table 2. Wound bed moisture management strategies (WUWHS, 2007; Orsted et al, 2017)

Wound bed status	Moisture adjustment strategies
Too dry	■ Select a dressing that conserves or donates moisture ■ Use a thinner/less absorbent version of the current dressing ■ Decrease the frequency of dressing changes
Optimal	■ Continue using current dressing ■ Do not change the frequency of dressing changes
Too moist	■ Use a thicker/more absorbent version of the current dressing ■ Change to a dressing with greater fluid-handling capacity ■ Add/use a higher-absorbency secondary dressing ■ Increase the frequency of primary and/or secondary dressing change ■ Consider negative pressure wound therapy or wound drainage collection or ostomy/fistula appliance

Improving patient quality of life

A patient's psychological wellbeing and quality of life can be significantly impacted by excessive exudate production (Benbow and Stevens, 2010; WUWHS, 2019). They may experience fear, anxiety and embarrassment as a result of leakage and/or strikethrough or the associated odour. This can lead to social isolation.

Frequent dressing changes may be needed to prevent strikethrough, potential infection and biofilm formation, but they can disrupt a patient's home, social or work life and cause distress if associated with pain (WUWHS, 2019). It is therefore important to consider whether the patient would benefit from psychosocial support.

Clinicians should also be aware that other problems, such as protein loss, fluid or electrolyte imbalance and dressing adherence issues, can occur and will need to be addressed with assistance from nutritionists from the multidisciplinary team.

The importance of dressing selection

The risk of potential complications can be minimised by selecting the most appropriate dressing. The qualities of the ideal dressing for exudate management are listed in Box 2.

Box 2. Ideal dressing properties for managing excess exudate (WUWHS, 2019)

- Prevents leakage and strikethrough
- Absorbs odour
- Suitable fluid-handling capacity
- Retains fluid-handling capacity under compression therapy or when used with an offloading device
- Stays intact and remains in place during wear
- Comfortable/reduces pain/does not cause pain on application
- Atraumatic and retains integrity on removal
- Unlikely to cause sensitisation or to provoke an allergic reaction
- Does not impede physical activity
- Incorporates sensors/alerts to feedback on dressing performance, need for change and wound condition
- Inactivates factors that enhance inflammation (i.e. matrix metalloproteinases)
- Showerproof
- Cost-effective.

The role of superabsorbent polymer dressings

The recent WUWHS (2019) Consensus Document focuses on three key areas for effective exudate management. Superabsorbent polymer (SAP) dressings offer multiple benefits that address these challenges (Table 3) and are increasingly being used in the management of moderate to highly exuding wounds.

Table 3. How superabsorbent polymer dressings effectively manage exudate (adapted from WUWHS 2019)

Aim	Actions of superabsorbent polymer dressings
Optimise moisture levels in the wound bed	■ Reduce matrix metalloproteinase activity ■ Maintain fluid retention capacity under compression ■ Provide high moisture vapour transmission rate
Protect skin surrounding the wound	■ Prevent leakage ■ Some have a silicone layer, which reduces risk of skin damage during dressing changes
Manage symptoms and improve quality of life	■ Provide comfort and cushioning ■ Sequester odour ■ Prevent leakage

Due to the specific design and the polymers properties, the SAP dressings maintain fluid retention capacity even under compression, provide cushioning, making them comfortable to wear. They can be used as primary or secondary dressings, and some have a silicone contact layer that protects the wound bed and reduces the risk of damage to the surrounding skin during dressing changes (WUWHS, 2019). These dressings absorb excess exudate and prevent leakage, thereby protecting the periwound skin from maceration. In chronic wounds, the superabsorber particles contained within SAP dressings block excess MMPs activity by directly binding these enzymes and the ions required for their activity, reducing protein breakdown in the wound bed and producing conditions more conducive for healing (Eming et al, 2008).

Zetuvit Plus Silicone Border

Zetuvit Plus Silicone Border is a single-use, sterile SAP dressing with silicone interface suitable for long-term treatment of injured skin in acute and chronic wounds with moderate to high levels of exudate. It is recommended as a primary and secondary dressing

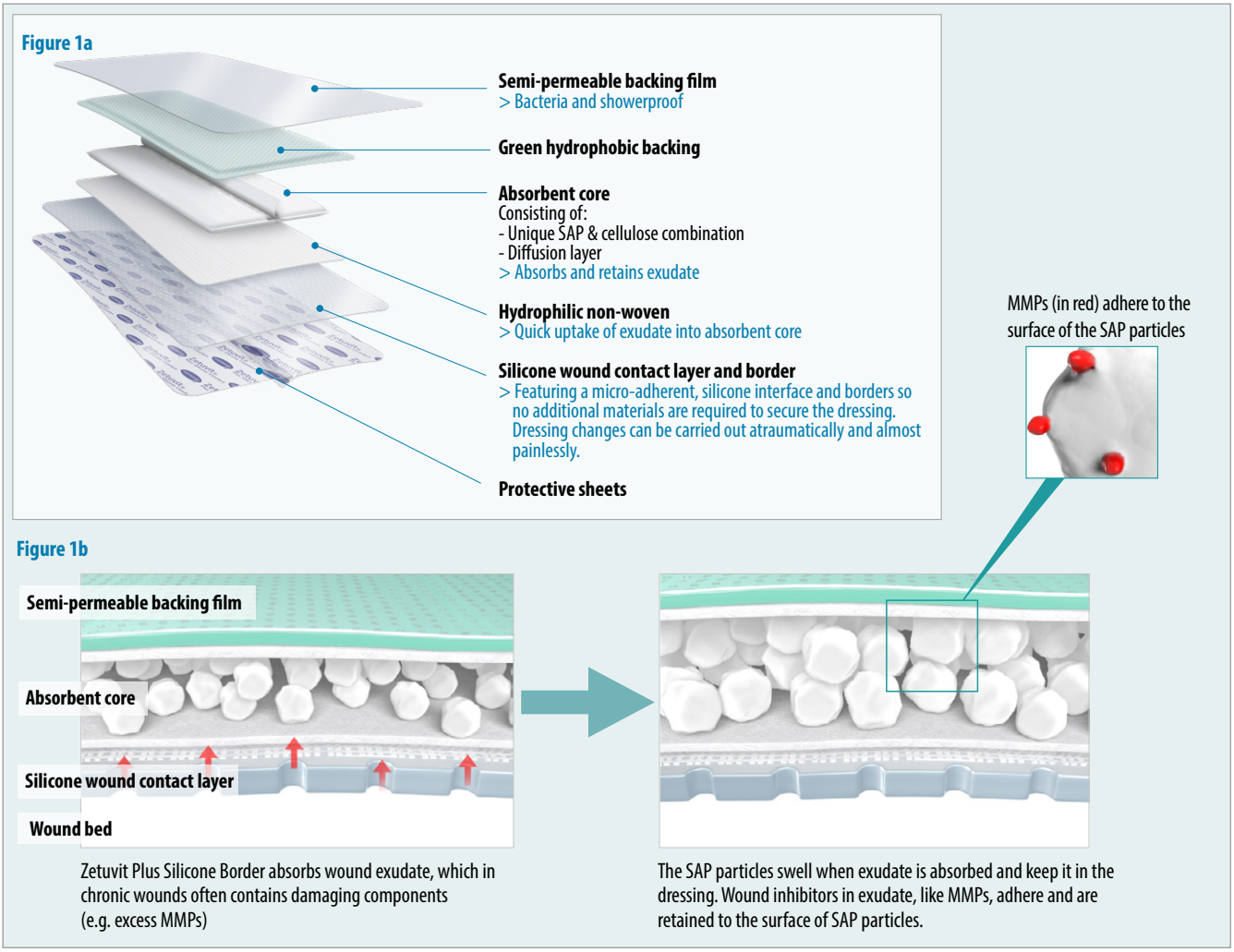

Figure 1: Zetuvit Plus Silicone Border (a) composition (b) mode of action. MMPs= matrix metalloproteinases; SAP= superabsorbent polymer.

(WUWHS, 2019), and it is available in five sizes. It can also be used in combination with local antiseptics.

Zetuvit Plus Silicone Border consists of five layers (Figure 1a) that form a versatile dressing with a very high absorption and retention capacity while maintaining optimal microclimate. It is easy to use, supports atraumatic dressing changes and confers a padding effect, so it is an ideal dressing for patients with exuding wounds, including those with skin problems and diabetic foot ulcer.

Zetuvit Plus Silicone Border has properties that result in both clinical and patient-centred benefits (Boxes 3 & 4). Good exudate absorption and retention minimises the risk of leakage and strikethrough, which are particularly distressing for patients, and protects the periwound skin (WUWHS, 2019). Due to its specific structure, Zetuvit Plus Silicone Border effectively absorbs and retains the exudate with excess levels of proteases (MMPs) contained in the exudate of non-healing wounds (Figure 1b).

In addition to trapping excess moisture, the SAP particles help improve healing conditions in the wound bed by significantly reducing the amount of MMPs 24 hours after application (Davies et al, 2017a).

High numbers of bacterial and fungal pathogens increase the risk of infection. Some bacteria produce odourous molecules from exudate, causing patients embarrassment and anxiety.

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Box 3. Case study, courtesy of Astrid Probst

The patient was admitted to our hospital in May 2019 presenting with a swollen right foot with an abscess and necrotic toe. He has type 2 diabetes, diabetic polyneuropathy, peripheral arterial disease, coronary artery disease, permanent arterial fibrillation, hypertension and obesity.

Oedema was predominant on plantar, dorsal and pretibial areas. Following medical assessment, the patient underwent a transmetatarsal amputation, surgical debridement on the plantar and medial side of the foot and an incision on the upper jump joint. *Figure a* shows the foot 6 days after amputation.

Later, the patient underwent recanalization of the artery femoralis superficialis. The wound continued to be debrided weekly as part of the management plan. Negative pressure wound therapy (NPWT) was applied for approximately 2 weeks, before a skin graft was performed and NPWT reapplied for another week. Antibiotics were also prescribed.

After NPWT, use of cold atmospheric plasma (CAP) supported wound progression. At day 69 (*Figure b*), the wound showed epithelialisation, some fibrin and granulation tissue.

Zetuvit Plus Silicone Border was used at this point to optimise the moisture wound environment and to protect the islands of epithelisation. Mild compression therapy on the leg was also applied.

There was a clear improvement of the healing tendency of the skin graft so the therapy with CAP and Zetuvit Plus Silicone/Zetuvit Plus Silicone Border was maintained until the patient's discharge from hospital.

The dressing change interval went from every second day to every third or four day, depending on the exudate level. After every dressing change, mild compression therapy was applied. Over time, CAP was no longer required so only Zetuvit Plus Silicone/Zetuvit Plus Silicone Border were used with mild compression therapy.

At day 100 (*Figure c*), 98% of the wound was covered with epithelialised tissue.

Both the clinician and patient were satisfied with the performance of Zetuvit Plus Silicone/Zetuvit Plus Silicone Border to improve the healing of the skin graft. The patient reported no pain during the dressing change and no pressure injuries occured after applying mild compression therapy.

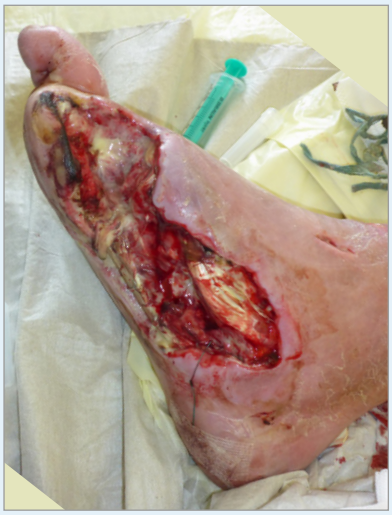

Figure a. 6 days after amputation

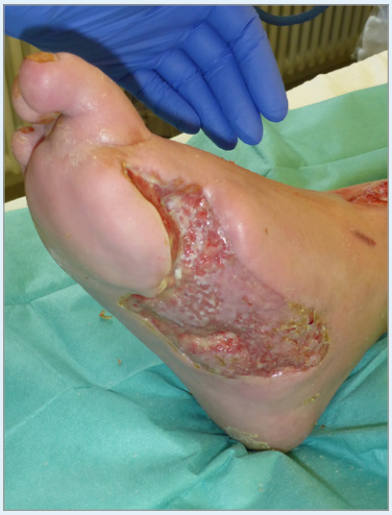

Figure b. 69 days after amputation

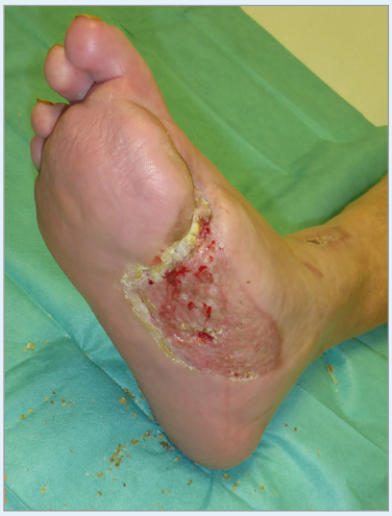

Figure c. 100 days after amputation

Suppressing the bacterial and fungal load will help reduce these issues. Zetuvit Plus Silicone Border sequesters and retains various bacteria, including *Pseudomonas aeruginosa*, methicillin-resistant *Staphylococcus aureus* and *Corynebacterium striatum* (which causes odour), as well as *Candida albicans* and odourous thiols (Davies et al, 2017a; 2017b). Application of this dressing can therefore potentially reduce the risk of biofilm formation and infection as well as reducing odour and its associated psychosocial issues.

Due to its absorption capacity, fewer dressing changes are needed (data on file), reducing nursing time and healthcare costs. Overall, by ensuring an optimal microclimate beneficial for wound healing, Zetuvit Plus Silicone Border has a positive impact on healing progression, minimising complications and improving patient quality of life. Its clinical efficacy, simple application and range of sizes recommend Zetuvit Plus Silicone Border as a versatile dressing to be used in the local treatment of a wide variety of exuding wounds (Box 5).

Box 4. Advantages of Zetuvit Plus Silicone Border

- Reduces leakage and soiling
- Reduces MMP activity
- Offers very high absorption and retention performance while maintaining optimal microclimate
- Maintains fluid retention capacity under compression
- Has a suitable MVTR
- Protects vulnerable periwound skin by
  - preventing leakage
  - reducing risk of skin damage during dressing change due to silicone layer
- Helps to reduce some stress and social isolation by
  - preventing leakage
  - sequestering odour
  - providing comfort and cushioning.

Box 5. Tips for appropriate use of Zetuvit Plus Silicone Border

- Select a dressing with a central pad 1–2 cm wider than the wound edges
- The transparent border can be cut to fit the shape of the wound
- To ensure good adherence, dry the surrounding skin with a swab
- On application, ensure there are no wrinkles in the border to prevent leakage
- Compression bandages can be applied over Zetuvit Plus Silicone Border if necessary.

Summary

Excess exudate can cause various complications that result in further tissue damage or prevent wounds progressing to healing. Correct dressing selection can optimise conditions at the wound bed, reduce the risk of complications, improve patients' psychosocial wellbeing and reduce healthcare costs. Zetuvit Plus Silicone Border:

- has very high absorption and retention capacity while maintaining an optimal microclimate
- reduces the activity of excess MMPs
- locks away odour
- supports progression towards healing and improvement of patient quality of life.

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