

## Mextra<sup>®</sup> Superabsorbent PRODUCTS FOR PRACTICE

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easy

### Introduction

Exudate plays an essential role in moist wound healing. However, in chronic wounds high levels of exudate may be associated with malodour, periwound skin damage and strikethough, impacting significantly on a patient's quality of life. In local wound management, dressings are the main option for dealing with exudate. This made easy discusses Mextra<sup>®</sup> Superabsorbent (Molnlycke Health Care), and how to use it in the treatment of moderate to highly exuding wounds.

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### ROLE OF EXUDATE IN WOUND HEALING

Exudate production is a natural component of the wound healing continuum. It facilitates the diffusion of vital healing factors, such as growth factors, and assists in the migration of cells across the wound surface. It promotes cell proliferation and provides essential nutrients for cell metabolism (White and Cutting, 2006).

A moist environment promotes wound healing (White and Cutting, 2006). However, when a wound produces too much exudate problems can occur including periwound skin damage, an increased risk of critical contamination/infection of the wound, delayed healing, increased levels of matrix metalloproteinases (MMPs), and patient pain and distress (WUWHS, 2007), as well as a drain on clinicians' time and resources. Patients can also experience anxiety, fear and social isolation due to the malodorous, unmanageable leakage from wound dressings (Tadej, 2009; Gebhardt, 2010).

### ROLE OF DRESSINGS IN EXUDATE MANAGEMENT

In wounds producing too much exudate, choosing an appropriate dressing, such as a foam or superabsorbent that can absorb excess fluid is key (WUWHS, 2007). Exudate is absorbed into the dressing's matrix but when exudate levels exceed its absorbent capacity subsequent periwound maceration and potential excoriation can occur (Queen, 2010), affecting patient comfort and quality of life (Adderley, 2008).

Inaccurate assessment, inappropriate dressing selection and over estimating wear time can therefore lead to poor management of exudate. Key characteristics of an ideal absorbent dressing are: absorption and retention of exudate, prevention of exudate from coming into contact with the periwound skin, easy removal, conformability, cost efficiency and efficacy underneath compression.

### Outcomes of good exudate management

- Less periwound maceration
- Lower bacterial burden on the wound bed
- Promotion of rapid granulation from the base of the wound (WUWHS, 2007).

### WHAT IS MEXTRA<sup>®</sup> SUPERABSORBENT?

Mextra<sup>®</sup> Superabsorbent is a highly absorbent non-adhesive dressing designed for use in wounds associated with moderate to high levels of exudate.

The dressing's four-layer construction works in a sequence to optimally manage exudate (Figure 1). The outer layer is a non-woven, fluid-repellent (hydrophobic) polypropylene membrane (1, in Figure 1). The core absorbent layer (2) is a pad comprising a three-dimensional structure containing precisely controlled proportions of cellulose (cotton) fibres and bonding fibres with embedded polyacrylate superabsorbent particles. A polyester and viscose non-woven distribution layer (3) lies between the superabsorbent layer (2) and the fluid-attracting (hydrophilic) polypropylene spun-bonded non-woven wound contact layer (4).

### FOUR LAYER CONSTRUCTION

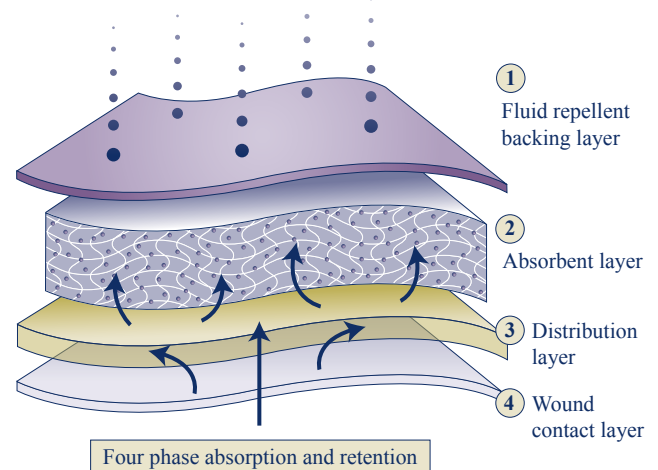


Figure 1: The structure of a Mextra<sup>®</sup> Superabsorbent dressing

The design of Mextra<sup>®</sup> Superabsorbent offers the following attributes:

- Absorbs and retains exudate
- Maintains its structure (size and volume) without becoming bulky
- Keeps the outer layer dry
- Provides protease modulating activity in the form of the polyacrylate superabsorbent particles, which have been associated with protease modulation (Eming et al, 2008).
- Good conformability.

## HOW MEXTRA<sup>®</sup> SUPERABSORBENT WORKS

The dressing's ability to manage exudate stems from the complimentary functions of its four layers:

- **Fluid acquisition:** The hydrophilic wound contact layer transfers wound exudate upwards towards the core of the dressing, ensuring the wound is not too wet.
- **Distribution:** The distribution layer evenly transfers exudate laterally and upwards into the absorbent core for maximum absorbency.
- **Absorption and retention:** This core contains the right proportion of superabsorbent particles to absorb exudate without causing the dressing to become bulky and heavy. As the superabsorbent particles in the core absorb exudate they occupy the structure of the pad. There must be sufficient space between the superabsorbent particles to allow excess moisture vapour to pass through the backing layer, otherwise dressing breathability is impeded.
- **Protection and comfort:** Moisture vapour is transmitted through the outer backing layer but fluid cannot pass through, thus minimising the risk of exudate strikethrough and preventing external fluids from contaminating the wound.

## EVIDENCE OF EFFICACY

### Absorbency

Laboratory tests undertaken by an independent body have shown that Mextra<sup>®</sup> Superabsorbent has a high absorption capacity, which is comparable to other superabsorbent dressings (Molnlycke Health Care, 2011).

### Retention: use under compression

To effectively prevent periwound maceration and excoriation, a dressing must also retain exudate under pressure comparable to that produced by compression bandages for venous leg ulcers (Cutting and White, 2002). In laboratory tests, the pressure typically exerted by compression bandages for venous leg ulcer management (Grey et al, 2006; Partsch et al, 2008) was applied to Mextra<sup>®</sup> Superabsorbent that had been saturated with fluid. It retained 95% of the absorbed fluid, and did not disintegrate or become swollen and bulky (Molnlycke Health Care, 2011).

### Breathability

The moisture vapour transmission rate (MVTR) of the outer layer was independently evaluated (Molnlycke Health

Care, 2011). Tests showed that a high volume of water evaporated through the backing layer, augmenting the dressing's ability to handle fluid. The backing layer also blocks the passage of water which enables the dressing to prevent strikethrough and keep its outer surface dry.

### Protease modulation

MMPs are necessary for wound healing, but if they are present and their activity is too high for too long, they can have a detrimental effect on the extracellular matrix, impeding or arresting wound healing. Managing protease levels is essential for healing. Polyacrylate superabsorbent particles have been shown to reduce MMP levels (Eming et al, 2008) and Mextra<sup>®</sup> Superabsorbent contains similar particles.

## WHEN TO USE MEXTRA<sup>®</sup> SUPERABSORBENT

When the absorbency of a traditional foam dressing is insufficient clinicians may need to look for alternatives. Superabsorbent dressings offer increased absorbency and can be used for:

- Wounds exuding excessively that have or might lead to infection. This can result in wet and stained dressings, malodour, too frequent dressing changes and poor quality of life for the patient.
- Moderate to heavily exuding wounds that are not healing.
- Patients with heavily exuding wounds that are undergoing compression therapy. Failure to correctly assess and implement an effective dressing regimen has resulted in patients reverting to the use of plastic bags, or the equivalent, to prevent their dressings leaking (Figure 2). Therefore the suitability of the superabsorbent dressing for use underneath compression therapy is important to prevent such episodes of poor management. However, further research into the effect of superabsorbent dressings on sub-bandage pressure is needed (Cook, 2011).
- Wounds in which existing dressings are failing to contain exudate.
- Wounds that require maintenance of the correct moisture balance.



Figure 2: Poor control of exudate: dressings are soaked with exudate and strikethrough is evident

## HOW TO USE MEXTRA® SUPERABSORBENT

First cleanse the wound using normal procedures according to local protocols and assess the wound. Place the dressing directly over the wound, using an aseptic technique. The dressing should overlap the dry skin surrounding the wound by at least 2cm. Secure Mextra® Superabsorbent in place using a suitable bandage, such as Tubifast or tape.

Mextra® Superabsorbent can also be used with other primary dressings, such as Mepitel® and Mepitel® One to reduce the frequency of dressing changes. Mepitel® and Mepitel® One can remain in place for extended periods (up to 14 days) while Mextra® Superabsorbent can be changed as required, minimising disturbance to the wound bed (Davies and Rippon, 2011). Mextra® Superabsorbent can also be used in conjunction with compression therapy for venous leg ulcers.

### When to discontinue use

The wound must be reassessed at every dressing change and treatment altered appropriately. Once the excessive exudate has been controlled and the wound has reached an appropriate moisture level, the wound must be reassessed and a more appropriate dressing chosen. This will prevent cell desiccation, dehydration of the wound bed and a delay in wound healing (Dowsett and Newton, 2005). Continued inappropriate use of Mextra® Superabsorbent can lead to a dehydrated wound bed.

## RELEVANCE TO CLINICAL PRACTICE

In heavily exuding wounds, dressings that absorb small amounts of exudate and have little or no ability to retain exudate are more likely to be associated with periwound skin maceration and excoriation (Cutting and White, 2002; Cutting, 2009; Jones et al, 2006). Cutting (2009) and Romanelli (2010) reported reduced levels of maceration and no excoriation (Cutting, 2009) in highly and moderately exuding wounds managed with polyacrylate superabsorbent dressings. Patient comfort is managed because the dressing remains conformable (see case study below), and exudate strikethrough and leakage are minimised keeping the outer layer dry, thereby reducing soiling of clothing and bedding.

### Patient safety and comfort

Mextra® Superabsorbent allows high levels of exudate to be effectively managed (Tickle, 2012). This can assist in the removal of harmful bacteria and enzymes from the wound to improve healing (WUWHS, 2007). Its ability to conform to the contours of the wound allows Mextra® Superabsorbent to be in close contact with the wound bed. Good conformability promotes a wound environment that will encourage healing (Romanelli et al, 2010), prevents pooling of fluid, enables more effective exudate absorption and decreases the risk of leakage.

Clinicians have a responsibility to their patients to manage wound exudate effectively, therefore reducing the

## Case Study

### Background

Mr S, a 72-year-old male, presented at the wound care clinic with 12-month history of skin ulceration and excoriation with unknown aetiology or cause. At presentation, both of his lower limbs were excoriated and exudate was excessive, resulting in malodour. The dressings to his limbs were excessively wet and stained. It took the tissue viability nurse over an hour to gently and safely remove the dressings that had adhered to his skin. His toes were almost adhered together with the excess exudate (Figure 1). The largest wound measured 9cm x 5cm. Mr S' skin was inflamed and showed signs of contact dermatitis. The community nurses had been redressing his limbs daily prior to presentation. The secondary absorbent dressing had not managed the high exudate levels effectively.



Figure 1: Foot showing toes encrusted with exudate

### Treatment and Outcome

Following a holistic assessment of Mr S and his wounds and skin the following treatment regimen was initiated. The foot was soaked daily with antimicrobial emollient (Dermol 500, Dermal Laboratories Ltd). Steroid ointment was applied for 7 days to the contact dermatitis resulting from skin contact with excessive levels of exudate. A non-adherent primary contact dressing (Mepitel®) was applied with Mextra® Superabsorbent. A cotton retention stockinet was applied toe to knee.

Dressing changes were extended to every second day for 7 days, every third day for 7 days and then every fourth/fifth day. This decreased nursing time, dressing costs, and increased staff and patient morale. After 15 days, the wound showed signs of healing and had reduced in size (5cm x 2cm). Mr S reported that his legs felt more comfortable and were not itching, and that he was no longer worried about the wound leaking on to his clothes and bedding. The wound progressed to full healing (Figure 2).

Mr S reported that Mextra® Superabsorbent had felt soft, which was important for comfort and improving his quality of life. The absorbence of high levels of exudate prevented/resolved maceration and excoriation to the skin, and reduced the risk of wound infection. Nurses found Mextra® Superabsorbent conformable and easy to apply.



Figure 2: Toes and foot free from exudate

occurrence of harm (Department of Health, 2009). Using inappropriate dressings to manage exudate can result in discomfort and detrimental psychosocial effects for the patient, as well as delayed healing (Tickle, 2012).

## Cost benefits

As a result of the absorption and retention of large amounts of exudate, Mextra<sup>®</sup> Superabsorbent has an extended wear time and less frequent dressing changes are required. This in turn frees up nursing time and reduces the cost of clinical resources (dressings etc). Using dressings that are able to cope with high levels of exudate benefits both the patient and the nursing staff who will gain time and use fewer medical resources (Adderley, 2008).

## Clinical benefits

Case studies using Mextra<sup>®</sup> Superabsorbent dressing have shown that it has the ability to absorb high volumes of wound exudate and limb oedema (Tickle, data on file). A reduction in wound pain and wound dressing strikethrough has been observed, which dramatically improved patients' quality of life and wellbeing. The absorption properties facilitated longer wear time of the dressing, ensured effective treatment regimens and reduced dressing costs and nursing time.

## SUMMARY

Effective management of excess exudate is vital. Clinicians must reassess the wound and how it is managed. The effectiveness of care should be reassessed at regular intervals and amended as appropriate. With careful management, exudate can assist with the wound healing process rather than excess levels of exudate hindering it (Adderley, 2008).

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