Meeting report: Promoting wound healing by optimising dressing change frequency

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This report outlines the proceedings of a symposium, which took place at the European Wound Management Association conference in Gothenburg, Sweden, on June 5, 2019. The session explored the concept and themes of undisturbed wound healing and the key considerations that should guide its practical application and improve outcomes, with case studies involving the use of Mepilex Border Flex (Mölnlycke Health Care; available as Mepilex Border Comfort in the United Kingdom).

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Leena Berg opened the session by introducing the concept of undisturbed wound healing, as reported by Brindle and Farmer (2019; *Box 1*). While it is a relatively new concept, undisturbed wound healing is now widely referred to in the clinical management of both acute and chronic wounds (Stephen-Haynes, 2015). The objectives of the symposium were for the audience to learn how to promote wound healing, save time and improve quality of care by optimising dressing change frequency.

According to the results of a recent survey of over 1,500 clinicians (Davies et al, 2019), dressings need to be changed, or are changed in practice, for a variety of reasons:

- The dressing has served its purpose (e.g. antimicrobial action, exudate handling)
- The original dressing has not remained *in situ*
- The clinician needs to inspect the wound
- The clinician needs to manage the wound (e.g. taking off the dressing to carry out debridement)
- Protocol-specified change frequency.

It was noted that traditional behaviours and strict adherence to established protocols may lead to the mindset of 'we have always done it this way', meaning that dressings could be being changed more frequently than necessary.

When following the principles of undisturbed wound healing, there are four key considerations that should guide its practical application and improve outcomes: the patient, the caregiver, care of the wound, and economics (Brindle and Farmer, 2019). Factors such as quality of life and psychosocial factors are of paramount importance. In particular, pain during dressing change can cause fear and anxiety for patients. When considering cost-effectiveness, it is important to look at the whole picture. For instance, using less expensive dressings that require more frequent changes can be a false economy. It is important to consider time savings, as well as the knock-on positive effects on the patient (e.g. a reduction in the frequency of dressing changes can improve the quality of life of patients and allow them to lead as normal a life as possible).

As such, Leena described Mepilex Border Flex (Mölnlycke Health Care; known as Mepilex Border Comfort in the United Kingdom), a dressing with a potentially long wear time and visual indicators to facilitate appropriate dressing changes, making it particularly well suited for wounds where fewer dressing changes may be beneficial. The dressing is an all-in-one, self-adherent soft silicone coated foam dressing, suitable for use on multiple wound types — its flexibility combined with fluid-handling capability enables wear time of up to 7 days, facilitating undisturbed wound healing *[Figure 1]*.

Optimising dressing changes in diabetic foot ulcer (DFU) management

Jose Luis Lazaro Martinez went on to explain how undisturbed wound healing can be applied to the management of DFUs. He emphasised that it is key to consider the healing phase

Box 1. Common themes of undisturbed wound healing (Brindle & Farmer, 2019).

- **Tissue trauma during dressing changes**
  - Undisturbed wounds do not have dressings adhering to the wound bed or causing periwound injury
- **Frequency of dressing changes/cost of care**
  - The more undisturbed the wound, the less frequent the dressing changes and the lower the associated cost
- **Biochemistry**
  - Products or conditions with limited/managed/reduced/controlled inflammation have more undisturbed healing
- **Structural integrity/remodelling potential of extracellular matrix (ECM)**
  - Wounds with suboptimal conditions result in ECM degradation or lack of fibrinolysis of denatured ECM structures, causing disturbed and delayed healing
- **Quality of life, psychosocial factors associated with healing**
  - Undisturbed wound healing is stated to be closest to a 'normal' life for the patient in the process of wound healing
  - Frequency of dressing changes and capability of the dressing to manage physical symptoms are important considerations
- **Pain**
  - Undisturbed wounds have less pain (during the wear and change of dressings)
- **Stability of wound, stable performance resistant to outside influences, which decrease dressing performance**
  - Optimal dressing: water-proof, conformable and prevents infection
- **Absence of infection/biofilm**
  - Undisturbed wound healing occurs with levels of bacteria that are managed by the body and do not delay healing through prophylaxis, maintenance or direct intervention to remove bacteria
- **Patient acceptability and comfort**
  - Comfortable dressing/no pain during wear or change/no anxiety or stress/possibility for extended wear time
- **Care of wound**
  - Gentle to wound bed/no damage, no adherence, no insult to ECM/capable of wicking away pro-inflammatory mediators and removing or trapping bacteria
- **Provision of caregiver confidence**
  - Dressing change based on clinical assessment (not dressing failure)
- **Cost-effectiveness**
  - Decreasing overall cost of care/cheaper dressings with poor clinical outcomes cause higher cost due to increased dressing changes, waste and poor clinical outcomes

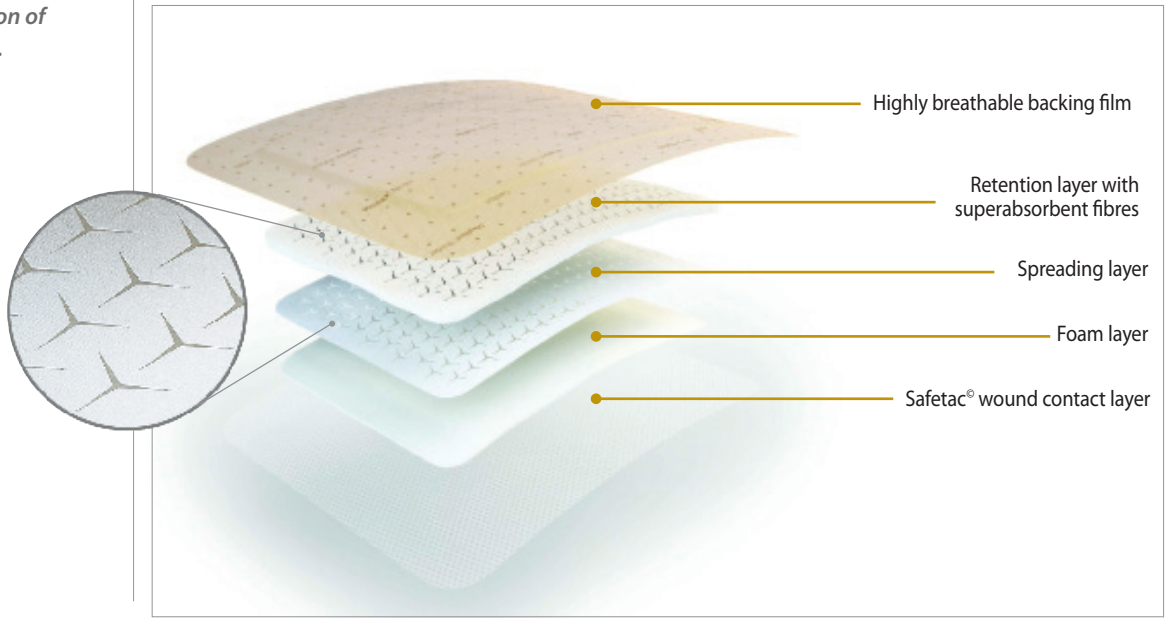

Figure 1. Composition of Mepilex Border Flex.

and status of the individual wound: it is not beneficial simply to use one dressing all the time. Appropriate selection is paramount, based upon the patient and the wound, and their individual needs.

Dressing needs for DFUs are multifactorial, focusing on:

- Location
- Size
- Pressure
- Shear forces
- Joint mobility.

For DFUs, it is also necessary to take into account the compatibility of dressings with other therapies – e.g. use in conjunction with offloading devices. Retention layers are also required in order to manage and retain exudate, preventing bacteria from re-entering the wound bed, and avoiding maceration and further damage to the surrounding skin. As DFUs are likely to be in difficult-to-dress anatomical locations (e.g. the toes, heels, or in cases of amputation), conformability and ease of use are particularly important.

Jose noted that the confidence needed to use a dressing with an extended wear time applies to both clinicians and patients. Clinicians need to be able to select a dressing that they feel will manage the wound, and this needs to be communicated to the patient. Patients may feel nervous about a longer wear time, so it is important to educate patients on dressing selection and the benefits for their treatment.

Case 1.

Figure 2a: ***The wound at presentation.***

Figure 2b: ***The wound at first dressing change on treatment day 7.***

Figure 2c: ***The wound after 28 days of treatment with Mepilex Border Flex.***

The patient was a 56-year-old female with Type 2 diabetes. She had a DFU on her left heel, which had been present for 10 years and was previously treated with a foam dressing combined with offloading.

Figure 2a shows the wound at presentation, and *Figure 2b* at the first dressing change on treatment day 7. After 28 days of this dressing change regimen, the wound had considerably reduced in size *[Figure 2c]*.

Case 2.

Figure 3a: The wound at presentation

Figure 3b: The wound at first dressing change on treatment day 7.

Figure 3c. The wound after 28 days of treatment.

This was a 62-year-old male, with Type 2 diabetes, presenting with a DFU on the 5th metatarsal head of the left foot. The DFU had been present for 43 weeks and had previously been treated with a foam dressing along with offloading using a postsurgical shoe/customised in-sole.

Figure 3a shows the wound at presentation, and at the first dressing change on treatment day 7 *[Figure 3b]*. After 28 days of this dressing change regimen, the wound had almost healed *[Figure 3c]*.

Case 3.

Figure 4a: The wound at presentation

Figure 4b: The wound at first dressing change on treatment day 7

Figure 4c. The wound healed after 28 days of treatment

This was a 58-year-old male with Type 2 diabetes, with a DFU on the first toe of the left foot. The DFU had been present for 24 weeks, and had previously been treated with a foam dressing along with offloading using a postsurgical shoe/customised in-sole.

Figure 4a shows the wound at presentation, and at the first dressing change on treatment day 7 *[Figure 4b]*. After 28 days, the wound had healed *[Figure 4c]*.

Jose presented three cases where Mepilex Border Flex was used, with weekly (7-day) dressing changes.

The US experience

Speaking about the experience in the United States of America, Thomas E. Serena presented the preliminary results of an ongoing prospective clinical study using Mepilex Border Flex, which started during the first week of May 2019. The study involves a wide range of patients and wound types, across a variety of care settings (hospital, private outpatient wound care centres, skilled nursing facilities, home health). The primary objective of the study is to assess reduction in wound size over a 4-week period.

The study's secondary objectives are:

- To assess the rate of wound healing over time (4 weeks)
- To determine the incidence of device-related adverse events
- To record initial clinical experiences
- To confirm clinical safety of the dressing
- To assess dressing wear time
- To assess number of dressing applications over time
- To assess patient satisfaction.

Thomas presented three selected case studies. The study is ongoing, but the findings so far suggest that:

- Mepilex Border Flex has good exudate control in all patients, with decreased exudation observed, particularly in venous leg ulcers
- Weekly dressing change regimen promotes healing, particularly in pressure ulcers
- One-week wear time is favoured by nurses in the outpatient clinic and skilled facilities
- Mepilex Border Flex is well tolerated by patients, with few reporting any pain at dressing change. No adverse events have been reported.

Case 1.

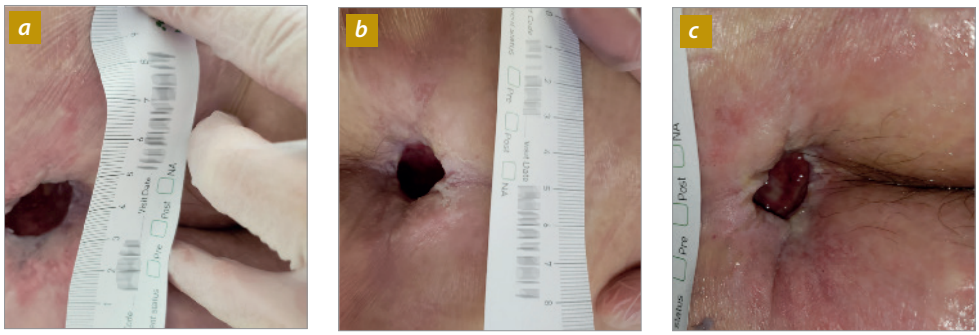

Figure 5: ***Pressure ulcer at presentation (a), week 1 (b) and week 4 (c).***

This was a 74-year-old female in a skilled nursing facility, with a full-thickness sacral pressure ulcer. *Figure 5* shows the wound at presentation (a), week 1 (b) and week 4 (c) of treatment. After 3 weeks, the patient said that she no longer felt pain between and during dressing changes.

Case 2.

Figure 6: ***The wound at presentation (a), week 1 (b) and week 2 (c).***

This was a 64-year-old male with dorsal foot breakdown due to lymphoedema with heavy drainage – the wound was very wet and 'dripping'. It had previously been dressed with gauze and was very painful. The 7-day dressing change regimen helped to improve the pain, as well as beginning to reduce the lymphoedema and exudate levels *[Figure 6]*.

Case 3.

Figure 7: ***The wound at presentation (a), week 1 (b) and week 2 (c).***

This was an 81-year-old female with a venous leg ulcer, with moderate drainage, that had been present for 1 week. The dressing regimen worked well and the ulcer healed by week 3, with improvement also noted to the periwound skin *[Figure 7]*. The patient refused pain relief with dressing changes.

Question Box.

Q The early study results have seen some very positive outcomes, but what do these mean for the healthcare provider in terms of health economics?

Thomas E. Serena: Product cost is an important factor, but equally or more so is the time involved in care provision. It is vital to look at both factors when considering cost. So far, we have seen a positive impact on both.

Next steps for the study have been identified as looking at community/home care and reducing the number of visits required. A further focus is also planned on bacterial burden analysis.

Patient focus

Luxmi Dhoonmoon went on to provide clinical testimonials of Mepilex Border Flex, focusing on patient feedback, with quality of care as the main objective. Ten challenging patients with a range of wounds (i.e. surgical wounds, leg ulcers, foot ulcers, and wounds treated under compression therapy) were selected according to the following criteria:

- Patients who were fully concordant to ensure dressings were not removed inappropriately
- Patients who were on caseload or new to caseload
- Patients with wet and challenging wounds that required frequent dressing changes due to exudate level
- Patients with wounds on hard-to-dress areas (to test the conformability of Mepilex Border Flex).

To assess the patients and their treatment, the following methodology was implemented:

- 'Sandwich' dressings were changed to Mepilex Border Flex
- Mepilex Border Flex was used under compression garments where applicable to monitor effectiveness
- All patients were seen by one Tissue Viability Nurse (TVN) to ensure continuity in evaluation and care
- All wounds were assessed and photographed at each visit to monitor any changes following patient consent.

Following the introduction of this protocol, dressing change was reduced from daily to twice-weekly, and then further reduced to once-weekly, which resulted in savings to nursing time. Progress to wound closure was noted, with rapid autolytic debridement and promotion of granulation tissue.

Patients and clinicians alike reported benefits of the new dressing regimen *[Table 1]*. The pain scores of patients also reduced (Figure 8). Patients' quality of life was monitored throughout and was found to improve, with patients reporting increased ability to carry out everyday activities — e.g. showering. Other improvements were reported, such as increased comfort and flexibility while the dressing was in situ. In particular when noting quality of life improvements, Luxmi described a child receiving

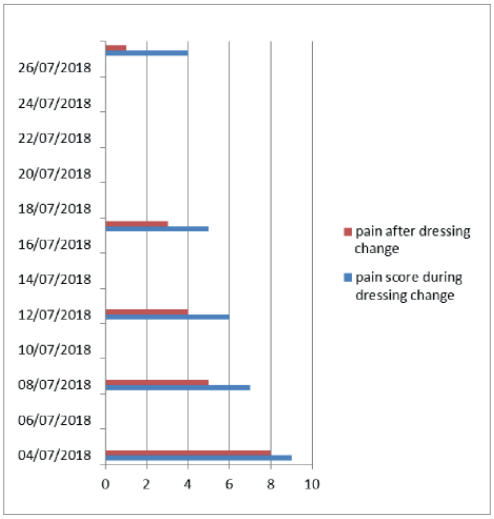

Figure 8: ***Reported patient pain scores: pain severity rating from 0 (no pain) to 10 (worst pain imaginable).***

Table 1. Examples of clinician and patient feedback.

Clinicians	Patients
■ The dressing was easy to apply ■ Improved wound bed and skin integrity ■ The dressing was able to manage more exudate than previously used adhesive foam dressings under compression, with no incidences of maceration observed ■ Released nursing time as dressing frequency was reduced – therefore able to see more patients	■ Pain reduced significantly ■ 'Magic dressing as all exudate has vanished' ■ No odour ■ Feel clean again – can shower daily ■ 'Got my life back' – no need to wait for district nurse for daily dressing change ■ Patient in control – no time off from work to attend clinic as dressing lasts longer and was able to do it himself ■ One patient reported that they were 'thrilled' to get back to their own routine

end-of-life care, for whom odour had been a problem; the increased exudate-handling capacity of Mepilex Border Flex meant that wear time could be increased and significant improvements to the child's comfort and pain levels were made.

The dressing was also found to encourage patient empowerment and self-care, due to the visual indicators that show when dressing change is needed. Educating and engaging patients in how to monitor this puts the patients in control, which

Case 1.

Figure 9: ***The wound on presentation (a) and after two dressing changes (b).***

Following amputation of the toes, this patient had unmanageable pain and problems concerning severe exudate and malodour. Taking multiple painkillers was affecting the patient's general health, causing drowsiness and affecting communication. The patient was nervous at the prospect of dressing change reduction, as this had previously been done daily, so the dressing change frequency was reduced gradually. Pain reduced significantly in all aspects (at dressing change and when the dressing was in situ), and the patient was able to better manage her wound and go home.

Case 2.

This patient had an abdominal wound and was dependent on the district nurse coming to change dressings twice daily. Due to the location and severe exudate, she was unable to get dressed or go out. She was severely depressed, as she had previously been active and independent. As part of the new dressing regimen, change frequency was decreased gradually due to the exudate levels. The patient was able to shower with the new dressing, which helped significantly with her quality of life. By week 4, she was active and mobile again.

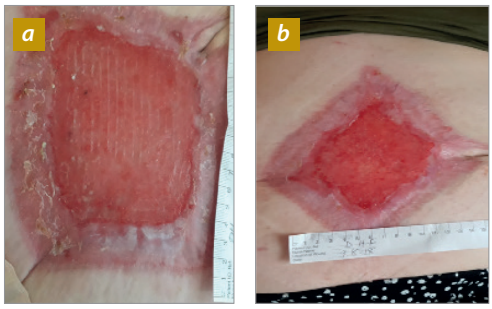

Figure 10: ***The wound on presentation (a) and at week 4 (b).***

Why would you recommend Mepilex Border Flex?

- Flexible, cost-effective and ability to work as both primary and secondary dressing
- User and skin friendly: very gentle on children with skin problems
- Conformable: key to maintaining dressing in situ when carrying out everyday activities
- Primary dressing not required in some patients, despite depth of up to 2cm
- Good exudate management, with no maceration reported from any patients

Question Box.

Q How can the saved time on dressing changes be used elsewhere?

Luxmi Dhoonmoon: As nurses, our job is not just to change dressings. The time saved can now be free for other duties and providing more support to patients.

Question Box.

Q What's next for this project?

Karen Ousey: A 3-arm study, going out in practice, educating and obtaining feedback about clinical decision-making and dressing usage.

made them more involved with their own care. Luxmi presented two cases where the patients used Mepilex Border Flex and were able to self-care at home.

Optimising dressing usage

Next, Karen Ousey presented her project on optimising dressing usage, which aimed to understand experiences, knowledge and current practices of wound care and dressing wear time in the United Kingdom (Blackburn et al, 2018). This took the form of a mixed-methods quality-improvement programme, involving retrospective audit collection and semi-structured interviews (sample size [*n*=12]).

The project looked at the following themes and sub-themes:

- Training and education
  - TVN experience
  - TVN training
- Knowledge and information
- Lack of confidence
  - Reasons for dressing change
  - Ritualistic practice
- Dressing choice.

Karen explained that a retrospective audit can be difficult to undertake, as details are not properly recorded and information has a tendency to go missing. As such, more support and education is required for clinicians on the importance of recording accurate information.

Education in general was identified as a key issue. Levels of education — both academic and 'on the job' learning — can vary, and are often inadequate. While there is a great deal of information available, there is little guidance on how this can be accessed and best used, and what constitutes good-quality information. This confusion can result in a lack of proper understanding, which leads to a lack of confidence.

A common response to this is to automatically fall back onto 'ritualistic practice', where individual factors are not taken into account but standard procedures adhered to regardless – i.e. following a set treatment routine and schedule. This can relate particularly to dressing selection and dressing change frequency. The issue also relates to practitioners being increasingly risk-averse and wanting to 'stick with what they know'.

The global survey (Davies et al, 2019) suggested that clinical assessment was not central to decision-making in dressing changes, and instead related to:

- Protocol
- Lack of confidence
- Patient preference
- Practicalities of nurse visits
- Ritualistic practice.

Summary and take-home messages

- Dressing changes are clinically and economically challenging to health care providers and can have an impact on patient wellbeing
- Through adoption of advanced dressing technologies in combination with professional education, these challenges can be addressed. WINT

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