Evaluation of a 16-patient study using DryMax® Extra in four leg ulcer clinics

Superabsorbent dressings are often used as a management strategy for venous leg ulceration (VLU), in particular to control exudate (Stephen-Haynes, 2011). The author evaluated DryMax® Extra (Absorbest) in 16 patients with various chronic wounds. Patients were given questionnaires on quality of life issues, such as pain, conformability, comfort and wear time. Within the first week of the evaluation, there was a marked improvement in both the wound and periwound skin. Pain scores had reduced by week two and clinicians rated the new dressing as 'very good' to 'good', compared to standard treatment. While the key to good wound management in patients with chronic venous leg ulcers is holistic assessment combined with compression, the new generation of superabsorbent dressings offer the clinician a solution to the problem of exudate management in chronic wounds. The constant demand on wound clinics to reduce costs, while maintaining clinical effectiveness relies on working with patients to find solutions to suit their needs.

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KEY WORDS
Leg ulcers
Super-absorbent dressings
DryMax® Extra
Exudate

Between 55,000 and 90,000 people have a leg ulcer at any one time in the UK (Bosanquet 1993; Franks et al, 2004). The financial burden of managing chronic leg ulcers has been estimated at 1.5% of total health expenditure and most of the care is delivered by community nursing services (Cherry, 1990; Margolis et al, 2002). Stephen-Haynes (2011) has demonstrated that the use of super-absorbent dressings can improve the quality of life of patients suffering from venous leg ulceration, chronic surgical wounds and pressure ulcers.

In this assessment, clinics in NHS City and Hackney evaluated DryMax® Extra (Absorbest) — a superabsorbent dressing — using 16 patients from four leg ulcer clinics. The majority of patients (12) had chronic venous leg ulcers, but the study also included the following:

- One patient with a deep dermal burn on the lower limb that had failed to heal for six weeks
- One patient with a category 3 pressure ulcer on the heel
- Two patients with associated lymphoedema and chronic venous hypertension.

Methods and study design

Nine women and seven men agreed to take part in this study to evaluate DryMax Extra and its use for moderate to heavily exuding chronic wounds. Patients were randomised, based on the clinician's clinical judgement for suitability. The majority of the patients had leg ulcers with venous or mixed aetiology (*Figure 1*). The age range of the study group was 65–87 years.

The 16 patients were selected by the tissue viability team. All of the patients had had leg ulcers for over six weeks. Patients were excluded from the trial if they were known to have diabetes, arterial disease and/or rheumatoid arthritis, or if they were unable to give written informed consent. Three patients had been vascularised and were considered suitable for compression from the vascular team under supervision.

The wounds were primarily around the gaiter area and measured between 30cm^2 and 50cm^2. Two patients had lymphoedema, one patient had a deep dermal burn that developed into a leg ulcer, and one patient had a pressure ulcer on the heel.

In this study, DryMax Extra was applied as a primary dressing in conjunction with non-elastic short-stretch compression or four-layer compression depending on the patient's preference. Previous treatments used by clinicians and patients before entering the study across the four sites included Aquacel® (ConvaTec), N-A® Ultra (Systagenix) or Tricotex® (Smith & Nephew) under short-stretch compression or four-layer bandage systems. Some of the patients had

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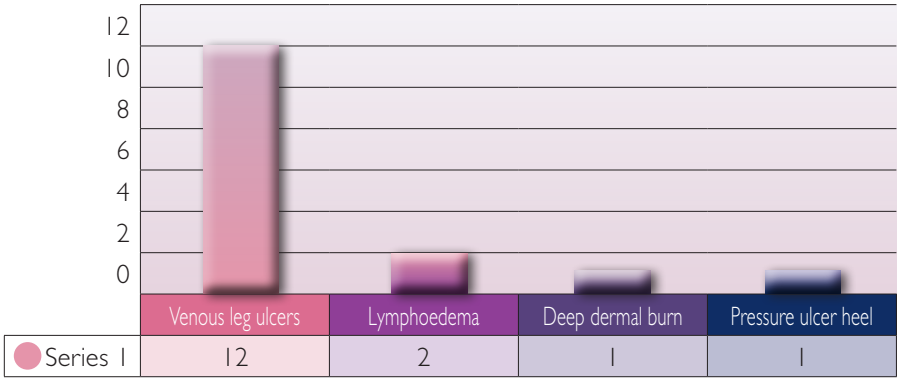

Figure 1. Wound types included in the study.

patients had required daily dressings or changes up to three times a week. All patients were offered analgesia as prescribed by their GP, as pain was one of the quality of life measurements. Prescribed analgesia was not altered unless requested by the patient. During the trial period, all patients were prescribed DryMax Extra 10 x 20cm used as a primary dressing with either a non-elastic Actico® short-stretch bandage (Activa Healthcare) or Profore® four-layer (Smith & Nephew) compression bandaging system, depending on the patient's preference.

The patients were monitored closely during the study and were asked to return to the clinic 24 hours after their first visit. As the researchers did not know how the dressing would perform under compression and wanted to ensure that patients were comfortable, they were asked about their experience of the dressing and were observed for any deterioration. Dressings were changed depending on the patient's exudate loss or if requested. If the dressing bulged under compression, the team took this as an indication that the dressings needed to be changed.

The patients were observed for up to four weeks, until the wound had improved or until a super-absorbent dressing was no longer clinically indicated (when the wound was no longer moderate or highly exuding). This decision was made by the clinician at the time of dressing changes.

Results were assessed by questionnaires given to both patients and clinicians throughout the study, along with the clinicians' wound assessments. Clinicians reported on the following:

- Wound inspection/assessment
- Fluid-handling properties under short-stretch and four-layer compression
- Wear time
- Whether they would recommend adding the product to the trust's formulary.

Patients reported on quality of life measures:

- Comfort
- Conformability
- Pain at dressing changes
- Wear time
- Leaking or strike-through of wound fluid
- Malodour.

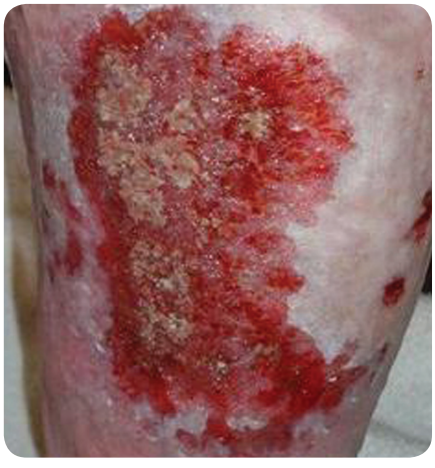

Figure 2. One of the patient's wounds on entry to the study.

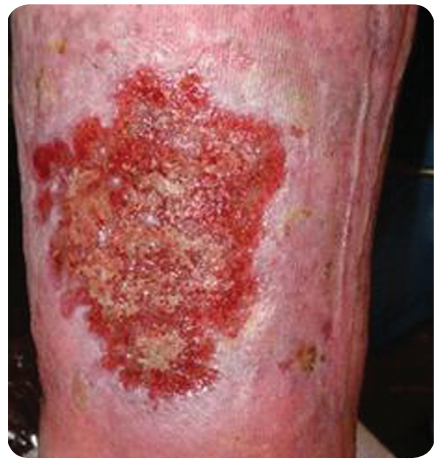

Figure 3. The same wound at week two. Note reduction in maceration and circumference.

Results

At the end of the first week's evaluation there was a marked improvement in both the wound bed and periwound skin (as assessed using the evaluation sheet, which measured overall wound contraction or reduction of periwound maceration [*Figures 2* and *3*]).

Ten percent of patients had necrosis and 90% of all wounds were reported as 'sloughy with areas of granulation tissue' at their first wound assessment on entering the study. All patients had wound exudate described as excessive or high. Forty-two percent of wounds were documented as macerated at the start of the evaluation period and 98% of wound margins and wound beds were healthy or improving by week two.

Quality of life: patients' responses to questionnaires

All patients (100%) were satisfied or very satisfied with the dressings conformability, comfort, and lack of leakage at week one.

Pain was rated on a numeral rating scale of 1–5. The pain scores were recorded weekly and there was a beginning and end score throughout the evaluation. Three patients had no pain following the application of the dressing, 11 patients recorded mild pain and two patients had not documented a pain score (*Figure 4*). Only one patient recorded a pain score of 4, which was reduced to 2 at the end of the four-week period. Thirteen

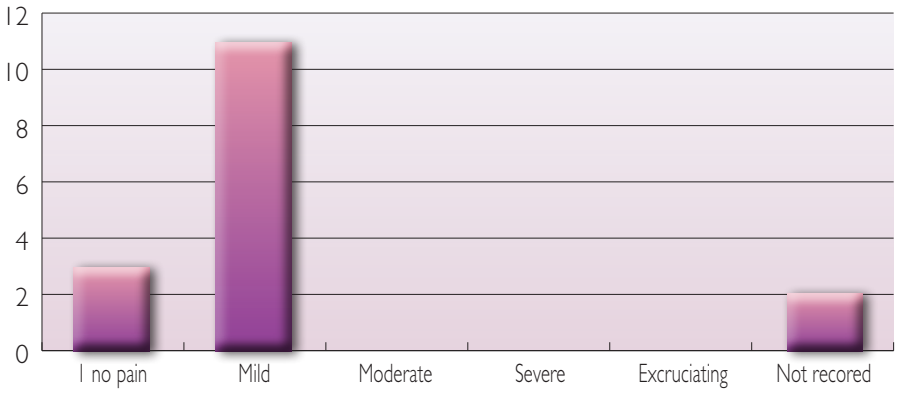

Figure 4. Quality of life pain scores at dressing changes weeks 1–4.

patients recorded scores of 1–2, but as all the patients were encouraged to continue with pain medication throughout the study it was difficult to establish whether these low scores were attributed to the dressing, or appropriate pain management.

All patients were asked their opinion of the dressing's performance at the end of the study. Ninety-four percent found the dressing comfortable and conformable. One patient reported leakage before seven days. This patient had lymphoedema and the dressing was managing the exudate with twice-weekly changes. No malodour was recorded after the dressings were applied by any of the patients enrolled in the study.

Clinicians' evaluations

Fluid-handling properties of the dressing

Absorbency test data provided by an independent Swedish laboratory indicated that the absorption of DryMax Extra is similar to the market leader and fluid retention under pressure was superior (Hindhede, 2010). This data was supported in this study through clinical opinion based on descriptive choices ranging from 'worse', 'similar', 'good' or 'very good' (*Figure 5*). Thirty-six percent of clinicians rated the dressing as very good at handling wound exudate, 56% rated the dressing good. Two forms were not recorded.

One nurse reported that, 'DryMax Extra handled fluid better and lasted up to seven days without strike-through or pain. I was impressed.'

When given the choice of worse, similar, better or much better, 89% of clinicians rated DryMax Extra as better or much better than standard treatment. One clinician reported that the dressing was similar to standard treatment and this was when used with a patient who had a diagnosis of lymphoedema (*Figure 6*).

Dressing changes

The majority of patients were able to wear the dressing for seven days by week two and, overall, 98% of patients required fewer dressing changes (*Figure 7*), with a marked reduction in maceration and wear time.

By the second week patients required 15 less dressing changes and by week four this number had increased to 44 fewer dressing changes. This reduced the need for clinic attendance, lowering travel costs and overall inconvenience for the patients. The reduction in dressing changes also freed up valuable clinic spaces for other patients.

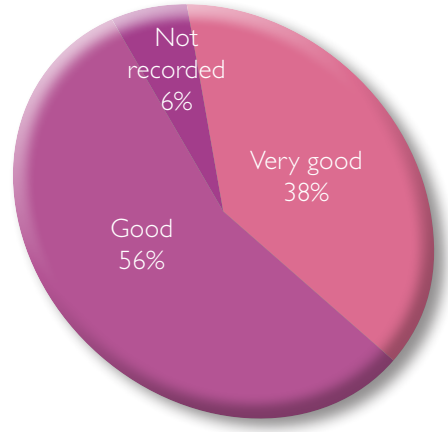

Figure 6. Researchers' overall assessment of the dressing.

Overall, the data above demonstrates a total increase in wear time and a reduction in nursing activity. This resulted in an overall saving in the cost of dressing purchase.

Discussion

DryMax Extra is a low-profile slim dressing that is based on super-absorbent polymers contained inside a propylene cover. The superabsorbent polymers can absorb up to 20 times their own weight. When the wound fluid comes into contact with the super-absorbent polymers, it will attach to the polymer chains and form a complex network structure, resulting in visible swelling and gelling (Hindhede, 2010).

The properties of this dressing minimised the risk of maceration, as demonstrated by the increased wear time under compression. None of the clinicians reported infection or peri-

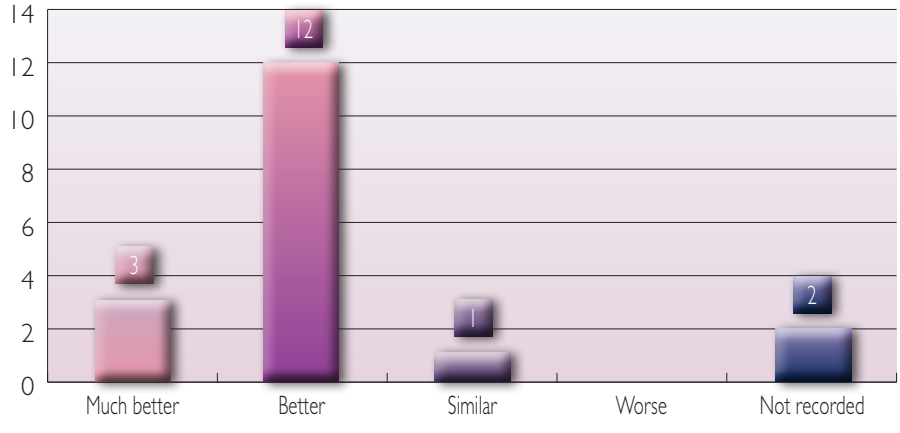

Figure 5. Fluid-handling properties of DryMax Extra — clinicians' assessment of the dressing.

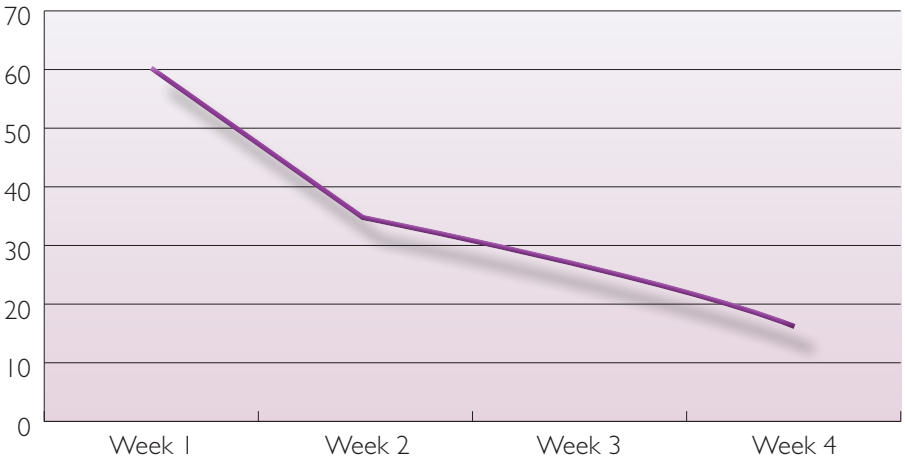

Figure 7: Total number of Drymax Extra dressing changes.

wound maceration. The low adherent contact layer conformed well, and there was no record of the dressing adhering to the wound.

The reduced pain scores and conformability under both short-stretch and four-layer compression were considered to be a clinically significant outcome for patients. The authors feel confident that this dressing offers patients a choice and recommend that it is added to formularies.

No patients were reported to have clinical signs of infection or any increase in exudate during the study period. This was thought to be attributed to the protease-modulating ability of this product, as defined in a 15-patient study (Meuleniere, 2009).

The ability of the absorbent cellulose polymers makes it difficult for microorganisms to replicate, thereby possibly reducing the risk of contamination or infection. Researchers have also reported successful exudate management and that this can contribute to a reduction in infection (Meuleniere, 2009).

Also noted is the ability of absorbent cellulose polymers to manage matrix metalloproteinases (MMPs), protect the periwound area, prevent over-granulation, increase conformability, reduce dressing changes, control pain, protect against skin tears and increase the dressing's ability to remain non-adherent (Meuleniere, 2009).

Conclusion

In this small study, all the patients and clinicians rated fluid handling better or improved when DryMax Extra was measured against previous standard care. The majority of patients' wounds had shown improvement by day seven — even the patient with lymphoedema.

The reduced need for clinic attendance also reduced costs in travel and inconvenience for the patients. This also frees up valuable clinic spaces for other patients.

The new generation of super-absorbent dressings offer the clinician a solution to the challenging problem of exudate management when dealing with chronic venous leg ulcers. The constant demands on services to reduce costs, while maintaining clinical effectiveness, relies on working with patients to find solutions that meet their needs. If clinicians can reduce pain, leakage and malodour, they will go a long way to improving patients' quality of life. WUK

Key points

- Between 55,000 and 90,000 people live with a leg ulcer at any one time in the UK.
- The constant demands on services to reduce costs, while maintaining clinical effectiveness, relies on working with patients to find solutions that meet their needs.
- The reduced need for clinic attendance also reduced costs in travel and inconvenience for the patients. This also frees up valuable clinic spaces for other patients.
- A new generation of super-absorbent dressings may offer clinicians a solution to the problem of exudate management when dealing with chronic venous leg ulcers.
- Nine women and seven men agreed to take part in this study to evaluate DryMax® Extra and its use for moderate to heavily exuding chronic wounds.
- The majority of patients' wounds had shown improvement by day seven.
- If clinicians can reduce pain, leakage and malodour, they will go a long way to improving patients' quality of life.

References

Bosanquet N, Franks PJ, Moffatt CJ, Connolly M, Oldroyd M, Brown P (1993) Community leg ulcer clinics: cost-effectiveness. *Health Trends* **25(4)**: 146–8

Cherry G (1990) Clinical comparison of a new compression bandage. *Nurs Stand* **4(39)**: 8–11

Hindhede A (2010) Superabsorbenter i sårbehandling (Superabsorbants in wound healing). *Saar* **2(4)**: 6–9

Meuleniere F (2009) DryMax Extra — Absorbent case study. Part 1 and 2. Wound Centre, Belgium

Meuleniere F (2010) Clinical experiences of using a super absorbing dressing. Poster presentation. EWMA, Geneva

Stephen-Haynes J (2011) Managing exudate and the key requirements of absorbent dressings. *Wound Care* **16(3 Suppl)**: 44–9