A COHORT Study to investigate the benefit of the use of DryMax Extra™ superabsorbent Wound Dressing on a population of wet wounds

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Introduction

The problems associated with managing heavily exuding wounds in the community are well known but the dressings selected to manage these wounds are still not always the most appropriate[1]. There is a high cost in materials, labour and patient comfort associated with very frequent dressing changes[2]. Dressings with a superabsorbent content might reduce the number of dressing changes, reduce costs and improve patients' comfort and degree of mobility[3,4,5] The Skin and Wound Care clinic of Sundsvall Regional Hospital undertook to change the management of all the patients on their caseload of heavily exuding wounds able to wear a superabsorbent dressing from their current secondary dressing to **Dry Max Extra**™.

Aim

To demonstrate in a real-life context that the appropriate use of **DryMax Extra**™ (DME) superabsorbent dressing on wet wounds saves money and time, contributes to effective wound bed preparation and improves the patient's quality of life in aspects such as mobility and comfort.

Results

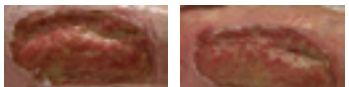
Frequency of dressing changes were 49% less with **DryMax Extra**™ across the cohort at two weeks vs frequency of changes at two weeks under current practice. Total labour costs with **DryMax Extra**™ over three weeks: 33% lower than current practice costs for two weeks.

The average nursing time saved and available for re-allocation per week: 20½ hours, (2.57 working days). The average weekly reduction of costs for dressing material per wound was 55%.

The total reduction in average weekly cost of materials and labour was 55%; SEK 10,370 (approx: £950). 55% of patients experienced a reduction in the level of pain when under **DryMax Extra**™.

The wound beds were – with two exceptions – 100% red/granulating. The two exceptions were showing 10-15% fibrin slough. Cases of strikethrough of the dressing dropped from 8 cases under current practice to three under **DryMax Extra**™. The incidence of strikethrough in the remaining three cases was occasional and not at every change.

Patient no 9 - 74 year old female with extensive Venous Leg Ulcers on both legs. The wound shown is on the lateral malleol on the left leg sized 10x5cm.



After 2 weeks under current practice. After 3 weeks with **DryMax Extra**™

The patient found **DryMax Extra**™ comfortable and was pleased with it. The wound area is smaller.

Method

The Study followed a single group of 9 patients with 12 wet wounds attending the wound care clinic as outpatients.

Inclusion criteria All patients on the clinic's caseload with wounds where in the investigator's judgment the current dressing routine was not sufficient due to leakage, maceration, strike-through or saturation of the dressing.

Duration The study comprised two weeks of observation of the wounds managed according to the current local practice for managing heavily exuding wounds, followed by three weeks management with **DryMax Extra**™ as the secondary dressing.

Current Practice for heavily exuding wounds
The current practice for dressing heavily exuding wounds included the use of modern foam, alginate and Hydrofiber® dressings such as Mepilex™, Seasorb™ and Aquacel™, combined with absorbent compresses. Compression therapy was applied in all relevant cases.

Data Collection Data were collected on the study objectives during both periods and compared. Photos were taken once a week at dressing changes in the clinic.

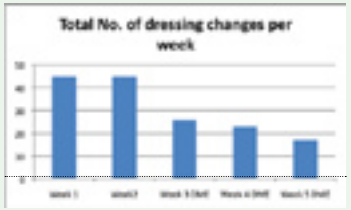
Study Group Patients with a variety of wounds were included such as venous leg ulcers, vasculitis, post-amputation wound on the forefoot, diabetic foot ulcer, and post surgical wounds (thorax, abdominal) and pressure ulcer (heel). The mean age of the patients was 66.

Table 1

Patient No.	Age	Main pathology	Duration
1	81	Forefoot amp.	4 Months
2	70	VLU	Not known
3	46	Diab. Foot ulcer	2 Months
4	85	VLU	5 Months
5	63	Post op abdominal hernia	12 Months
6	85	VLU - vasculitis	24 Months
7	60	Postop thorax surgery	2 Months
8	29	Pressure ulcer heel	1 Month
9	74	VLU bilateral	Not known

Hydrofiber® and Aquacel® are trademarks of ConvaTec Ltd; Mepilex™ is a trademark of Molnlycke AB and Seasorb™ of Coloplast AS.

Figure 1 'DME' = week where the standard absorbent compresses had been replaced by **DryMax Extra**™



Rates of reduction in dressing changes versus Week 2 (current practice):
Week 3 with **DryMax Extra**™ – reduction of dressing changes was **42.2%**
Week 4 with **DryMax Extra**™ – reduction of dressing changes was **48.8%**
Week 5 with **DryMax Extra**™ – reduction of dressing changes was **62.2%**

There was one outlier in the results. Patient 7 had 10 dressing changes a week in Weeks 1 & 2, dropping to 3 in Week 3 and then to 2 in Week 5. Excluding Patient 7 the frequency of dressing changes was 37 % less at two weeks with **DryMax Extra**™ than the frequency at two weeks of standard practice.

The reduction of average weekly dressing changes per patient was **51.4%**

The average reduction of labour costs per week was **55.5%**

The average nursing time available for re-allocation per week compared to current practice was 19 hours, 2.4 working days

Total nursing time under current practice was 74.5 hours = 37.25 hours/week

Total nursing time using **DryMax Extra**™ was 50 hours = 16.66 hours/week

Difference 20.59 hours per week – 2.57 working days (if the working day is 8 hrs)

Table 2

Average cost of all materials used per dressing change per wound

Under Current Practice	160 SEK (£16)
Incl. **DryMax Extra**™	141 SEK (£14)
Saving vs Current Practice	12%

The difference in the average total weekly cost of dressing materials, cleansing and compression therapy (when necessary) was a saving of 55%.

Excluding Patient 7, whose wound had 10 dressing changes a week under current practice, the reduction in the average total weekly cost per wound between current practice and management with **DryMax Extra**™ was 26%.

Clinical achievements

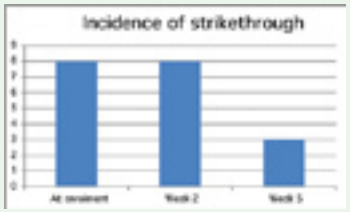
Proportion of Wound Bed Tissue
There was no significant change in the condition of the wound beds between the period of current practice and management with **DryMax Extra**™. 10 of the 12 wounds were granulating at the start of the study and the same ten wounds showed 100% red/granulation at the end of the study. No side effects on the wound bed were reported. The investigators had free choice of when they carried out dressing changes in order to achieve the most effective exudate management of the wound.

Table 3

	Week 1	Week 5 (end of study)
10 wounds	100% red granulating	100% red granulating
1 wound Diabetic foot ulcer	< 5% necrotic tissue 95% granulation	10% Fibrin slough 90% granulation
1 wound (amputated forefoot)	10% slough 90% granulation	15% slough 85% granulation

Incidence of maceration
Management with **DryMax Extra**™ kept the wound edges healthy and distinct in 7 cases. In 2 cases the macerated wound edges improved and in 2 cases, a pressure ulcer on a heel and a large venous leg ulcer, deteriorated.

Figure 2 Incidence of strike through



The result indicates an improvement in all cases of frequent strikethrough when changing treatment to management with **DryMax Extra**™

Quality of life measures
Patients comfort, mobility, odour, pain and overall satisfaction were recorded and given scores on a five point scale.

- Seven out of nine patients experienced no deterioration in their degree of mobility when wearing **DryMax Extra**™
- 5 out of 9 (55%) patients experienced a reduction in pain when treated with **DryMax Extra**™, one patient experienced an slight increase in pain in the first week of **DryMax Extra**™ treatment but this was resolved by the second week of treatment. 3 (33%) patients experienced no pain throughout the study. By week 3 of the **DryMax Extra**™ treatment only one (11%) patient was experiencing pain.
- Management with **DryMax Extra**™ improved the management of odour.

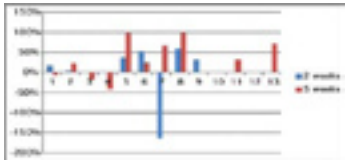
Table 4

	At end of Week 2	At end of week 5
No odour	3	7
Little odour	3	1
Some odour	3	1

- At the end of the study all patients reported being "satisfied" or "very satisfied" with the addition of **DryMax Extra**™ to their wound management.

Change in wound surface area
Total wound surface area at enrolment was 45cm^2. There was no change to the total surface area at two weeks. At five weeks total wound surface area was 26cm^2, a reduction of 42%.

Figure 3 Percentage change in wound surface area per wound at 2 weeks from enrolment and at 5 weeks.



Wound no:
1 Amputated forefoot
2 Venous Leg Ulcer lateral malleol
3 Venous Leg Ulcer medial malleol
4 Diabetic foot ulcer
5 Diabetic foot ulcer
6 Diabetic foot ulcer
7 Post op abdominal hernia
8 Vasculitis leg ulcer
9 Post op thorax fistula
10 Pressure ulcer heel
11 Venous Leg Ulcer right lateral malleol
12 Venous Leg Ulcer left medial malleol
13 Venous Leg Ulcer left lateral malleol

Discussion

The reduction in the frequency of dressing change shown in the study can be attributed not only to the higher absorbent capacity and retention of fluid of **DryMax Extra**™ but also the progression of the wound to healing. It was not possible in this study to separate the effect of these two factors but the sharp and immediate reduction in dressing changes, from a total of 45 per week for the whole study group under the current practice to 26 per week under **DryMax Extra**™, strongly suggests that the substitution of **DryMax Extra**™ for the previous secondary dressing was the dominant factor.

The results indicate that **DryMax Extra**™ is effective in reducing the frequency of dressing changes and thus the costs of managing heavily exuding wounds, whilst not compromising the health of the wound bed, wound edges and peri-wound skin. All of the patients were satisfied with the management of their wound with **DryMax Extra**™ and all reported increased levels of satisfaction over those experienced under the previous dressing regime. 83% reported an increase in comfort, 50% an increase in satisfaction with the management of odour and 50% an increase in satisfaction with levels of mobility.

Disclosure This Study was sponsored by:
Absorbest AB, Kisa, Sweden.

References
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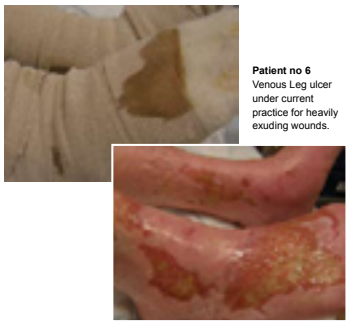
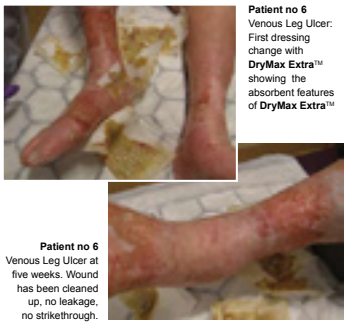
2 Cherry G (1990) Clinical comparison of a new compression bandage. Nurs Stand 4(39): 8-11
3 Hindhede A (2010) Superabsorbenter i sårbehandling (Superabsorbants in wound healing) Saar 2(4): 6-9
4 Meuleniere F (2009) DryMax Extra - Absorbent case study. Part 1 and 2. Wound Centre, Belgium
5 Meuleniere F (2010) Clinical experiences of using a super absorbing dressing. Poster presentation. EWMA Geneva



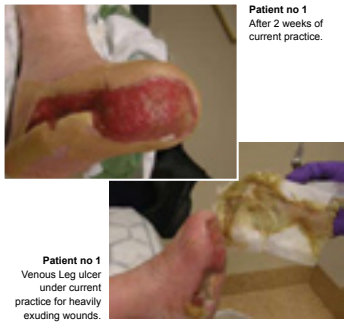
Patient no 6 Venous Leg ulcer under current practice for heavily exuding wounds.



Patient no 6 Venous Leg Ulcer: First dressing change with **DryMax Extra**™ showing the absorbent features of **DryMax Extra**™

Patient no 6 Venous Leg Ulcer at five weeks. Wound has been cleaned up, no leakage, no strikethrough.

Patient no 1 - The patient is an 81 year old male with a forefoot amputation caused by arterial insufficiency.



Patient no 1 After 2 weeks of current practice.

Patient no 1 Venous Leg ulcer under current practice for heavily exuding wounds.

The **DryMax Extra**™ treatment resulted in less dressing changes, pain relief and no odour in the patient's home from the wound. Dressing change frequency reduced.

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