Does Allevyn foam’s management system improve wound healing?

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ABSTRACT

Four technically enhanced Allevyn dressings were used in this study. Patients were asked to evaluate these products and compare them to the performance of the original dressings. The dressings had been enhanced to increase the rate of fluid uptake and their rate of transpiration of the absorbed fluid, thereby radically increasing the overall fluid management profile of the dressings. The moisture vapour transmission rate (MVTR) had been enhanced by as much as 915% in two of the dressings. The results showed that 94% of the patients on the study rated the new dressings as being acceptable for the indication. When asked to rate appearance, conformability, dressing fixation, absorbency and wear time of the enhanced dressings against that of the users experience with the original Allevyn dressings, the results showed the enhanced dressings performed well. Patients were particularly impressed with the absorbency of the enhanced dressings with 72% rating it as better than the original. Improved absorbency meant that wear time, appearance, and fixation also scored highly in the ratings.

KEY WORDS

Allevyn • Absorbency • Fluid management • Wear time • Comfort
absorbed fluid, thereby dramatically increasing the overall fluid management profile of the dressings. One of the enhancements made to the new dressings was to the moisture vapour transmission rate (MVTR). MVTR is the measure of fluid that is passed through a film membrane—often incorporated within dressings—during a given period of time. The MVTR will be determined by the molecular structure of the membrane, which once hydrated from contact with liquid will facilitate moisture transportation and as such will determine the level of excess fluid that is passed away from the dressing. It is important to note that the technology incorporated within new ALLEVYN ensures that only excess moisture is passed through the dressing, leaving a level of moisture on the wound bed to promote the optimum wound environment and faster healing.

MVTR is a continual process whereas handling of fluid through absorption is a one off event, therefore once the absorption capacity of a dressing has been reached then no further fluid handling can take place. The effective management of exudate through a combination of absorption and a high MVTR can reduce pooling at the skin surface, which has the potential to cause maceration, or leakage, which may allow the penetration of bacteria to the wound. It may also provide greater comfort and acceptability for patients due to a less saturated and bulky dressing.

Data from moisture vapour transmission rate (MVTR) tests show that the fluid handling characteristics of the new dressings have been enhanced considerably. The MVTR of the adhesive dressings has been improved by 534%, while the MVTR of the non-adhesive dressings has been improved by 915% (Figure 1).

The Allevyn range is able to do this because of the enhancements to its trilaminate structure (Williams, 1995). The dressings now have polyethylene glycol within the hydrocellular core to give faster fluid uptake. In addition to this they also exploit IV3000™ film technology, which gives the dressings the enhanced transpiration/evaporation rates (Williams, 2005).

How is moisture resistance measured?

Moisture resistance is measured in a special chamber, divided vertically by the substrate or barrier material. A dry atmosphere is in one chamber, and a moist atmosphere is in the other. A 24-hour test is run to see how much moisture passes through the substrate or barrier from the 'wet' chamber to the 'dry' chamber. Standard test procedures can specify any one of five combinations of temperature and humidity in the 'wet' chamber. The toughest conditions are 100°F / 95%RH (Relative Humidity).

Method

Study design

This study was non-comparative looking at the performance of the enhanced dressings. The dressings were applied to low to heavily exuding wounds.

Primary objective

The user was asked to rate the overall acceptability of the enhanced dressings. This was in the form of one question in the case report form (CRF). The patient had to say YES or NO to the question: 'Is the dressing acceptable for the indication?'

Secondary objectives

The user was asked to assess the following aspects of the enhanced dressings against that of the users experience with the original Allevyn dressings:

- Appearance, conformability, dressing fixation (adhesive variant), absorbency and wear time. For each attribute the patient had to indicate whether the new dressing

### Table 1. Percentage of patients reporting an improvement in the dressings

<table>
<thead>
<tr>
<th>Attribute</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbency</td>
<td>72</td>
</tr>
<tr>
<td>Wear Time</td>
<td>52</td>
</tr>
<tr>
<td>Fixation (adhesive variant)</td>
<td>52</td>
</tr>
<tr>
<td>Appearance</td>
<td>52</td>
</tr>
<tr>
<td>Conformability</td>
<td>46</td>
</tr>
</tbody>
</table>
Primary objective
Of all the respondents 113 (94%) stated that the dressing was acceptable for the indication while only 7 respondents (6%) said it was not acceptable.

Secondary objectives
Table 1. Shows the percentage of patients reporting an improvement. Figure 2. Bar chart showing percentage of patients noting an improvement in the enhanced dressing. Of all the patients taking part in the trial only 1 patient reported an attribute as being worse. This patient reported conformability as being slightly worse and appearance as being worse. The rest of the patients rated the dressing as being as good as the original. Level of wound bed complications on dressing removal (94%) of all dressing removals showed no wound bed complications, indeed 5.25% showed minor wound bed complications. In the study 0.75% did not respond to the question. Of a total of 386 dressing changes there were no reports of severe complications to the wound bed.

Peri-wound complications
The chart in figure 3 indicates the level of complications to peri-wound skin on dressing removal. In total 3 patients gave no response to the question (0.75%). Of all dressing removals 88.75% showed no peri-wound complications with 10.25% showing minor peri-wound complications. Finally 0.25% indicated severe complications. One patient reported an allergic response after removing Allevyn Adhesive dressing, but it was not classed as serious.

Conclusion
The results show that the dressing was acceptable for the indication used in 94% of the patients and not acceptable in 6% of the sample studied. This figure should, however, be viewed with caution, several of the patients within this sub group gave no reasonable explanation as to why they found the dressing unacceptable. Since the limit set for the acceptability criteria was 75% of the responses reporting YES, it can be concluded that this criterion was met.

With regard to wound bed complications, 94% reported no complications at dressing removal. Only 5.25% reported minor complications at the wound site upon dressing removal. Of the sample 0.75% gave no response to the question. Therefore the above criterion set was well met and there was no concern that the modifications to the evaluation dressing will have a detrimental effect on the wound.

In the evaluation 88.75% reported no peri-wound complications at dressing removal while 10.25% reported minor complications to the surrounding skin upon dressing removal. One patient reported severe complications to the surrounding skin, 0.75% gave no response to the question.

The results demonstrate that in a very high proportion of patients, Allevyn causes no complications, and just to
emphasize this point the results showed that out of a total of 386 dressing changes there were no reports of severe complications to the wound bed. The results of the evaluation, could afford the clinician a degree of confidence that new Allevyn will effectively meet the needs of their patients and be an acceptable option in a majority of cases. With this said, there is a small sub-group that was identified (6%), which found the evaluation dressings 'not acceptable'. Even though in several of these cases, no reason for 'non-acceptability' was provided, this is clearly a patient population that may need further exploration. For example, in patients with very frail and/or fragile skin, a non-adhesive variant could be selected to avoid adhesive related complications. Alternatively a silicone-based adhesive could be selected to exploit its inherent 'modulated fixative' properties.

In the introduction the importance of patient comfort and confidence was stressed. This trial has looked at many aspects of the new wound dressing, which addresses patient concerns. In terms of comfort, i.e. conformability and adherence, the new dressing rated well by patients and staff alike. The enhanced comfort means that the patients will not be thinking constantly about their wound. This reduces the anxiety the patient has and leads to greater compliance with the care plan.

Also in the introduction the gold standard of wound dressings was talked about as being one that enables you to dress and forget, a once only application, because it manages the wound leaving the patient to get on with their lives. The enhancements now present in new Allevyn facilitate a faster uptake of fluid, and perhaps more importantly the 'intelligent' breathable top film, allows for greater rate of moisture vapour transpiration. The process and dynamics of exudate management is evolving from one based solely on absorption to one of controlled fluid management. The above-mentioned enhancements equate to a reduction in dressing changes, which benefits patient, clinician and budget holder.

Finally, the performance of the new enhanced Allevyn dressings appears to reassure patients by creating not only the correct physical and physiological environment in and around the wound itself, furthermore it facilitates the correct psychological environment for the patient, which equates to an enhanced wound healing episode.

**KEY POINTS**

- The enhanced fluid management profile of the Allevyn dressings has led to an increase in the patients feeling of comfort, security and confidence.
- The enhancements equate to a reduction in dressing changes, which benefits patient, clinician and budget holder.
- The enhanced comfort means that the patients will not be thinking constantly about their wound.
- A patient with less anxiety leads to greater compliance with the care plan.

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