Evaluating a super absorbent dressing (Flivasorb) in highly exuding wounds

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Wounds can significantly disrupt any quality of life and cause intense pain, both physically and psychologically. There is a great responsibility in caring for patients with chronic wounds, and this is taken very seriously in the Wound Healing Centre in Eastbourne, where the specialist nurses consider the options for treatment carefully. The aim is to manage symptoms and reduce the distress these life altering wounds can cause.

Exudate production in chronic wounds can be extremely uncomfortable, causing tissue damage around the wound and reducing quality of life as the excessive leaking leads to embarrassment and disrupts social life (Hampton and Collins, 2003). Nurses’ decisions on dressing selection should be based on current best evidence and research-based knowledge of principles of topical wound care, even when a dressing (such as Flivasorb) is extremely unlikely to cause harm (Pieper, 2009).

The development of new dressings enables patients to have access to the latest technology. Wound healing units are ideally placed to evaluate such products. The aim of the evaluation was to assess Flivasorb for its ability to absorb the excessive exudate and to reduce colonization by removing the bacteria through absorption into the dressing.

Background

Exudate is fluid that filters from the circulatory system into areas of the body that are inflamed and, because exudate is present on the wound surface, it promotes moist wound healing and allows the migration of fibroblasts. Normally, the amount of wound exudate should decrease over time (Ratiff, 2008). However, in chronicity, exudate can also increase over time.

The production of wound exudate occurs as a result of vasodilation during the early inflammatory stage of healing (White and Cutting, 2006). Its production in the acute wound is a normal process of wound healing and, in itself, is generally not a problem. However, when an acute wound becomes chronic, exudate then changes from a normal process into an abnormal one, with an elevation of levels of reactive oxygen and nitrogen species (Wiegand, et al. 2009). Overproduction of these free radicals (atoms or molecules with at least one unpaired electron, causing instability, which can interfere with normal cell function) perpetuates the inflammatory phase and results in severe tissue damage (Figure 1). Exudate then becomes a wounding agent in its own right (Walker, Hadgraft and Lane, 2008).

Abstract

This article reports an observational evaluation of 19 patients with highly exuding wounds. Flivasorb was used as a super absorbent dressing that could remove the harmful exudate fluid and promote a healthy wound bed. The outcomes demonstrated that Flivasorb successfully absorbs large amounts of fluid, reduces the number of dressing changes required and therefore, reduces the cost of the patient’s care.

Key words: Dressing ■ Exudate ■ Healing ■ Wound

The reduction of these active species seems to be one way to promote normal wound healing (Wiegand et al, 2009). A potential way to control this damaging wound exudate is through the use of a supra absorbent dressing such as Flivasorb.

The superabsorbent properties of Flivasorb give the healthcare professional potential to extend periods between dressing changes. It was important that Flivasorb was applied appropriately in each case with some patients requiring an extra antibacterial to the wound to reduce bacterial loading. Some patients would require an extra antibacterial dressing against the wound to reduce colonization, whereas others could have the Flivasorb directly onto the wound as a primary dressing.

The specific aims of the evaluation were to:

- Absorb exudate and prevent periwound damage
- Reduce the bacterial content in the wound through absorption. This follows research by Bowler et al (1999), which showed that absorptive dressings absorb the bacteria into the dressing. This means the bacteria are discarded with the dressing. Bacteria cause the wound to be malodorous and increase the pH, so the reduction of colonizing bacteria is measured by reduced odour and pH.
- Assess the potential of a superabsorbent (Flivasorb) dressing under compression, as the compression could squeeze the fluid back out of the dressing and onto the wound and surrounding tissue.

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What is Flivasorb?

Flivasorb (Figure 2) is filled with superabsorbent polymers that can absorb up to 20 times as much fluid as most foam dressings, which is several times their own weight. When exudate comes into contact with the superabsorbent polymers it will attach to the polymer chains and form a complex network structure, resulting in visible swelling and gelling.

Like all highly absorbent dressings (Bowler et al, 1999), Flivasorb will retain some pathogens in the dressing. Although Flivasorb cannot kill the bacteria, it can successfully remove them when the dressing is changed. It is good practice to change the dressing when it is almost full, and Flivasorb should never be used as the only treatment for critically colonized or infected wounds, where the bacteria is in the host tissue and requires antibiotics. Changing the dressing when required will also reduce the potential for any dressing to macerate the tissue surrounding the wound, although this is far less likely to occur with a superabsorbent dressing as it retains the fluid.

The manufacturer claims that Flivasorb is suitable for use under compression, locking fluid in the dressing when a tight bandage is applied. This study assessed that claim with the compression bandaged wounds that were used.

Method

Nineteen patients, (seven from the Wound Healing Centre and twelve from different clinics were selected and consented to evaluate Flivasorb. Criteria for selection was any wound that was heavily exudating requiring dressing change of three times to seven times weekly. Sixteen of these patients had venous disease, which had led to venous ulceration of the lower limb. Venous ulceration makes up 70% of the wounds seen in any wound healing centre with a further 10% being arterial (Morrison et al, 2007).

The audit tool used to assess the patients in the Wound Healing Centre is part of the telemedicine system. Telemedicine is a computer programme assessment tool used within the Wound Healing Centre. Audit results are simply produced from telemedicine, which is based on national guidelines. The assessment tool used in all other centres were individual, but also based on local and national guidelines.

Eleven women and eight men took part in the evaluation, with the average age being 66.5 years. Those patients with venous leg ulcers were all being treated with compression therapy and all had undergone a Doppler assessment prior to application of compression bandages.

Exudate levels were assessed using the recognized continuum of 1 (low exudate – requires dressings weekly) to 10 (extremely high levels of exudate requiring dressing change daily). The wound dressings were changed as required by the individual’s needs and the wounds measured at each change.

Nationwide evaluations according to a set questionnaire measured the following parameters:

- Exudate levels and management
- Skin condition
- Wound improvement
- Frequency of dressing changes
- Use under compression
- Ease of use
- Patient comfort

Results

There were:

- 16 established venous leg ulcers
- 1 pressure ulcer
- 1 arterial ulcer
- 1 chest wound.

In this study, the average level of exudate was 6.5 (out of 10). This was measured using the wound healing continuum (Gray et al, 2005) and, on average, dressings required changing on alternate days. The average duration of the wounds was 1.5 years, with the longest established wounds being greater than 5 years and the newest wound being 2 months.

The 16 patients who had venous ulceration were already established users of compression bandages. The Doppler assessment was considered necessary, and gave an average ankle brachial pressure index (ABPI) of 1.05 (normal is 1.0). Therefore, these 16 patients were suitable for compression.

Measurement of wounds in the Wound Healing Centre

Figure 1. Exudate becomes a wounding agent in its own right.

Figure 2. Flivasorb in situ.
were undertaken on telemedicine, providing a graph of changes in wound dimension (see Figure 3), and total reduction in surface area of all wounds was 79.2 cm². The outcome of each measurement was plotted on the telemedicine assessment programme (see Figure 4).

In ten cases Flivasorb was used as the primary dressing, and in six cases it was used secondary to honey, Steripaste, Aquacel and foam. There was no difference in the absorption levels when used as secondary dressing.

In the 16 venous ulcer patients with compression therapy, the types of bandages used were a mixture of Actico, multi-layer and Coban2. In each case, Flivasorb had absorbed and successfully retained the fluid without reflection of exudates onto the periwound area, even under the high compression bandages.

The incidence of clinical infection was zero during the evaluation, and each wound improved during the four weeks with obvious signs that colonization was reducing (judged by assessing the granulation levels in the wound and reduction of odour).

The nurses found Flivasorb did not adhere to the wound and reduced dressing changes by an average of 1 to 2 visits per week. Dressings cost an average of £24 per change (see Table 1). By reducing daily dressing changes (at a cost of £8,736 per year) to twice weekly, a significant saving of £6,240 per year is made for each patient that does not heal within the year for dressing costs alone. Adding the nursing costs doubles the total cost of each dressing change, and would also create a significant saving if reduced.

During the evaluation period, dressing changes were reduced in 100% of the cases, with the average dressing change Flivasorb application being 3.2 and during Flivasorb, this dropped to 1.8 (Figures 5 and 6) times per week.

Examining the outcomes of the evaluation
The nurses in the Wound Healing Centre have found from experience that wounds will heal faster if:
- The patient is confident in the treatment they are given
- They are treated by the same nurse at each visit
- The pain is reduced
- The nurse has obvious knowledge in the wound healing process
- The patient’s quality of life is improved by the treatment they are given

This fits with the concept identified by Gottrup (2003). The evaluation of Flivasorb was part of a process of understanding the patient needs and developing the tool
Using this process has led the Wound Healing Centre to healing 83% of venous ulcers within a very short period of time. Therefore, the process of evaluation and development cannot be undervalued when it comes to treating and caring for patients with chronic wounds. The benefits of good absorption of exudate can clearly be seen in Figures 7 to 14.

These patients (Figures 7 to 14) are a small example of those included in the evaluation. Nevertheless, this example is representative of the changes seen in the 4 weeks of observational study, and clearly shows the benefits of removing the exudate from the wound and the area around the wound.

Nurses should be knowledgeable of the therapeutic effects of a dressing when selecting it for wound care, and should be prepared to evaluate products and change practice according to the identified outcomes. Change, and how people react to it, are important features of organizational life. This relates strongly to how we accept new dressings such as Flivasorb.

In order for wound care to develop, nurses need to engage in research and integrate research findings into practice and yet, in spite of the seemingly common acceptance of this principle, the actual merger of research and practice has yet to become widespread (Caroll et al, 1997). We must change in order to enhance high standards of patient care (Smith 1986) and, at the same time we must utilise research and evaluations to validate and prove that these changes are beneficial (Jaarsma and Dassen, 1993; Muellera et al, 2006). This is the important process that is understood within the
Wound Healing Centre; the evaluation of new dressings, such as Flivasorb must not only be undertaken, but the outcomes should be disseminated to colleagues as, without this dissemination, wound care will become static, along with many of the wounds.

**Conclusion**

With the dynamically changing environment of the NHS, managing change and developing and improving patient care is the vital element of nursing’s survival and growth. This evaluation was beneficial for both the patients and the nurses, enlarging the nurses’ portfolio of knowledge and increasing the patient’s quality of care and quality of life. Our nurses summarized the outcome: ‘Fliwasorb absorbs and retains the exudate, without reflecting it onto the skin, even under compression’. The patients were simply glad that they did not have to worry about leakage.

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**KEY POINTS**

- Nurses’ decisions on dressing selection should be based on current best evidence.
- Exudate has the potential to damage the peri wound area and requires active management.
- Dissemination of outcomes is vital for the development of nursing and the promotion of high quality care.
- In this observational evaluation Flivasorb achieved its claim to being a super-absorbent dressing.