

Appeel® Sterile sachet: helps remove pain from a dressing change

Repeated application and removal of adhesive dressings and tapes can result in stripping of the skin in both the wound and periwound areas. This not only causes pain, but can also increase wound dimensions, delay healing, induce an inflammatory response and increase the risk of infection. Adhesive removers are designed to facilitate easy, pain-free and non-traumatic removal of adhesive dressings. This article details a study into Appeel® Sterile sachet medical adhesive remover (CliniMed) and examines the product's ability to help remove dressings while preventing pain and trauma.

Pam Cooper

KEY WORDS

Wound care

Pain

Skin stripping

Adhesive dressing removal

Over the past two decades the field of wound care has evolved almost beyond recognition. The types of wounds being seen by healthcare professionals in both acute and chronic care can present a variety of problems in all areas of the body. These wounds are often further complicated by underlying medical and surgical challenges, presenting healthcare professionals with an array of minor and major wound care issues.

To complicate matters further, advances in wound care have resulted in a vast range of products to debride, accelerate healing, rebalance the wound bed, reduce bacterial burden and even replace the skin.

The introduction of dressings with adhesive skin contact layers, which enable dressings to be secured in

place without the need for secondary support or fixation (Waring et al, 2008), is a significant development in wound care and has led to additional benefits, such as cost reductions and an increase in dressing wear time. Unfortunately, some of these dressings can adhere too aggressively to the wound or fragile periwound skin, resulting in trauma and

The first step in treating pain is to recognise that pain exists and is unique to each individual, before ascertaining when it occurs and what is the cause.

pain upon removal (Dykes, 2007). This adherence may be due to the adhesive itself, but can also be exacerbated by the patient's skin, as well as moisture from sweating. Pain and periwound trauma can be a significant problem for all types of wounds and may be associated with the wound itself, dressings or dressing changes (White, 2008).

The World Union of Wound Healing Societies (WUWHS) consensus document on minimising pain during dressing-related procedures recommends that wound-related pain should be assessed at all stages, before, during and after each dressing change (WUWHS, 2004). The highest levels of pain are generally associated with skin and wound

damage occurring during dressing changes (Gerritsen et al, 1994; European Wound Management Association [EWMA], 2002; Dykes, 2007).

Pain

Pain has always been a major issue during dressing changes for patients with either acute or chronic wounds (Gray, 2009). Price (2006) conducted a large international study looking at wound pain, which identified that of the 2,018 patients surveyed, 40.3% indicated that pain at dressing change was the worst part of living with a wound. In another study, Hollinworth and Collier (2002) identified that 81% of patients experienced the most severe pain during dressing removal, a finding that was further supported by Kammerlander and Eberlein (2002).

While many healthcare professionals are aware of issues surrounding wound pain, all too often nurses fail to manage pain effectively when changing dressings (Hollinworth and Collier, 2002). The first step in treating pain is to recognise that pain exists and is unique to each individual, before ascertaining when it occurs and what is the cause.

The WUWHS (2004) consensus document identifies the following causes of pain:

- ▶▶ Background pain: persistent underlying pain due to wound aetiology and local wound factors, e.g. infection and ischaemia

- ▶ Incident pain: arising from movement-related activities, e.g. friction, dressing slippage and coughing
- ▶ Procedural pain: arising from routine, basic procedures, i.e. dressing change
- ▶ Operative pain: associated with any intervention that would normally be performed by a specialist clinician and require an anaesthetic.

In an international study, Moffatt et al (2002) identified that 'dressing removal is considered to be the time of most pain', due to the adherence of inappropriate dressings or stripping of the periwound skin through traumatic dressing removal.

White and Hollinworth (2006) suggest that wound-related pain has become a 'professional and humanitarian' concern, and that practice will only change if all healthcare professionals actively engage in care strategies to minimise trauma and pain in wound care. They propose that the starting point is, 'understanding the patients' experiences and the impact the pain has on their lives' (White and Hollinworth, 2006).

Skin stripping/trauma

Damage caused by the repeated application and removal of adhesives can result in stripping of the skin, both in the wound and periwound areas. Variable levels of damage may occur, usually involving the stratum corneum (Waring et al, 2008). This not only causes pain, but can also increase wound dimensions, delay healing, induce an increased inflammatory response and multiply the risk of infection. Skin stripping can also have an adverse psychological impact on the patient, impeding the effectiveness of future dressing changes. Anderson (2006) observed that some patients, in particular those with venous leg ulcers, can develop contact allergies or irritation when the skin is in contact with the adhesive properties of certain dressings.

Skin stripping and the irritant potential of different dressings varies considerably, with the level of pain or discomfort experienced on removal being unique to each patient. Therefore, the process of dressing selection should be based on the following principles (EWMA, 2006):

- ▶ Comprehensive assessment of the wound and periwound area
- ▶ Pain assessment: previous products used, whether the patient experienced pain on removal, application and after dressing application
- ▶ Avoiding adherent dressings when wear time is likely to be short
- ▶ Further consideration if dressings are to be worn for a longer length of time.

Medical adhesive removers

Adhesive removers are designed to facilitate easy, pain-free and non-traumatic removal of adhesive dressings. They fall into three distinct categories:

- ▶ Alcohol/organic-based solvents
- ▶ Oil-based solvents
- ▶ Silicone-based removers.

Appeel® 'no sting' medical adhesive remover (CliniMed) is silicone-based and designed to easily and painlessly remove adhesives from any part of the body.

Alcohol/organic-based solvents rely on the property of the alcohol to dissolve some of the components of the adhesive (Berry et al, 2007). This is not ideal as some of the alcohol can be absorbed into the skin, as well as drying out the skin and causing stinging and irritation (Mather and Denyer, 2008). Alcohol preparations often take several minutes to work and can leave a layer of residual glue that requires rubbing to facilitate effective removal, further increasing the risk of skin irritation and stripping.

Oil-based solvents comprise a mixture of oils, such as paraffins and citrus oil extracts. The oils wick slowly into the interface between the adhesive and the skin's surface (Berry et al, 2007). However, this can be a time-consuming process, leaving the dressing inert and the patient's skin covered in a film of oil, making further adhesive dressing application impossible without thorough cleansing and drying. This cleansing and drying subsequently increases the friction coefficient at the skin's surface, rendering it friable and prone to breakdown/stripping.

The silicone contained in silicone-based removers temporarily alters the surface chemistry between the skin and the adhesive, allowing the adhesive to be easily removed with minimum force and thereby preventing pain and stripping (Cutting, 2006). Silicone-based removers can be used in a wide variety of settings, from dressing to stoma pouch removal, and where adhesive-based tape-fixing agents have been used. Silicone-based removers have the following properties (Cutting, 2006):

- ▶ They are gentle on the skin: there is no 'drying out' effect, thus reducing the risk of breakdown/irritation
- ▶ They can be formulated as gel, liquid or emulsion
- ▶ They dry without leaving a residue
- ▶ They are inert and cannot be metabolised
- ▶ They do not sting, even on broken skin
- ▶ They are available as a spray cream, liquid, lotion or wipe.

Appeel® 'no sting' medical adhesive remover

Appeel® 'no sting' medical adhesive remover (CliniMed) is silicone-based and designed to easily and painlessly remove adhesives from any part of the body. Applications include adhesive dressings, sheaths, plasters, ostomy pouches, electrocardiogram electrodes and therapeutic patches (Stephen-Haynes, 2008).

The siloxanes incorporated within Appeel possess a 'searching' mode in that they have exceedingly low surface energy — this allows them to temporarily change the surface chemistry of the skin and disrupt the adhesive link between a dressing and the skin's surface (Cutting, 2006).

Appeel comes in three formats:

- ▶ Aerosol spray
- ▶ Wipe
- ▶ Sterile sachet (new).

Method of use

When using Appeel, healthcare professionals should place a small amount of the solution onto the edge of a dressing (either using the spray, wipe or sachet). The dressing can then be gently peeled back — this process can

be repeated along the entire surface of the dressing until it has been completely removed. The dressing or skin should require no rubbing or pulling.

Once the dressing has been removed, the silicone on the skin evaporates without leaving a sticky residue. The skin/wound can then be assessed and treated appropriately. This pain-free removal prevents any residue from adhesive dressings being left on the skin. There is also an absence of stinging, trauma or stripping of the stratum corneum. In some products, the same dressing can be reapplied immediately, as Appeel will not alter the dressing's adhesive properties.

Appeel Sterile sachet

Appeel previously came in two formats, wipes or an aerosol spray, however; a new 5ml sterile sachet has now been added to the range (Figure 1). The sachet is a sterile, single-use application designed to meet the clinical challenges of dressing removal/or adhesive device removal where pain, periwound skin and the risk of infection are a concern. By their very nature, wounds and/or breaks in skin integrity are at risk of becoming contaminated by bacteria, delaying healing and compromising the patient's well being.

Appeel Sterile sachet is essential when removing adhesive dressings in wounds where the risk of infection is a concern. The sachet is opened using a 'tear and twist' motion that reveals a fine-bore nozzle — by pressing on the base of the fine-bore sterile nozzle the healthcare professional is able to control the flow and target a particular area (Figure 2). The mechanism of directing the flow of the solution means that both the nozzle and the solution are in close and/or direct contact with the wound. If the dressing is permeable, deliver the liquid over and around the dressing as it will penetrate through to release the adhesive from the skin. If the dressing is non-permeable, such as a film dressing, a small start point should be created by lifting a corner to enable the liquid to seep under and release the adhesive.

The sterile presentation of Appeel Sterile sachet means that it can be used



Figure 1. Range of Appeel products.



Figure 2. Appeel Sterile sachet.

on broken skin, eliminating any risk of infection to the patient. It is suitable for use on any type of wound and patients of all ages. As with other products in the Appeel range, once the silicone liquid has come into contact with the dressing it changes the chemical balance of the skin, making the adhesive temporarily inert. This facilitates the safe, pain-free and non-traumatic removal of the dressing.

Consensus

In this evaluation, data was collected on ten patients; four in a once-only dressing review and removal, four with an initial assessment and two follow-up reviews (Table 1). In each case, patients and healthcare professionals reported positive feedback when using the Appeel Sterile sachet. Feedback and comments were recorded by completion of the evaluation form or by verbal feedback.

Patients reported:

- » 'There was no pain on my dressing coming off'
- » 'The dressing just fell off'
- » 'That didn't take long at all'
- » 'I was dreading all this sticky tape having to come off, but it was ok.'

Healthcare professionals reported:

- » Fast dressing removal: dressings could be separated from the patient's skin in very little time
- » Absence of pain
- » Absence of stripping/irritation to either the wound or the periwound area
- » Patients did not fear future dressing changes
- » Reduced patient preparation time, which helped to allay patients' fears
- » Reduced need for analgesia before dressing changes.

Case reports

Case report 1

In this case, a 50-year-old woman was referred to the tissue viability department following a wound to the dorsal aspect of her left foot. She had been admitted with endocarditis and was awaiting cardiac surgery. However, she also presented with a number of other conditions, including:

- » Non-insulin dependent diabetes
- » Systemic lupus erythematosus (SLE)
- » Interstitial pulmonary fibrosis
- » Vasculitis to both lower limbs (this was attributed to SLE).



Figure 3. Mepore dressing in situ.



Figure 4. Appeel Sterile sachet lifting dressing edge.

The patient had been successfully treated for the vasculitis but had been left with a wound to her left foot which measured 2.5x1.2cm with no

depth. The wound bed was covered in 100% yellow slough, and evidence of underlying granulation tissue. The wound showed no evidence of infection, minimal exudate, and the periwound skin was intact with no redness or irritation.

However, the patient reported pain at dressing change, which in the acute stages of vasculitis she had found unbearable. Thirty minutes before dressing changes she would have tramadol to help reduce the pain. Although the acute vasculitic episode had passed, she still experienced a high degree of pain and anxiety at dressing change.

The wound was being dressed with a topical antimicrobial (Mesitran®, Aspen Medical) and a small adhesive dressing (Mepore®, Mölnlycke Health Care). The patient was happy with both dressings but still required analgesia before any dressing changes (Figure 3).



Figure 5. Appeel Sterile sachet deactivating adhesive.



Figure 6. Dressing almost off.

Appeel Sterile sachet was first applied to the top edge of the dressing (Figure 4), and then in steady drops around the edge to facilitate removal

Table 1

Appeel Sterile sachet evaluation table

Sex	Age	Wound type	Dressing removed	Pain at dressing removal before using Appeel	Pain at dressing removal using Appeel	Periwound condition following dressing removal
Female (case 1)	50	Vasculitis lesion, foot	Mepore® (Mölnlycke Health Care)	Yes	None	Intact
Female (case 2)	85	Pressure ulcer, sacrum	Film	Yes	None	Intact
Female (case 3)	52	Surgical wound, abdomen	Film	No	No	Intact
Male (case 4)	64	Pressure ulcer, sacrum	Granuflex® Bordered (ConvaTec)	Yes	No	Intact
Male (case 5)	82	Skin tear to hand	Tegaderm™ Absorbent (3M)	Yes	No	Intact
Female (case 6)	6 weeks old	Trauma, hand	ActiFormCool™ (Activa Healthcare) and Tegaderm	Yes	No	Intact
Female (case 7)	95	Trauma, legs	Mepilex® Border (Mölnlycke Health Care)	Yes	No	Intact
Female (case 8)	7 months	Trauma, neck	DuoDERM® (ConvaTec)	Yes	No	Intact
Female (case 9)	40	Burn, hand	Hydrocolloid	Yes	No	Intact
Male (case 10)	78	Pressure ulcer — heel	Maggots/hydrocolloid	Yes	No	Intact



Figure 7. Complete removal, showing no periwound trauma.

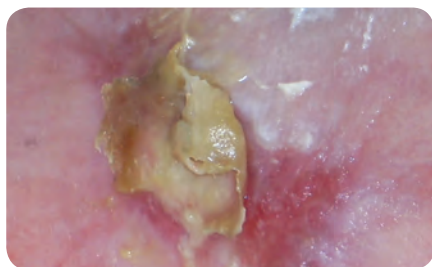


Figure 8. Two weeks later using Appeel Sterile sachet to remove dressing and no periwound trauma.



Figure 9. Necrotic pressure ulcer to sacrum.

(Figure 5). This process was continued along the whole dressing edge (Figure 6) until it was completely removed (Figure 7). Figure 7 clearly demonstrates that there was no stripping/trauma to the periwound area and, significantly, the patient herself reported 'no pain at all' on dressing removal.

Treatment continued using a topical antimicrobial (Flamazine®, Smith & Nephew) and Mepore dressings. Flamazine was chosen as some adherence of the Activon tulle (Advancis Medical) had occurred and, due to the extensive nature of her cardiac surgery, a prophylactic topical antimicrobial was considered necessary. This regimen was reviewed 12 days later following extensive cardiac surgery to replace heart valves that had been damaged as a result of the patient's

endocarditis. At this review, the dressings were being changed on alternate days without the aid of analgesia — a significant step forward (Figure 8). There was no evidence of skin stripping or irritation to the surrounding periwound area and the patient said that she was delighted.

In this case, pain management was the main challenge for the patient and healthcare professionals. An acute episode of vasculitis had been successfully treated but had resulted in a lesion, which caused the patient a great deal of pain at dressing changes. Although this pain was now being managed with analgesia, the patient was still anxious before dressing changes. Using Appeel Sterile sachet not only helped to remove the dressings, but also reduced any perceptions of pain to the point that the patient did not require analgesia. This was felt to be a significant clinical outcome for the patient.

Case report 2

This 85-year-old woman was admitted to hospital for palliative care having been diagnosed with multiple myeloma — she also had a history of ischaemic heart disease and atrial fibrillation. The patient was in a poor condition, with extensive weight loss, pain and a sacral pressure ulcer:

On admission, the priority was to manage her pain and improve her nutritional status, both of which were achieved. She was referred to the tissue viability department for management of the sacral pressure ulcer. On initial assessment, the patient presented with a black, necrotic stage 4 (European Pressure Ulcer Advisory Panel-National Pressure Ulcer Advisory Panel [EPUAP-NPUAP], 2009) pressure ulcer, which was very malodorous (Figure 9). The wound was conservatively debrided to remove the devitalised tissue and facilitate further debridement at dressing change (Figure 10). The patient was started on a topical antimicrobial, which was secured with a dressing pad and pants as her surrounding skin was friable and the team were concerned about trauma/skin stripping to the periwound area.



Figure 10. Pressure ulcer following conservative debridement.



Figure 11. Wound debriding nicely.

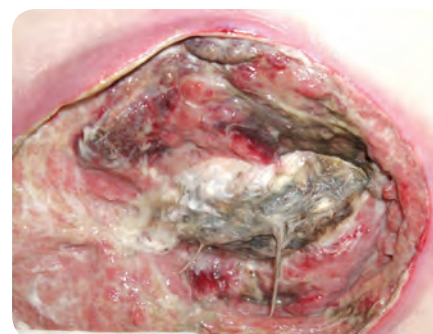


Figure 12. Wound before application of NPWT.

The dressing regimen was applied daily and the patient was cared for on a pressure-reducing mattress, being routinely repositioned. Any pain was being effectively managed and her nutritional intake was good, with the team reporting that 'she had a very good appetite'. Over a period of two weeks the wound continued to debride autolytically through wound dressing intervention (Figures 11 and 12).

It was then decided to change the dressing regimen to topical negative pressure (TNP) (Venturi™, Talley Medical) to promote granulation tissue and reduce the frequency of dressing changes. Appeel Sterile sachets were to be used at each dressing change to remove the



Figure 13. Appeel Sterile sachet lifting film dressing off, showing no periwound trauma.



Figure 14. Dressing changes and no periwound trauma by using Appeel Sterile sachet.

film dressing and prevent any pain or skin stripping (Figure 13). During dressing removal the patient did not complain of any pain.

After seven days of using TNP therapy (incorporating three dressing changes), the wound had improved significantly (Figure 14). Staff reported that removal of the dressing was 'so much easier and faster' and that the patient reported no pain and, in fact, slept through many dressing changes. Figure 14 demonstrates no trauma/stripping to the periwound skin.

Conclusion

Appeel 'no sting' medical adhesive remover has been trialed successfully in the past in both its spray and wipe formats. The new sterile sachet format enables healthcare professionals to control and target an application of the product exactly where it is needed. It was found to be clinically effective in removing wound care dressings in these case reports.

In this evaluation, both healthcare professionals and patients reported positive feedback, with comments such as 'much faster dressing removal' and 'no stripping of the wound or periwound area'. These clinical evaluations demonstrated that the Appeel Sterile sachet could have benefits across all care settings, from very young to elderly friable skin. Appeel Sterile sachet can be used to remove any adhesive device and facilitate pain-free removal while preventing any potential skin-stripping or skin irritation. **WUK**

References

- Anderson I (2006) Aetiology, assessment and management of leg ulcers. *Wound Essentials* 1: 20–37
- Berry J, Black P, Smith R, Stuchfield B (2007) Assessing the value of silicone and hydrocolloid products in stoma care. *Br J Nurs* 16(13): 778–88
- Cutting K (2006) Silicone and skin adhesives. *J Comm Nurs* 20(11): 36–8
- Dykes PJ (2007) The effect of adhesive dressing edges on cutaneous irritancy and skin barrier function. *J Wound Care* 16(3): 97–100
- European Pressure Ulcer Advisory Panel-National Pressure Ulcer Advisory Panel (2009) *Pressure Ulcer Prevention and Treatment — clinical practice guideline*. NPUAP, Washington DC. Available online at: www.npuap.org
- European Wound Management Association (2002) Position Document: *Pain at wound dressing changes*. Medical Education Partnership Ltd, London
- Gerritsen MJ, van Erp PE, van Vlijmen-Willems IM, et al (1994) Repeated tape stripping of normal skin: a histological assessment and comparison with events seen in psoriasis. *Arch Dermatol Res* 286(8): 455–61
- Gray D (2009) Silvercel, non-adherent dressing: taking the pain out of antimicrobial use. *Wounds UK* 5(4): 118–20
- Hollinworth H, Collier M (2002) Nurses' views about pain and trauma at dressing changes: results of a national survey. *J Wound Care* 9: 369–73
- Kammerlander G, Eberlein T (2002) Nurses views about pain at dressing changes: a central European perspective. *J Wound Care* 11: 76–79
- Mather C, Denyer J (2008) Removing dressings in epidermolysis bullosa. *Nurs Times* 104(14): 46–8
- Moffatt CJ, Franks PJ, Hollinworth H (2002) Understanding Wound Pain and Trauma: an

Key points

- ▶▶ Some adhesive dressings may adhere too aggressively to wounds or periwound skin causing pain and or skin stripping.
- ▶▶ Medical adhesive removers are designed to prevent and facilitate dressing removal.
- ▶▶ Appeel Sterile sachet is a silicone-based medical adhesive remover which leaves no residual properties from either the dressing or the solution.
- ▶▶ Appeel Sterile sachet has been shown to be effective across a wide range of adhesive dressings, aiding their removal without causing pain or skin stripping.
- ▶▶ Appeel Sterile sachet has been shown to be effective at removing dressings without causing stinging or irritation and can therefore be used on the skin of the very young and the very old.

international perspective. EWMA position Document: *Pain at wound dressing changes*. Medical Education Partnership Ltd, London

Price P (2006) The psychology of pain and its application to wound management. In: White R, Harding K, eds. *Trauma and Pain in Wound Care*. Wounds UK, Aberdeen: 162–79

Stephen-Haynes J (2008) Skin integrity and silicone: Appeel 'no-sting' medical adhesive remover. *Br J Nurs* 17(12): 792–5

Waring M, Rippon M, Bielfeldt S, Brandt M (2008) Cell attachment to adhesive dressings; qualitative and quantitative analysis. *Wounds UK* 4(3): 35–47

White R (2008) A Multinational survey of the assessment of pain when removing dressings. *Wounds UK* 4(1): 26–32

White R, Hollinworth H (2006) The clinical significance of wound pain. In: White R, Harding K eds. *Trauma and Pain in Wound Care*. Wounds UK, Aberdeen

World Union of Wound Healing Societies (2004) Principles of Best Practice: *Minimising Pain at Wound dressing-related procedures. A consensus document*. Medical Education Partnership Ltd, London