The use of a honey dressing in a range of wound types

Tracey Morgan

The specialty of wound care is one that has expanded exponentially in modern times with a plethora of theories and technologies, including wound bed preparation, the role of proteases, negative pressure wound therapy (NPWT), and an almost bewildering array of dressing formulations, from antimicrobials to larval-based products. However, for the clinician on the ground who may not have time to appraise all the theory — or indeed afford all of the new technologies — there is still a high premium placed on having a range of wound care dressings that can be used on a variety of wounds, are simple to use, patient-friendly, and, increasingly important in this day and age, cost-effective (Chandan et al, 2009). In a follow-up to a previous article (Morgan, 2015), this piece looks at one particular dressing (Actilite Protect®; Advancis Medical) and reviews the latest in a series of case studies that show how it can be effective in a range of wounds, in particular infected wounds, due to its innovative use of honey.

KEYWORDS:
- Wound care
- Honey
- Exudate
- Infection

Wound care forms a large part of the modern community nurse’s caseload, either directly as a result of pressure ulcers for example, or secondary to primary conditions such as diabetes. This focus on wound care requires a variety of skills as wounds present a unique set of challenges, including infection, how to control exudate and making sure that any dressing chosen does not actually further harm the periwound and newly-formed tissue by, for example, damaging the skin when removed. Community nurses also need to have a grasp of the many different types of wound presentations, from acute and surgical wounds to chronic, non-healing wounds.

This article gives an overview of one of the most important areas of wound care — infection — before going on to look at the benefits of honey. Finally, it examines the solutions provided by one particular dressing (Actilite Protect®; Advancis Medical), which is designed for use on the full range of wounds, including acute skin tears, post-surgical wounds, chronic leg ulcers, pressure ulcers, diabetic ulcers and infected wounds.

As well as presenting an overview of the dressing, this article also presents a series of case studies that illustrate the benefits of the dressing in practice.

WOUND INFECTION

Any wound contains bacteria to different degrees, but if they begin to overload the patient’s natural responses, wound infection can be dangerous. The presence of bacteria in a wound can result in:
- Contamination: the bacteria do not increase and do not cause clinical issues
- Colonisation: the bacteria begin to multiply, but still do not represent a danger to the wound
- Infection: the bacteria multiply, healing is disrupted and wound tissues are damaged (local infection).

If left untreated, infection can produce problems close to the wound itself (spreading infection), or may even cause systemic illness, such as sepsis, which can be life-threatening (systemic infection) (World Union of Wound Healing Societies [WUWHS], 2008).

HONEY

Medical grade honey (a specifically manufactured product that is sterilised to remove impurities or potential bacteria) has been shown to have many applications in wound care, particularly when used as part of a dressing’s composition.

Honey has a gentle debriding effect on a wound, creating a moist wound environment that facilitates autolysis by drawing fluid from the wound through powerful osmotic action, while simultaneously rehydrating devitalised tissue (Gethin and Cowman, 2008; Evans and Mahoney, 2013). Honey’s broad spectrum of action against bacteria has been widely reported and its antibacterial action can even have an effect on resistant strains of bacteria such as meticillin-resistant Staphylococcus aureus (Wahdan, 1998).

It has also been able to kickstart healing in wounds that have been previously unresponsive to antibiotics (Dunford, 2000). Honey has been shown to be effective on a variety of different wound types including venous leg ulcers, pressure ulcers, burns, surgical wounds,
necrotising fasciitis and oncological wounds (White, 2005a).

**Honey’s wound care properties**

**Anti-inflammatory**
The antioxidants in honey produce an anti-inflammatory effect that reduces the amount of exudate, slough and devitalised tissue in the wound bed (Bradbury et al, 2014). It also acts against the over-inflammation that can impede healing, while simultaneously promoting angiogenesis (Bainbridge, 2013).

**Antimicrobial properties**
Honey is typically made up of 80% sugar and 17% water. The sugar binds the water molecules making it impossible for microbes to use them. An enzyme which is added to the honey as it matures — glucose oxidase — converts some of the glucose to gluconic acid which creates a hostile environment that is too acidic for microbes to thrive (White, 2005a). This conversion also produces hydrogen peroxide which acts as a broad spectrum antiseptic (White, 2005a). Honey can prevent the formation of *Pseudomonas aeruginosa* biofilm *in vitro* in laboratory studies, as well as inhibiting and disrupting established biofilm (Cooper et al, 2014). There is also a suggestion that using honey is less likely to result in the development of resistant strains of bacteria: a widespread problem caused in part by the over-use of antibiotics (European Wound Management Association [EWMA], 2014).

**Promotes debridement in sloughy and necrotic wounds and creates a moist wound environment**
Honey promotes autolytic debridement both by providing a moist wound environment and through the possible activation of proteases (Molan, 2009). The high sugar content and low water levels in honey produce an optimal moist environment for wound healing by exerting an osmotic effect that can draw excess moisture away from the wound (Molan, 2009).

**Reduces or eliminates wound malodour**
Wound dressings that contain honey are particularly suited to malodorous wounds that have local infection (White, 2005b). Honey stops the production of ammonia and other odorous products of bacterial decomposition in necrotic wounds (White and Molan, 2005). It also debrides devitalised tissue and reduces bioburden and any accompanying smell (Bradbury et al, 2014).

**Stimulation of healing**
Honey promotes the production of cells that facilitate healing and the growth of new tissue.

**DRESSINGS**
There is now an enormous range of dressing options for the community nurse to choose from depending on the patient’s needs — in any one day this might include a foam dressing for use under compression; a soft silicone wound contact layer that protects the periwound skin; or a superabsorbent dressing that can be used to manage excess exudate. A specialty as diverse as wound care also demands constant innovation to further meet the developing needs of patients. One dressing, Actilite Protect™ (Advantis Medical) has been designed to combine silicone, foam and honey technology to create one single dressing.

**Actilite protect**
Faced with a growing incidence of chronic and acute wounds, clinicians need practical solutions as well as theories. Fortunately, among the advances borne out of the greater understanding of wounds are new dressing technologies designed to combat some of the conditions that lead to poor healing, as well as the symptoms that cause such distress for patients. Actilite Protect comprises a hydrophilic foam dressing with a soft silicone wound contact layer and border; it also contains medical grade Manuka honey and a Manuka oil dissolvable film.

Upon contact with exudate, the film forms a ‘gel-like’ substance absorbing exudate while maintaining the moist wound-healing environment crucial to healing. Simultaneously, the honey oil contained within the dressing directly penetrates the wound, working to combat the action of harmful bacteria. Actilite Protect is designed for use on the full range of wounds, including chronic leg ulcers, pressure ulcers, diabetic ulcers and infected wounds, as well as acute skin tears and post-surgical wounds.

**CASE STUDIES**
The cases reported here explore the use of Actilite Protect over a predetermined time period (two weeks) in a range of wounds and provide an overview of Actilite Protect’s action on non-healing wounds. The wounds featured in the study included diabetic foot ulcers, pressure ulcers, sacral abscesses and skin tears.

The clinicians performing the case studies were tasked with measuring/observing for a number of outcomes including:
- Wound measurements
- Ease of dressing removal
- Pain
- Effect on wound bed: development of granulation and epithelialisation, removal of slough, etc
- State of the periwound skin
- Frequency of dressing change.

As can be seen by the case studies presented here (see also summary box at the end of article), Actilite Protect can be used on a variety of wound types and has the potential to kick-start the healing process in previously ‘stalled’ wounds.

**CONCLUSION**
It is important that community nurses have a basic grasp of potential wound complications such as infection and excess exudate. A working knowledge of the types of products that will progress a wound along the healing trajectory is also beneficial. The cases featured in this article demonstrate that Actilite Protect has a practical application across a range of wounds, and, as such, would be a welcome addition to any community nurse’s toolkit.

Cases courtesy of Jackie Stephen-Haynes, professor and consultant nurse in tissue viability, Birmingham City
Actilite Protect®
The first time 3 dressings have been combined

Wound healing...
as nature intended

✔ Combination 3 in 1 dressing – foam, dry honey film and silicone
✔ Atraumatic soft silicone border allows conformability to body contours
✔ Designed to maintain a moist wound environment
✔ Clear backing allows easy assessment of wound exudate
✔ Appropriate for every stage of the healing process
✔ Wide range of sizes (cm) – 10x10, 10x15, 10x25 and 10x35
EXAMPLE CASES: SUMMARY

Case 1
This patient was an 82-year-old former smoker who was living in a care home. He had an ulcer on the side of his left foot that had been present for one week and measured 2x1cm with 100% granulating tissue in the wound bed (Figure 1).

The patient tested negative for diabetes after a blood test and his ankle brachial pressure index (ABPI) was also measured and found to be normal, with a clear signal indicating a lack of arterial involvement.

Overall, there was no underlying medical condition that might have delayed healing. The periwound skin was also healthy and he was not experiencing any pain.

Wound progression
Actilite Protect (10x10cm) was used to cover the wound, and, although the clinician reported that this size initially seemed too large, the dressing did conform well to the wound. While the dimensions of the wound did not change dramatically over the two-week evaluation period, it did show signs of improvement (Figures 2 and 3).

Dressings were changed every four days throughout the evaluation and were reported to be easy to use and to remove, being rated 3 on a five-point scale for ease of application, with 1 indicating ‘very easy removal’ and 5 ‘very difficult’ removal. The dressing was atraumatic to the wound bed and the periwound skin and the patient did not experience any pain during application or removal.

Over the evaluation period, the dressing remained intact on removal and stayed in place as long as expected, with no rolling at the edges. The clinician felt that the dressing had positively contributed to wound healing and that it was easy to use because of its all-in-one composition (foam, Manuka honey and a silicone wound contact layer).

However, the clinician did comment about the sizes available, saying that smaller-sized dressings would be a useful option.

The patient found the dressing very comfortable to wear and was very satisfied with the pain-free treatment he had received during the two-week evaluation.
CASE 2
The patient in this case was a 96-year-old woman who lived in a care home. Her nutritional status was poor and she also had diabetes, but was a non-smoker. Due to the pressure ulcer that had developed on her ankle she had been prescribed systemic antibiotics by her GP and was referred to tissue viability. The wound had been present for four weeks and was being treated daily by the staff at the nursing home. The ulcer itself measured 2x1cm and the wound bed exhibited thin, yellow slough, although there were no signs of infection (Figure 1). The periwound skin was healthy.

WOUND PROGRESSION
At presentation the dressing was being changed daily and this was reduced to every three days during the evaluation period. Actilite Protect (10x10cm) was used without a secondary dressing. The clinician felt that the size was possibly too big for the wound, but still rated the dressing as very easy to use and remove, and easy to apply.

The wound’s dimensions did not change throughout the evaluation but by the end of week one the slough was lifting and by week two there was no slough at all, with the wound bed having developed 100% granulation tissue (Figure 2). The patient’s pain was rated as 3 on a 1–10 scale, where 1 indicated a ‘complete lack of pain’ — this rating reduced to 2 after one week of treatment with Actilite Protect.

The dressing was atraumatic to the wound bed and the periwound skin and conformed very well to the wound. There was no pain during wear and removal, and no analgesics were required.

The dressing remained intact on removal and it stayed in place longer than expected, although it did roll at the edges. The care home staff needed to be persuaded to change the dressing less frequently (every three days), as they had been used to daily changes.

When the patient was asked about the dressing she said that she found it comfortable and pain-free — overall she declared herself satisfied with the treatment she had received.

Figure 1. The ulcer at presentation showing slough in the wound bed.

Figure 2. At week two, the wound demonstrated 100% granulating tissue.

The clinician felt that the Manuka honey element of the dressing helped to treat infection and slough, and that the dressing made a positive contribution to healing. Overall, the clinician was very happy with the dressing.
Summary of case evaluations

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<th>Case reports</th>
<th>Patient comorbidities</th>
<th>Wound type/ duration</th>
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<th>Wound measurement at end of trial</th>
<th>Changes in wound bed by end of trial period</th>
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<td>Non-smoker; limited venous return</td>
<td>Leg ulcer above right malleolus/present for one year</td>
<td>3x2cm/2cm deep</td>
<td>No change</td>
<td>- At the end of week two there was further granulation and epithelialisation - The periwound skin was healthy and the wound had improved generally</td>
<td></td>
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<tr>
<td>Poor nutritional status</td>
<td>Ulcer behind large toenail/present for 1–2 months</td>
<td>5x5cm/1mm deep</td>
<td>Wound closed</td>
<td>- Dressing had contributed to wound closure and helped to reduce the bioburden - The patient rated the dressing as very comfortable</td>
<td></td>
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<tr>
<td>Diabetes; poor nutritional status; ex-smoker</td>
<td>Ulcer on lower leg/present for six weeks</td>
<td>4x3cm</td>
<td>Wound reduced in size to 2x2cm</td>
<td>- At the end of the two-week evaluation the clinician concluded that Actilite Protect had tackled the infection effectively and helped the wound to heal</td>
<td></td>
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<tr>
<td>Poor nutritional status</td>
<td>Two sacral abscesses/present for two weeks</td>
<td>Joint area of the two wounds measured 4x3cm</td>
<td>No change</td>
<td>- The wound bed comprised 100% granulation tissue and the redness of the periwound skin was greatly reduced - There were no signs of infection and the patient’s pain levels had reduced to zero</td>
<td></td>
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<tr>
<td>Non-smoker; poor nutritional status</td>
<td>Ulcer on side of left foot/present for one week</td>
<td>1x1.5cm</td>
<td>Wound completely healed</td>
<td>- The dressing was being changed every five days rather than every two days - Clinician stated that infection had been resolved through the action of the dressing’s Manuka honey dissolvable film</td>
<td></td>
</tr>
<tr>
<td>Poor nutritional status; no underlying medical conditions</td>
<td>Unhealed skin tear on lower shin/present for four weeks</td>
<td>10x5cm</td>
<td>Wound completely healed</td>
<td>- Granulation in the wound bed had risen to 100% - Wound healed after being dressed with Actilite Protect every three days</td>
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University and Worcester Health and Care Trust; Rosie Callaghan, tissue viability nurse specialist, Worcester Health and Care Trust

REFERENCES

Confused about wound care?

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