What nurses need to know about the application of larval therapy

Jackie Griffin

In chronic wound management the potential for healing increases following effective debridement. Indeed, it has been suggested that debridement’s effect on chronic wound healing is similar in impact to the relief of pressure in preventing pressure ulceration. Debridement can be performed using a number of methods, but larval debridement has recognised benefits, including the breakdown of necrotic tissue; removal of microbes; wound cleansing; and breakdown of biofilm. The reduction of malodour in the wound can also help increase patients’ self-esteem and overall wellbeing. This article looks at the use of larval therapy in a community setting, which can be particularly cost-effective as rapid debridement swiftly reduces the bacterial load, helping to lessen the potential for hospital admission.

KEYWORDS:
- Wound care
- Larvae
- Debridement
- Cost-effectiveness

Debridement — that is the removal of devitalised tissue from the wound bed — can be facilitated by any of the following methods:
- Autolytic: hydrocolloid dressings or hydrogel dressings and sheets can be used to enhance the body’s natural capacity for removing dead tissue, known as autolytic debridement, where the body’s own enzymes cleanse the open wound of dead tissue (this process can be delayed in some patients)
- Mechanical techniques: such as hydrosurgery; sharp debridement (often performed by a podiatrist or tissue viability nurse); surgical debridement (usually performed by surgeons).

Larval therapy is another method of debridement and involves the application of medical grade *Lucilia sericata* fly larvae to the wound, either free-range or in a mesh bag. As well as mechanically debriding dead tissue with their mandibles, the larvae secrete a proteolytic enzyme — this dissolves any dead tissue, which the larvae then ingest (Pyatt, 2011).

Larval therapy has three recognised modes of action:
- Debridement through larval production of proteolytic enzymes, which break down necrotic tissue
- Ingestion of bacteria by the larvae provides antimicrobial benefit at the wound’s surface
- Research indicates that the larval secretions could be beneficial in promoting wound cleansing, as well as breaking down the biofilms associated with chronic wounds (Nigam, 2013).

In order for nurses to achieve clinically sound and cost-effective treatment, all avenues of debridement should be considered.

Jackie Griffin, tissue viability clinical nurse specialist, Montgomery County Infirmary, Powys, Wales
BioMonde is a European wound care company specialising in the manufacture and distribution of larval therapy for chronic, infected and necrotic wounds.

Our state-of-the-art pharmaceutical production units in the UK and Germany, together with our commitment to research, development and education make BioMonde the first choice in larval debridement therapy and wound cleansing.

For more information about Larval Debridement Therapy, or to arrange a clinical visit or an education session, please call 0845 230 1810 or visit:

www.biomonde.com
Similarly, when attempting to assess the financial implications of a particular wound care regimen, it is important not just to review the cost of each unit item — be that a single application of larvae or a traditional dressing — but also to consider the predicted length of treatment, number of interventions required, the cost of any travel undertaken by the nurse, and the impact of any adverse events.

Cost-effectiveness
Reviewing the cost-effectiveness of larval therapy, Bennett et al (2013) stated that in comparison to the use of other more common debriding treatments such as hydrogel dressings, honey, mechanical debridement, or hydrosurgery, larval therapy demonstrated significant cost-efficiency and patient outcome benefits. Although no one debridement method was shown to have superior benefits in terms of patient quality of life, the quicker the debridement process meant the sooner the wound was in a condition where healing could begin.

COURSE OF TREATMENT
In healthy patients, wound healing is often uncomplicated and requires minimal intervention from nurses. However, those wounds that do not progress in a timely fashion need assessment to determine the cause of the delay. Stephen-Haynes et al (2013) state that there is no treatment panacea and that each wound presents a unique combination of challenges, which must be identified in order that an effective wound management plan can be formulated.

To ensure effective care planning that closes and ultimately heals the wound, a holistic assessment must be undertaken (Dowsett, 2002). The patient’s general health must be assessed in conjunction with any known medical conditions and the wound status, including aetiology, size and wound bed tissue type, must be recorded.

In order that any wound has the opportunity to progress to closure and healing the wound bed must be free of devitalised tissue — the presence of devitalised tissue impedes wound healing and prevents accurate assessment by nurses, which can lead to poor outcomes (Price and Young, 2013).

Larval therapy
There are two presentations of larvae available for clinical use — free-range and those that come in a ‘bio-bag’ (BioMonde), a finely woven polyester net pouch containing a small piece of foam and the larvae themselves. The foam protects the larvae during transportation and also absorbs the excess secretions from the larvae once the bag is applied to the wound.

The free-range presentation involves the larvae being delivered in a sterile pot and applied directly to the wound. Larvae are prevented from escaping by the application of a retention net held in place with fixation tape.

Both presentations are equally effective in removing necrotic tissue, however, the bio-bag might be more acceptable to some patients, particularly those receiving treatment at home, as the risk of any larvae ‘escaping’ is nil.

To achieve effective debridement it is important to apply enough larvae or a large enough bag to cover the wound bed (http://biomonde.com/attachments/article/7/BM110_05_0713_IP.pdf). The manufacturer provides a free-range calculator as well as a bio-bag size guide to ensure that the wound is adequately covered. It is also possible to use more than one bio-bag if the wound is particularly large or a complex shape.

Free-range larvae can be left in place for three days, while the bio-bag can be left for up to four days. One advantage of the bio-bag is that it can be lifted from the wound for inspection and, if necessary, moved to a different part of the wound that requires further treatment. Conversely, the advantage of the free-range larvae is that they can move freely within the retention net, digesting necrotic tissue in any area of the wound that requires debridement. In both cases it is advisable to review the wound’s progress 24-hours before the course is due to end so that further courses of larvae can be ordered if necessary.

Once the larval therapy is in place, patients and nurses must be aware of several factors that could impede the effectiveness of treatment. Firstly, the larvae are living creatures that require air to breathe, therefore, they should not be covered with occlusive dressings such as films. Secondly, the larvae will drown if submerged in water, for instance if the patient is bathing. Thirdly, it is possible to squash the larvae, for instance, by standing on them. Therefore, in cases where the wound is located on the feet or heels, some method of pressure off-loading must be employed so that the larvae are not destroyed.

When using the bio-bag, the manufacturer recommends that nurses change the secondary
dressings each day, as well as reapplying any periwound skin barrier. A skin barrier is used in conjunction with larvae in order to protect the wound edges from maceration, which may be caused by the increase in wound exudate as a result of the process of debridement by the larvae. This can be in the form of a cream or film depending on local formulary. When using the ‘free range’ larvae, the wound should first be framed using a hydrocolloid wafer which both protects the wound edges and gives a clean surface onto which the securing tape can be fixed. Although this may initially involve a significant amount of nursing time, in the long run larval therapy will reduce the time it takes to debride the wound bed and allow the wound to move on to the next stage of healing (Bennett et al, 2013).

Post-treatment
Following each larval therapy application, a full wound assessment should be performed, which will indicate if further treatment is required. There is no upper limit to the number of larval therapy applications (Chambers et al, 2003). However, in all cases an onward treatment plan must be formulated. Some patients may be able to begin caring for the wound themselves, whereas others with more complex wounds may require further therapy, such as the use of negative pressure wound therapy (NPWT).

After each cycle of treatment the larvae are classed as ‘potentially contaminated’ and must be disposed of according to local policy using the packaging included in the original delivery. Should a patient die during treatment, the larvae should be removed from the patient before the body is taken to the undertaker or local mortuary.

Patient suitability
In some situations, debridement using larval therapy may be a one-off intervention, but more often it is an ongoing process, depending on the size of the wound and the amount of necrotic tissue to be removed. Where a patient presents with a wound covered in hard eschar, larvae would be ineffective, however, following the softening of any hard tissue with, for example, a hydrocolloid dressing, larval therapy offers a quick method of ‘cleaning’ out the wound bed (Price and Young, 2013). Debridement also works to reduce the bacterial burden in the wound, which can reduce the malodour often associated with wounds that have been colonised with bacteria (Vowden and Vowden, 1999). Larvae have also been shown to reduce, and in some cases eradicate, local wound infections including that caused by meticillin-resistant Staphylococcus aureus (MRSA) (Thomas et al, 1999; Thomas and Jones, 2000).

‘Larvae have also been shown to reduce, and in some cases eradicate, local wound infections ...’

Wound types
Wounds suitable for debridement with larval therapy include: (All Wales Tissue Viability Forum, 2013):

- Pressure ulcers
- Leg ulcers
- Diabetic foot ulcers
- Traumatic wounds
- Amputation sites
- Denised surgical wounds
- Infected wounds.

Wounds not suitable for larvae include (All Wales Tissue Viability Forum, 2013):

- Those where the blood supply is insufficient to permit healing, i.e. peripheral vascular disease
- Where the wound-bed is covered by hard eschar
- Wounds that connect with the body’s cavity or internal organs
- Fistulae that have not been probed/investigated.

Improved healing outcomes have been demonstrated where patients are actively involved with their treatment (Department of Health [DH], 2011). Therefore, informed patient consent is required before treatment is started, with patients being told that live larvae will be used in the debridement process. Information leaflets produced by the supplier should also be made available and explained to the patient.

There have been concerns about the use of larval therapy in patients taking anticoagulant medication such as warfarin, particularly in the community setting where monitoring of the patient may be an issue (Thomas and Jones, 2000). However, in the author’s experience, if patients are aware of the side-effects of their medication and the potential for bleeding has been explained, the therapy is safe. The use of the bio-bag can be helpful in reducing any concerns as it can be easily removed if the patient needs to check the status of the wound.

If the patient’s wound is as a result of ischaemia, there may be a degree of pain associated with the use of larvae, which should be treated with simple analgesia (All Wales Tissue Viability Forum, 2013). Some patients treated by the author have reported mild discomfort, describing it as being stung by fresh nettles or scratched by a kitten’s claws.

NURSE ATTITUDES
Price and Young (2013) stated that some general nurses avoided more

KEY POINTS

- The use of larval therapy to debride wounds in a community setting is both clinically sound and cost-effective.
- Rapid debridement of a wound reduces the bacterial load, helping to lessen the chance of infection and subsequent admissions to hospital. This, in itself, represents a reduction in potential costs.
- The reduction of malodour from the wound can help increase the patient’s self-esteem and the speed and ease of debridement can accelerate healing.
- However, it is important that the full implications of larval therapy, including possible discomfort or distaste for the procedure itself, are discussed with the patient before any application.
active debridement techniques such as larval therapy in favour of autolytic debridement supported by wound care dressings, due in part to familiarity with the latter process. However, autolytic debridement is not always the best option for the patient — indeed, stressing the importance of rapid debridement, Gray et al (2011) state that the method chosen for debridement must be the most effective for each patient’s wound at the time of presentation, rather than the method dictated by the skills or preferences of individual nurses.

Often described as the ‘yuk’ factor, nurses themselves may have negative perceptions of larval therapy as patients are rarely reported as refusing the treatment (Evans, 2002). Gilead et al (2012) suggest that the use of larval therapy is both an effective and acceptable debridement method.

Support for the use of larval therapy can be found in guidance such as that from the All Wales Tissue Viability Nurse Forum (2013) and individual health trusts or health boards will have their own decision-making or approval pathways. It is important that local tissue viability nurses are also available to colleagues to provide advice regarding use of larvae.

NURSING REQUIREMENTS

It is vital that nurses fully understand the procedure before they initiate larval therapy, including:

- Suitable wound types
- Ethical considerations for the patient undergoing the therapy
- Contraindications and associated risks of treatment
- Potential for interaction with other medical products.

The techniques required to administer both types of larval therapy are outlined by the manufacturer, with full instructions being included in each delivery of larvae. Nurses should be able to undertake a full wound assessment and construct an effective plan of care — involving the patient — to ensure that all involved have the same expectations of treatment.

CONCLUSION

The use of larval therapy to debride wounds in a community setting is both clinically sound and cost-effective. Rapid debridement of a wound reduces the bacterial load, helping to lessen the chance of infection and subsequent admissions to hospital. This, in itself, represents a reduction in potential costs.

The reduction of malodour from the wound can help increase the patient’s self-esteem and the speed and ease of debridement can accelerate healing. However, it is important that the full implications of larval therapy, including possible discomfort or distaste for the procedure itself, are discussed with the patient before any application.

REFERENCES


Wound Care Today’s Product Pyramid

Detailed explanations of the different wound care product categories

Listings of all products available within each category

Links to relevant websites

Extended product entries, including:
- Specifications, how to use, and performance indicators
- Key clinical evidence to underpin product use in clinical practice

Comprehensive product information to guide formulary decision-making

www.woundcare-today.com