

Appropriate and effective use of Larval Therapy in lower limb wounds – challenges and solutions

KEY WORDS

- ▶ Consensus document
- ▶ Debridement
- ▶ Larval Therapy
- ▶ Lower limb

LEANNE ATKIN
*Vascular Nurse Consultant, Mid
Yorks NHS Trust and Lecturer
Practitioner, University of
Huddersfield, West Yorkshire, UK*

CLAIRE ACTON
*Tissue Viability Nurse Manager,
Guy's and St Thomas' NHS
Foundation Trust, London, UK*

MICHAEL EDMONDS
*Professor of Diabetic Foot
Medicine, King's College London
and Consultant Physician, King's
College Hospital, London, UK*

SIAN FUMAROLA
*Clinical Specialist, NHS
Supply Chain, Stoke-on-Trent
and Senior Clinical Nurse
Specialist, Tissue Viability and
Continence, University Hospitals
of North Midlands NHS Trust,
Staffordshire, UK*

JEMELL GERAGHTY
*Nurse Consultant Tissue Viability,
Turning Point, CNS at HCA
London & Visiting Clinical Teacher
Kings College Florence Nightingale
Faculty of Nursing, Midwifery &
Palliative Care, London UK.*

CAROLINE MCINTOSH
*Chair of Podiatric Medicine, NUI
Galway and Diabetes Specialist
Podiatrist, University College
Hospital Galway, Galway, Ireland*

DUNCAN STANG
*Podiatrist; National Diabetes Foot
Coordinator for Scotland, UK*

The lower limb is the most common site for wounds (Guest et al, 2015) and, with almost half being considered 'chronic' or complex (Guest et al, 2017), it is essential that timely, appropriate treatment is provided to increase the chances of healing, improve patient quality of life and reduce pressure on healthcare services.

Debridement optimises the condition of the wound bed and reduces the risk of stalled healing. Two previous debridement consensus statements (Gray et al, 2010; Strohal et al, 2013) support the use of Larval Therapy as a first-line option when speed, selectivity and bioburden are driving care decisions. The literature and expert experience support the use of Larval Therapy as a rapid, selective, non-invasive treatment option for lower leg wounds. However, this form of therapy is currently underused in practice.

A panel of UK experts met in August 2019 to discuss the role of Larval Therapy in the management of lower limb wounds, which will form the basis of a Wounds UK consensus document, to be published in 2020. The panel discussed the current treatment landscape, the benefits of Larval Therapy, possible barriers to its use, patient assessment and selection, and associated practical considerations.

A key aim was to devise a treatment pathway that can be used by all members of the multidisciplinary team to inform the appropriate selection of Larval Therapy during clinical decision-making. The draft pathway (Figure 1) is included in this article, and the context and rationale will also be provided in the full consensus document. The pathway should enable all members of the team to make informed choices about patient selection, and treat lower limb wounds with confidence using Larval Therapy.

LARVAL THERAPY – UPDATE ON MODE OF ACTION AND BENEFITS FOR LOWER LIMB WOUNDS

Larval Debridement Therapy uses *Lucilia sericata* (greenbottle fly) larvae to remove necrotic, sloughy and/or infected tissue, suitable for use in a wide variety of wound types. It should be

considered for wounds where rapid debridement is required. It can also be used to maintain a clean wound bed in situations where resloughing is a risk. It is suitable for use in hard-to-heal wounds and in patients who are not suitable for surgical intervention due to the presence of comorbidities (Strohal et al, 2013).

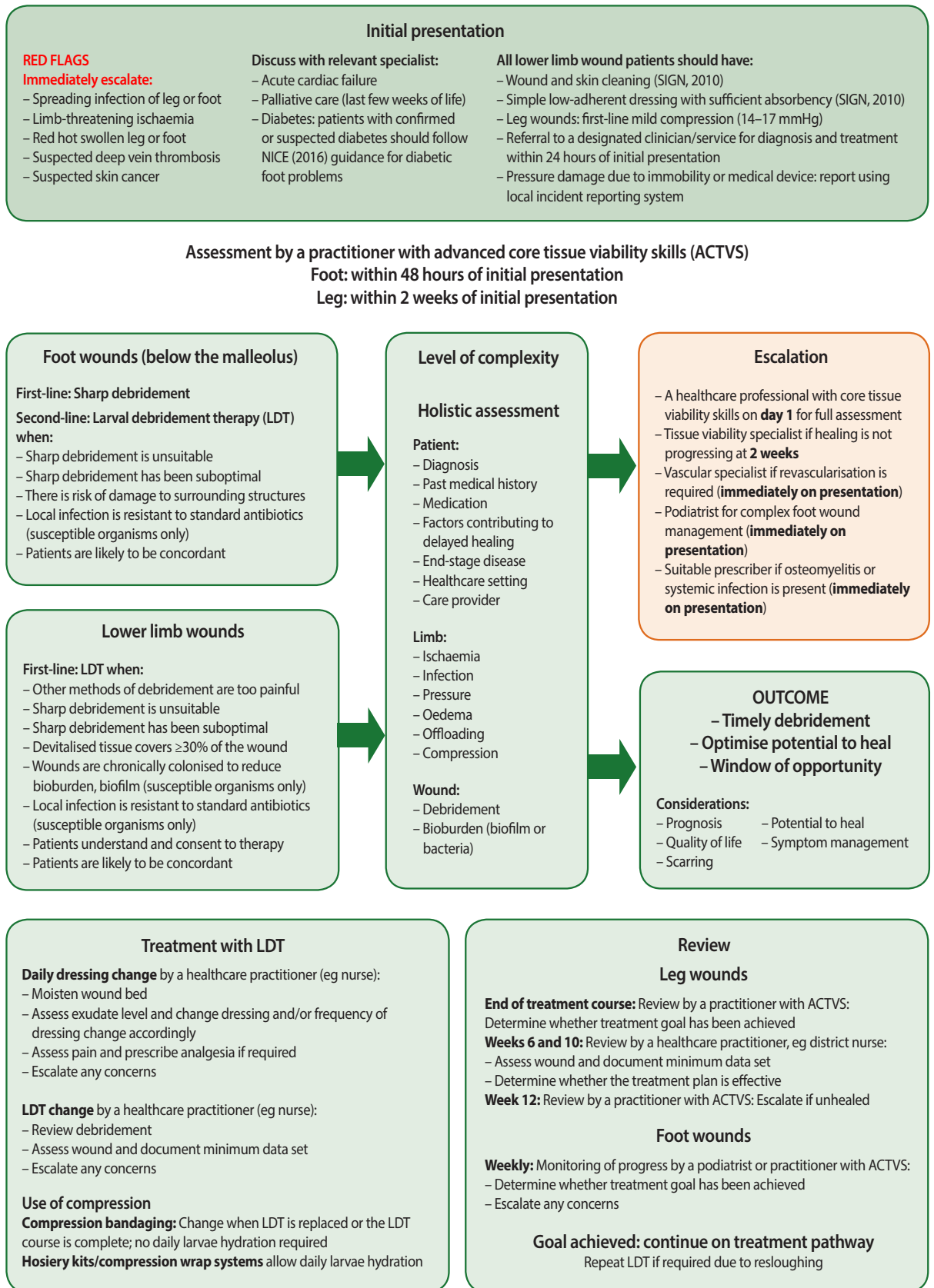
Larvae are sealed within a finely woven net pouch (the BioBag dressing) containing one or several pieces of foam that support larval growth. BioBag dressings are available in different sizes, so practitioners should select a BioBag appropriate to the size and nature of the wound.

Larvae selectively feed on the necrotic tissue, cellular debris and exudate present in sloughy wounds, leaving healthy tissue intact. They have three modes of action (Strohal et al, 2013):

- ▶ Debridement
- ▶ Antimicrobial
- ▶ Stimulation of healing.

Several randomised controlled trials have demonstrated the efficacy of Larval Therapy. Dumville et al (2009) reported that bagged and loose larvae quickly removed necrotic tissue when compared to hydrogel in large randomised controlled trial of 267 patients with venous leg

Figure 1. The draft treatment pathway



REFERENCES

All Wales Tissue Viability Nurse Forum (2013) *All Wales Guidance for the Use of Larval Debridement Therapy. WoundsUK on behalf of AWTVF.* Available from: www.wounds-uk.com

Davies CE, Woolfrey G, Hogg N et al (2015) Maggots as a wound debridement agent for chronic venous leg ulcers under graduated compression bandages: A randomised controlled trial. *Phlebology*30(10):693–9

Dumville JC, Worthy G, Bland JM et al (2009) Larval therapy for leg ulcers (VenUS II): randomised controlled trial. *Health Technol Assess*13(55):1–182

Gray D, Acton C, Chadwick P et al (2010) Consensus guidance for the use of debridement techniques in the UK. *Wounds UK*7(1):77–84

Guest JF, Ayoub N, McIlwraith T et al (2015) Health economic burden that wounds impose on the National Health Service in the UK. *BMJ Open*5(12):e009283

Guest JF, Ayoub N, McIlwraith T et al (2017) Health economic burden that different wound types impose on the UK's National Health Service. *Int Wound*14(2):322–30

Markevich YO, McLeod-Roberts J, Mousley M et al (2000) Maggot therapy for diabetic neuropathic foot wounds. *Diabetologia* 43(Suppl1):A15

Strohal R, Dissemond J, Jordan O'Brien J et al (2013) EWMA document: debridement. An updated overview and clarification of the principle role of debridement. *J Wound Care* 22:S1–S52

Wounds UK (2016) *Best Practice Statement: Holistic Management of Venous Leg Ulceration.* Available online at: https://www.wounds-uk.com/resources/all/0/date/desc/cont_type/21 (accessed 22.10.2019)

Table 1: Myths and truths about Larval Debridement Therapy

| Myths ✘ | Truths ✔ |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▶▶ Larvae eat flesh | ▶▶ Larvae release enzymes that dissolve non-viable tissue |
| ▶▶ Larvae cause malodour | ▶▶ Malodour is caused by microorganisms not larvae |
| ▶▶ Larvae are dirty | ▶▶ Larvae are produced in a sterile process |
| ▶▶ High volumes of exudate will drown the larvae | ▶▶ Exudate can be managed by daily dressing changes |
| ▶▶ Causes pain | ▶▶ Initial pain is linked to improvement and diminishes over time. Where appropriate, the short-term use of appropriate analgesia prevents this being an issue. |
| ▶▶ Causes bleeding | ▶▶ Risk of bleeding is very small |
| ▶▶ The larvae will escape | ▶▶ Most larvae are prescribed in bags ▶▶ Loose larvae are used in specialist settings in appropriate conditions |
| ▶▶ Autolysis is a rapid and efficient form of debridement | ▶▶ Larvae debride faster than other methods |
| ▶▶ Cannot be used on necrotic tissue | ▶▶ Cannot be used on dry eschar but can be used on moist necrotic tissue |
| ▶▶ Cannot be used after sharp debridement | ▶▶ Can be used if clinician has not achieved the removal of all devitalised tissue |
| ▶▶ Pseudomonas kills larvae | ▶▶ Heavy pseudomonas infections can impact larval viability and reduce the speed of debridement, however, the therapy can still be used successfully |
| ▶▶ It can only be used by specialists | ▶▶ It is a standard treatment. It can be used by generalists with core skills: it is easy for healthcare providers to apply and remove BioBags; patients can self-care between applications by moistening the wound bed if they observe good hand hygiene |
| ▶▶ Cannot be used in areas subject to high pressure as larvae may be squashed | ▶▶ Can be used for foot wounds if offloaded ▶▶ Can be used under non-occlusive compression therapy up to 40 mmHg (All Wales Tissue Viability Nurse Forum, 2013) |
| ▶▶ Cannot be used when infection is present | ▶▶ Can be used very effectively |
| ▶▶ Larvae must be prescribed by a doctor | ▶▶ As an unlicensed medicine, Larval Debridement Therapy can be prescribed by doctors, dentists, independent nurse and pharmacist prescribers and, in some circumstances, supplementary prescribers |

ulcers. A trial by Markevich et al (2000) including 140 patients with diabetic foot ulcers randomised to receive hydrogel or Larval Debridement Therapy found a 27% reduction in necrosis with hydrogel versus a 51% reduction with the use of larvae.

In venous leg ulcers, compression therapy is the gold standard treatment (Wounds UK, 2016). In cases where fast debridement is desirable, the addition of Larval Therapy should be considered. Davies et al (2015) found that Larval Therapy improved the debridement of hard-to-heal venous leg ulcers that were treated with multilayer compression bandages without interrupting the compression therapy.

OVERCOMING CHALLENGES

There is a great deal of misconception surrounding Larval Therapy. Education of both healthcare practitioners and patients is key (Table 1).

SUMMARY AND CONCLUSIONS

The expert panel identified a need for a clear pathway to guide use of Larval Therapy in practice. The full consensus document, which will include the treatment pathway, will aim to provide clinicians with all the information they need to treat lower limb wounds appropriately and effectively with Larval Therapy. The full consensus document will be published by *Wounds UK* in 2020.

