Improving clinical outcomes and reducing the cost of venous leg ulcers (VLUs) using an externally applied electroceutical therapy* in a Community NHS Trust

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INTRODUCTION

The prevalence of venous leg ulcers (VLUs) worldwide is 3% in the adult population[1], which is likely to increase in the UK by up to 12% per annum.[2] It is estimated that only 53% of VLUs heal within 12 months and that the mean cost of managing an unhealed VLU in the UK is £13,455 per annum.[3] The overall cost is likely to increase year on year with an ageing population.[2] Several initiatives in the NHS are currently aimed at ensuring patients receive optimum care at the right time.[4-7]

Electroceutical therapy*

An innovative treatment using electroceutical therapy* for the management of VLUs can significantly improve outcomes for patients and reduce costs.[8-11] The electroceutical therapy* is a small disposable class IIa portable medical device delivering a precise dosage of electroceutical therapy through the skin surface to dampen chronic inflammation and amend the impaired biological function in the wound. It is a one-off 12-day treatment to reduce inflammation[12] and stimulate healing.[8]

METHOD

An evaluation using the electroceutical therapy* was undertaken in a Community NHS Trust in the UK.

Primary aim

- Determine the clinical outcomes and clinician feedback of using the electroceutical therapy* for the management of VLUs.

Secondary aim

- Determine the reduction in nursing visits and cost effectiveness of using the electroceutical therapy* for the management of VLUs.

Study population

- 8 patients with non-progressing VLUs despite following best practice including compression therapy.
- Exclusion criteria - active cancer and pregnancy.
- 50% male and 50% female with a mean age 73 of years.
- Mean pain score 4.3 (range 3-5) on the visual analogue score (VAS).
- Mean wound size 13.3cm^2 (range 0.8cm^2 – 24.8cm^2).
- 50% of patients had wounds for over a year. Duration; <3 months (n=1); 4-6 months (n=3); >12 months (n=4).
- 50% had moderate exudate and 25% heavy exudate.
- Mean number of dressing changes 1.9 weekly (range 1-4 times weekly) prior to treatment.

Treatment and Data collection

Treatment with the 12 day electroceutical therapy* was combined with standard therapy according to local protocol, which continued following treatment.

Data collected included wound size, duration, pain scores, exudate levels and number dressing changes per week. Data was collected every 2 to 4 weeks for up to 20 weeks or to complete healing.

RESULTS – CLINICAL OUTCOMES

Healing

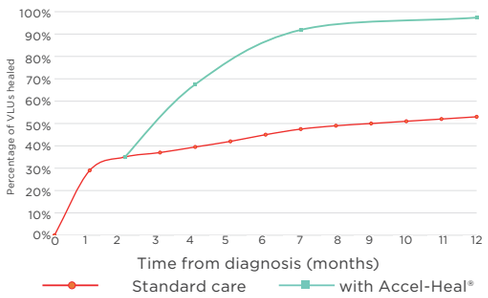
Twelve weeks following the treatment 75% (n=6) of all wounds had healed (figure 1). At the end of the 20-week period, 88% (n=7) wounds healed (figure 2) and 100% of all wounds <12 months old prior to treatment healed.

Figure 1. Wound healing following 12 day electroceutical therapy*

Patient ID	Wound age prior to treatment*	Time to healing
Patient A	16 months	Non-healer
Patient B	3 years	6 weeks
Patient C	3 months	Within 12 day treatment
Patient D	4/6 months	8 weeks
Patient E	4/6 months	6 weeks
Patient F	4/6 months	8 weeks
Patient G	Over 12 months	20 weeks
Patient H	15 months	12 weeks

It is estimated that incorporating the electroceutical therapy* into a care pathway for VLUs that were not progressing satisfactorily at 8 weeks would increase the percentage of wounds healing within 12 months from 53%[3] to 97% (figure 2).

Figure 2. Improvement in healing by adding electroceutical therapy* to VLUs not progressing satisfactorily at 8 weeks



Symptom management – reduction in pain, exudate and wound size (figure 3)

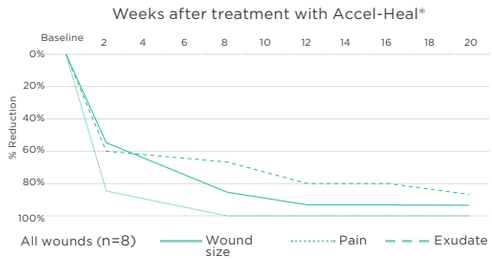
Typically, the first and highly significant outcome of the therapy* is a marked reduction in pain; often experienced within hours of application of the therapy and possibly as a result of the impact the therapy has on inflammation.[12] A prolonged inflammatory response results in wound sensitivity and spontaneous pain[13], which often dominates the patients' lives and limits their functioning.[14]

Symptom management (continued)

Within 2 weeks of commencing the therapy*, the mean pain score reduced to 0.7. At the end of the 20-week period, no patients had pain.

Within 2 weeks of commencing the therapy*, no patients had heavy exudate, 1 patient (13%) had moderate exudate and 50% (n=4) had light exudate. The patient who failed to heal had moderate exudate at the end of the 20-week period.

Figure 3. Reduction in pain, exudate and wound size

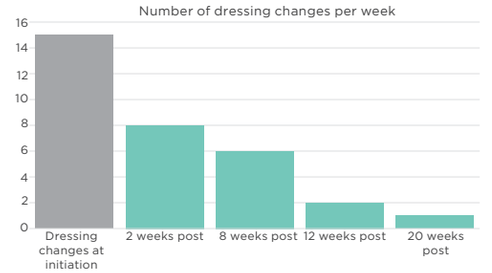


REDUCTION IN DRESSINGS AND NURSING TIME

After 2 weeks, 1 (13%) wound had healed and the number of dressing changes had dropped by 47% (figure 4) to an average of 1 per week. After 12 weeks, 6 (75%) wounds had healed and the number of dressing changes had dropped by 87% to an average of 0.3 per week. At 20 weeks, 7 (88%) wounds healed and the number of dressing changes had dropped by 93% to an average of 0.1 per week.

Patient H, whose wound had been present for 15 months and had been having four times weekly dressing changes, visits reduced to twice weekly within 2 weeks of commencing treatment and reduced to weekly within 8 weeks of treatment. The patient healed within 12 weeks.

Figure 4. Dressing change reductions per week



COST EFFECTIVENESS OF USING ELECTROCEUTICAL THERAPY*

A reduction in dressings and nursing time has a significant impact on the cost of chronic wounds to the organisation. Applying the mean annual cost of an unhealed VLU[3] and extrapolating it to the longevity of wounds in this evaluation, the estimated cost of managing the 8 VLUs prior to therapy* was approximately £111,002.

Following the therapy* 75% wounds had healed within 12 weeks and 88% of wounds healed within 20 weeks. Only 1 patient remained unhealed with an on-going cost of £13,455 per annum. The 7 healed wounds had previously been non-progressing and therefore would have resulted in an on-going cost to the NHS Trust of up to £94,185 per annum. The potential saving for the NHS Trust with a population of 730,000 (based on 3% prevalence[1] and healing rates of 53%[3]), allowing for the cost of the treatment is estimated to be £119.4 million per annum.

The savings are a combination of real cash savings and efficiency gains. Real cash savings result from significantly lower dressing costs, significantly lower agency and bank nursing costs and significantly lower cost of analgesia. As a result of the reduction in a nurses' caseload (figure 5), significant efficiency gains are generated, which enables nurses to provide more focused care to all patients. A positive feedback loop is created with patients, which empowers nurses, reduces stress and reduces sick time.

Figure 5. Reduction in caseload

DISCUSSION

Clinician and patient feedback was very positive. The results of the evaluation were consistent with previous studies.[8,10,11] A suggested pathway[15] for using the therapy* in the management of VLUs has been developed to ensure clinicians get it right first time.[4] The pathway also suggests clinicians to consider using the therapy* for managing pain when either a Doppler assessment and/or compression therapy cannot be tolerated.

CONCLUSION

Implementation of an innovative electroceutical therapy* at an optimal time on the patient's care pathway, can significantly improve wound healing and patient's quality of life, reducing costs of chronic wound care in the UK.

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*Accel-Heal® electroceutical therapy.

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