

Introduction

It has become well publicised that chronic wounds are a significant problem for patients, clinicians and healthcare systems. The impact is increasing as cumulative numbers of wounds continue to grow - the total number of chronic wounds is rising by 12% per year (Guest et al, 2017) and it was estimated that 3.8 million patients with a wound were managed by the NHS in 2017/2018 (Guest et al, 2020). The demand for wound care has resulted in overstretched services and staff, and compromising outcomes for patients. The introduction of advanced therapies in hard-to-heal wounds can, if used appropriately, result in long-term savings. This Made Easy focuses on WoundExpress: an advanced wound therapy delivered via a pump and garment, which operates by using low-pressure air to deliver a compression therapy. The device can be used to assist in the healing of acute venous leg ulcers, or hard-to-heal wounds.

Introducing advanced therapies

The development of a new approach in wound care, whereby the focus is on targeting the cause and healing wounds, rather than on symptom management, is needed. The use of advanced therapies in practice can help to achieve this (Vowden, 2011; Ivins et al, 2020). Earlier interventions have the potential to prevent wounds from becoming chronic – or hard-to-heal – before they cause long-term problems for the patient and develop possible further complications (Ivins et al, 2020).

Advanced adjunctive therapies are intended for use in addition to standard wound care, in order to achieve healing in wounds where this might not otherwise be possible. If used on wounds that are at risk of becoming hard-to-heal – which is defined as a wound that 'fails to heal with standard therapy in an orderly and timely manner' (Troxler et al, 2006) – outcomes can be improved for patients, which will have a knock-on positive effect on staff and healthcare systems (Vowden, 2011). This can result in long-term savings – both financial and in terms of clinician time – despite initial increased treatment costs (Vowden, 2011).

Equally, the importance of a patient-centred approach to care has been increasingly emphasised in recent years. Patient outcomes are improved when patients are able to be more involved in their own care (where they are willing and able), to be involved in shared decision-making, and empowered to engage in their own care (Wounds International, 2016).

Introducing WoundExpress - intermittent pneumatic compression

WoundExpress (Huntleigh Healthcare Ltd) is an advanced wound therapy that is designed to be used as an adjunct to standard care,

and has been proven to contribute to the healing of hard-to-heal wounds (Naik et al, 2019). WoundExpress is applied and managed by patients themselves, in their own homes, for 2 hours per day. Daily use has resulted in significant reductions in both wound size and wound-related pain, and patients have reported improved wellbeing and quality of life (Naik et al, 2019; Ivins et al, 2020).

Use of WoundExpress has also been found to result in overall cost savings, due to the reduced time to healing, compared to the cost of a non-healing wound (Wounds UK, 2020). Additionally, as the patient is engaging in shared care and becomes more empowered in the self-management of their condition, reductions may be made in nurse visits, further saving time and money.

How WoundExpress works

WoundExpress delivers therapeutic levels of compression through 'intermittent pneumatic compression' therapy [Figure 1]. The device consists of a pump and garment: the specially designed three-chamber garment attaches to the pump, which has a unique 4-minute timing cycle that increases venous and arterial blood flow.

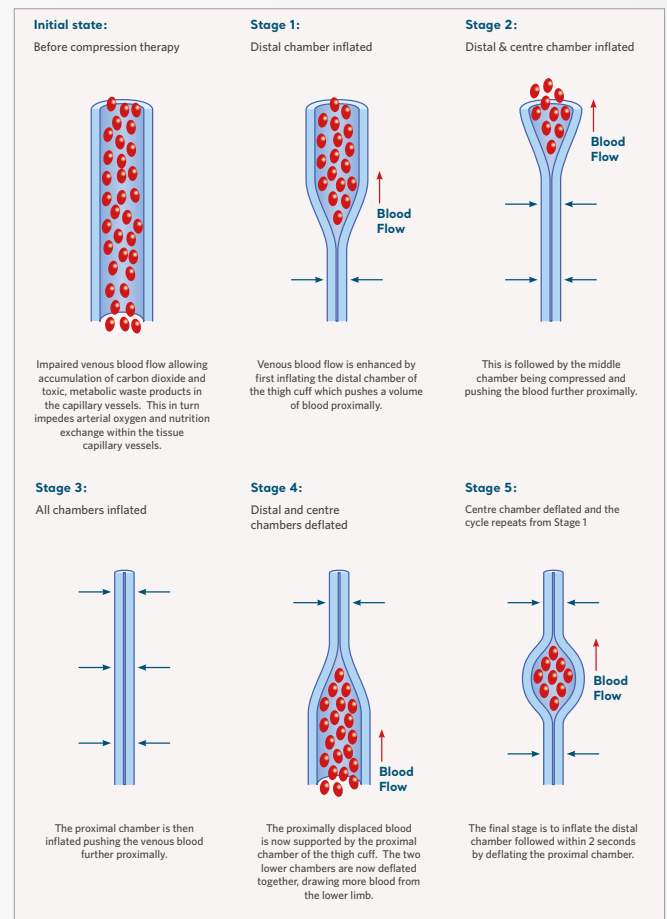


Figure 1. How WoundExpress works

The result is the removal of high levels of accumulated carbon dioxide and metabolic waste products from the wound site. The arterial inflow to the leg subsequently increases and encourages the flow of nutrient- and oxygen-rich blood into the affected region of the wound, promoting enhanced wound healing.

Unlike standard treatment, the WoundExpress garment has been designed to be placed on the thigh of the ulcerated limb and not on the wound site. A recent study has demonstrated that applying sequential compression to the thigh alone can produce positive haemodynamic effects in the calves of patients with chronic wounds (Morris et al, 2019).

In an evaluation of WoundExpress in hard-to-heal wounds (mean duration prior to inclusion was 45 months) over a 16-week treatment period, 95% of wounds progressed towards healing, with a mean surface area reduction of -66% (range: -16% to -100%) and 38% achieved complete re-epithelialisation (Kettley and Turner-Dobbin, 2020).

Pathway for use

A suggested pathway for use of WoundExpress in clinical practice has been devised based on consensus recommendations (Young et al, 2021; [Figure 2]). The pathway offers guidance on when to use, when not to use and when to stop using the device. It is important to note that use of WoundExpress should be associated with frequent assessment of the lower limb wound. It is important to observe skin appearance and condition, to enable therapy to be discontinued where poor or negative outcomes are identified.

As with any use of therapeutic interventions, there is a requirement to assess both the patient and their immediate environment before instigating a new intervention, which should take place within existing care pathways to avoid confusion and potential errors associated with premature or delayed use of therapy (Young et al, 2021).

Patient focus

It has been increasingly acknowledged that hard-to-heal wounds can have a significant negative effect on people living with a wound and their quality of life, as well as their physical health (Pragnell and Neilson, 2010). On a practical level, overstretched or reduced services has meant that self-care, and treatments that the patient can engage with in their own home, have become increasingly important.

Wound-associated pain is often described as one of the worst aspects of living with a chronic wound (Park et al, 2008; Woo et al, 2018) and can lead to problems with mobility, sleep disorders and loss of employment. It is important for clinicians to help adequately manage pain and enable the patient to function normally in physical activities of daily living, such as bathing, dressing, eating and mobility.

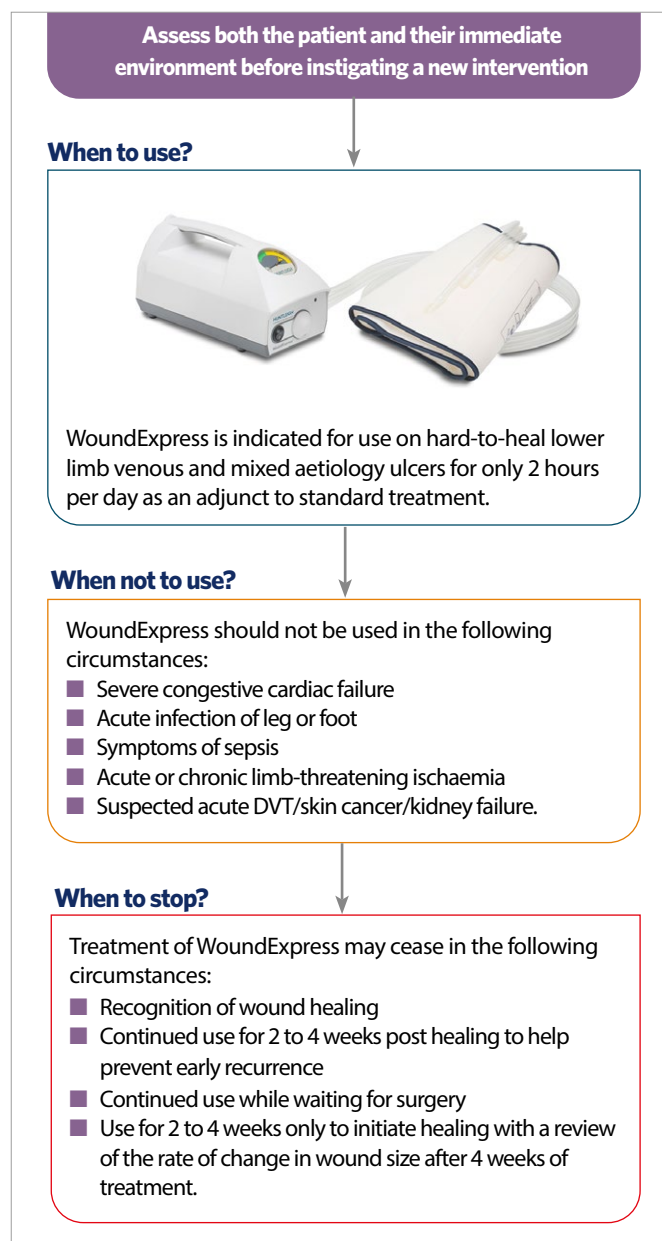


Figure 2. Pathway for use in practice (Young et al, 2021)

Equally as important as physical wellbeing, is mental wellbeing. Often when a patient has been living with a hard-to-heal wound, they can lose confidence and hope in their wound ever healing, and retreat from contact with others or hide the true extent of their problems (Wounds International, 2012).

If measures can be taken that allow the patient to feel involved in their own care and see progress towards healing, patients may be able to live without fear, anxiety, stress or other negative emotions relating to their wound.

Case study (courtesy of Alison Schofield, Tissue Viability Clinical Nurse Specialist and Community Services Tissue Viability Lead, Northern Lincolnshire and Goole NHS Foundation Trust; and Elizabeth Willerton, Sister, Chronic Wound Clinic, Ironstone Centre, Scunthorpe)

This case study provides a practical example where WoundExpress has been used in a Chronic Wound Clinic at the Ironstone Centre, Scunthorpe, to help identify a potential cost saving from renting and adding WoundExpress to a patient treatment plan. The goal here was simple – it wasn't just about healing the wound but about symptom management and for the patient to take an active role in their own care.

A 73-year-old female presented at the wound clinic with an ulcer on her inner right ankle, measuring 9.2cm [Figure 3]. The wound had been present for 5 years – the ulcer would heal and then breakdown intermittently. This patient suffers from rheumatoid arthritis and has an extensive history of mixed aetiology ulcers for over 25 years.

WoundExpress was initiated as an adjunct to standard treatment to stimulate wound healing in this non-healing wound; the secondary goal was to manage symptoms and for the patient to take an active role in their own care. The treatment was used for only 2 hours per day – WoundExpress fitted in well with her lifestyle and daily activities, and supported self-care.

The wound bed comprised of thick tenacious slough, which initially required sharp debridement by a podiatrist on two occasions. Treatment included a foam dressing and compression wraps, which were changed twice a week in the clinic. Pain associated with the wound was rated a 7 out of 10 on the visual analogue scale (VAS). This reduced to 2 out of 10 on the VAS after 1 week of treatment. By week 3, no pain was reported by the patient and treatment continued, along with weekly debridement using a monofilament pad [Figure 4].



Figure 3. Initial presentation



Figure 4. 3 weeks of treatment

By week 10, dressing changes were reduced from twice a week to weekly. After 14 weeks of WoundExpress therapy, improved tissue perfusion was identified and a 50% reduction in wound area – the wound measured 2.56cm. Figure 5 shows the wound at the end of this study.



Figure 5. End of study (16 weeks of treatment)

It is recognised that an improvement in quality of life through appropriate treatment can contribute to good levels of patient concordance and the potential for better healing outcomes (Wounds International, 2016). It is also vital for patients who feel they have lost their independence or control, to have the chance to understand their condition and contribute to decisions about their treatment, where appropriate.

Patient involvement allows for shared decision-making between clinician and patient, which focuses on effective communication and setting realistic and achievable goals. This approach can have a significant effect, with patients taking an active role in decisions about their treatment and a responsibility in managing their wound at home, often having a hugely beneficial impact on patient quality of life (Wounds International, 2016). For clinicians, it provides an opportunity to work efficiently despite significant pressures on the health service and invest time in developing partnerships with patients.

In practice, patient involvement is dependent on the:

- Clinician's attitude towards patients in their care
- Patient's expectations (often these are variable)

- Availability of systems and resources to facilitate the move to greater patient involvement
- Need for outcome measures that encompass patient involvement (Wounds International, 2016).

The primary driver in patient involvement should be getting the treatment right for the individual: ideally a treatment for use in the home, to reduce pain and improve outcomes, with the potential for more effective and efficient use of resources in the longer term (Wounds International, 2013).

Evidence in practice

Examples of cost savings achieved prior and during use of WoundExpress in the above case study, based on a 7-day period, are outlined in Figure 6. These results were measured based on nursing time, dressing costs and rental of the WoundExpress pump and garment, and highlighted a total saving of £113.70 per week, £492.71 per month and £5,912.50 per year.

As a result, the wound clinic are hopeful for the introduction of this advanced therapy as part of their clinical tool kit for treating

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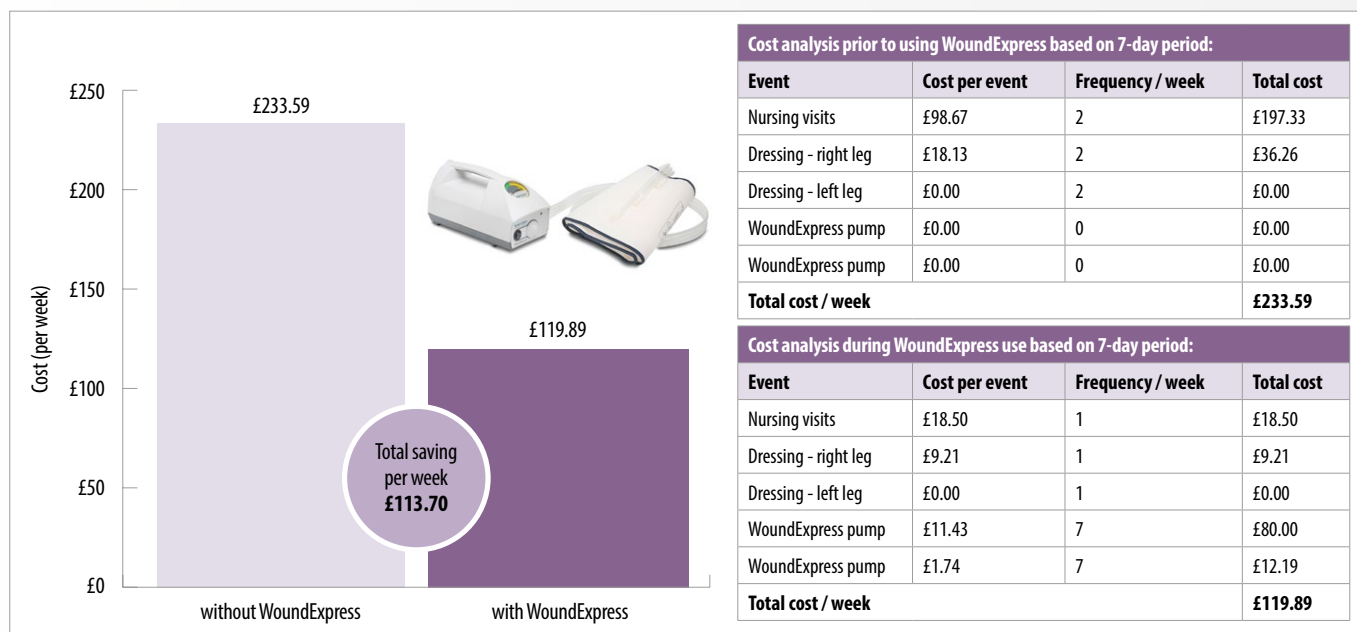


Figure 6. Examples of cost savings achieved prior and during use of WoundExpress

patients with lower limb wounds. The patient and the staff found WoundExpress safe and easy to use, with positive clinical benefits identified including reductions in wound size and, importantly, in reducing wound pain.

If used appropriately, the introduction of advanced therapies in hard-to-heal wounds, such as WoundExpress, can result in long-term cost savings. WoundExpress is a lightweight, portable and quiet pump and patient-administered, which allows the 2-hour therapy cycle to be delivered, whilst minimising disruption to lifestyle and daily activities. This can help to reduce the need for nursing visits, saving clinician time and increased healing rates, as patients become more empowered in the self-management of their condition.

WoundExpress is an accessible, comfortable and effective treatment that is easily applied, fits with different lifestyles to reduce pain and improve outcomes for hard-to-heal wounds. The device offers

Key points and tips for use in practice

- Lightweight, portable and quiet
- Recommended therapy time is 2 continuous hours per day
- A diary is included with the pump for the patient to fill in as a means of monitoring concordance with the therapy
- During therapy, the patient should lie down or sit with their leg elevated
- The garment should remain snugly in place and not move from around the thigh of the limb affected by the chronic wound (reposition if necessary)
- The WoundExpress Therapy Device has a preset pressure of 60mmHg.

significant benefits to both the patient and the clinician; it has the potential to improve patient outcomes and wellbeing and enhance healing (Naik et al, 2019; Ivins et al, 2020). WoundExpress represents a promising intervention to add to the tools available to apply compression to the leg and help counteract the effects of gravity on leg blood flow (Young et al, 2021).

References

- Guest JF, Vowden K, Vowden P (2017) The health economic burden that acute and chronic wounds impose on an average clinical commissioning group/ health board in the UK. *J Wound Care* 26(6): 292–303
- Guest JF, Fuller GW, Vowden P (2020) Cohort study evaluating the burden of wounds to the UK's National Health Service in 2017/2018: update from 2012/2013. *BMJ Open* 10(12): e045253
- Ivins N, Kettley K, Staines K, Turner-Dobbin H (2020) WoundExpress: an advanced therapy for hard-to-heal venous leg ulcers. *Wounds UK* 16(2): 80–8
- Kettley K, Turner-Dobbin H (2020) Case series evaluating thigh administered Intermittent Pneumatic Compression (IPC) as an adjunct therapy for patients with hard to heal mixed/venous leg ulcers. Available at: <https://bit.ly/32tF3Eo> (accessed 17.08.2020)
- Morris RJ, Ridgeway BS, Woodcock JP (2019) The use of intermittent pneumatic compression of the thigh to affect arterial and venous blood flow proximal to a chronic wound site. Available at: <https://bit.ly/3x6mB2L> (accessed 17.08.2020)
- Naik G, Ivins NM, Harding KG (2019) A prospective pilot study of thigh-administered intermittent pneumatic compression in the management of hard-to-heal lower limb venous and mixed aetiology ulcers. *Int Wound J* 16(4): 940–45
- Park SH, Ferreira KASL, Santos VLCG (2008) Understanding pain and quality of life for patients with chronic venous ulcers. *Wounds* 20(11): 309–20
- Pragnell J, Neilson J (2010) The social and psychological impact of hard-to-heal wounds. *Br J Nurs* 19(19): 1248–52
- Troxler M, Vowden K, Vowden P (2006) Integrating adjunctive therapy into practice: the importance of recognising 'hard-to-heal' wounds. *Worldwide Wounds*. Available at: <http://www.worldwidewounds.com/2006/december/Troxler/Integrating-Adjunctive-Therapy-Into-Practice.html> (accessed 13.08.2020)
- Vowden P (2011) *Hard-to-heal wounds Made Easy*. Wounds International. Available at: <http://www.woundsinternational.com> (accessed 26.08.2020)
- Woo K, Conceição VL, Alam T (2018) Optimising quality of life for people with non-healing wounds. *Wounds International* 9(3): 6–14
- Wounds International (2012) Optimising wellbeing in people living with a wound. An expert working group review. London: Wounds International. Available at: www.woundsinternational.com (accessed 26.08.2020)
- Wounds International (2013) *Making the case for cost-effective wound management. An international consensus*. Wounds International. Available at: www.woundsinternational.com (accessed 26.08.2020)
- Wounds International (2016) *International Best Practice Statement: Optimising patient involvement in wound management*. London: Wounds International. Available at: www.woundsinternational.com (accessed 26.08.2020)
- Young T, Chadwick P, Fletcher J et al (2021) The benefits of intermittent pneumatic compression and how to use WoundExpress™ in Practice. London: Wounds UK. Available at: www.wounds-uk.com (accessed 18.02.2021)