WoundExpress™

Advanced Wound Therapy Device

HUNTLEIGH

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A new concept in woundcare therapy

The NHS manages an estimated 278,000 venous leg ulcers (VLUs) every year of which 47% (130 660) do not heal within 12 months, costing over £1.7bn per year. Static compression represents only 6% of the annual cost for managing VLUs but it is a main driver of district nurse visits. Community nurse visits are the main cost for the NHS when treating VLUs accounting for more than 78% of the total managing cost. (Guest et al, 2018)

To help reduce this cost burden, Huntleigh Healthcare has developed a new concept in wound healing. This unique device, Wound Express, uses Intermittent Pneumatic Compression (IPC) to increase blood flow around the leg ulcer.

Wound Express has been shown to significantly reduce the size of venous and mixed aetiology 'hard to heal' wounds in some patients and heal other wounds completely in just 8 weeks of use. (Naik et al, 2019).

The garment is easily applied by the patient on the thigh of the ulcerated limb, away from the wound site, and is used for only 2 hours per day as an adjunct to standard treatment.

In a recent study by Naik et al, 2019, pain scores decreased in 83% of the patients receiving treatment for 8 weeks. One patient reported a decrease in opioid medication he was taking for wound pain.

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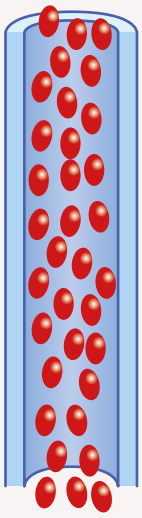
WoundExpress™

Initial state:

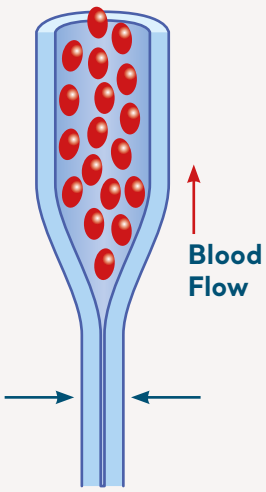
Before compression therapy



Impaired venous blood flow allowing accumulation of carbon dioxide and toxic, metabolic waste products in the capillary vessels. This in turn impedes arterial oxygen and nutrition exchange within the tissue capillary vessels.

Stage 1:

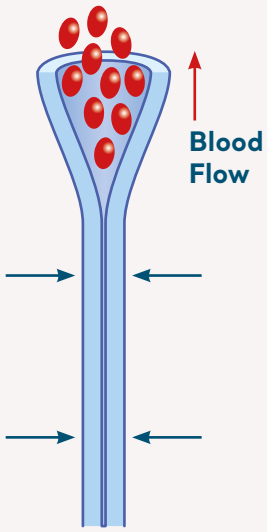
Distal chamber inflated



Venous blood flow is enhanced by first inflating the distal chamber of the thigh cuff which pushes a volume of blood proximally.

Stage 2:

Distal & centre chamber inflated



This is followed by the middle chamber being compressed and pushing the blood further proximally.

How does Wound Express work?

The Wound Express system has a specially designed three chamber garment that attaches to the pump which has a unique, patented timing cycle that augments venous and arterial blood flow.

The garment is inflated to 60mmHg in a peristaltic action which draws the venous blood from the wound site. By inflating the garment in this special sequence, venous blood flow is increased, even in the presence of venous insufficiency, since reflux is prevented.

This effect reduces the venous and interstitial pressure and increases the pressure gradient across the arterial-venous pathway, distal to the garment.

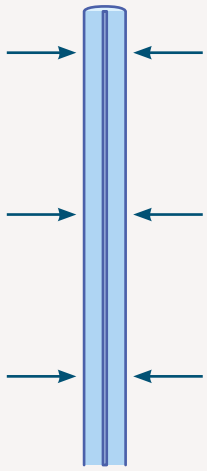
The result is the removal of high levels of accumulated carbon dioxide and metabolic waste products from the wound site.

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 performance.

Morris et al, 2019 has demonstrated that applying sequential compression to the thigh alone can produce positive haemodynamic effects in the calves of patients with chronic wounds. Arterial blood flow velocity increased in the dorsalis pedis artery after periods of compression. Venous blood flow velocity increased when the lower chambers of the cuff deflated.

Stage 3:

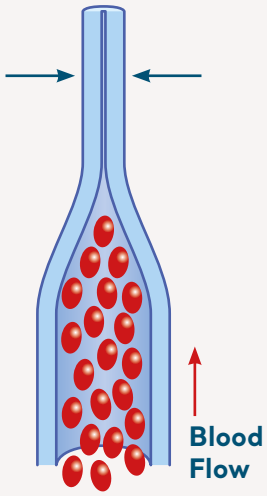
All chambers inflated



The proximal chamber is then inflated pushing the venous blood further proximally.

Stage 4:

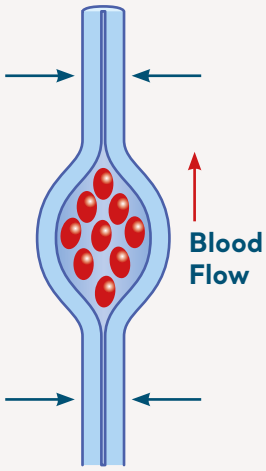
Distal and centre chambers deflated



The proximally displaced blood is now supported by the proximal chamber of the thigh cuff. The two lower chambers are now deflated together, drawing more blood from the lower limb.

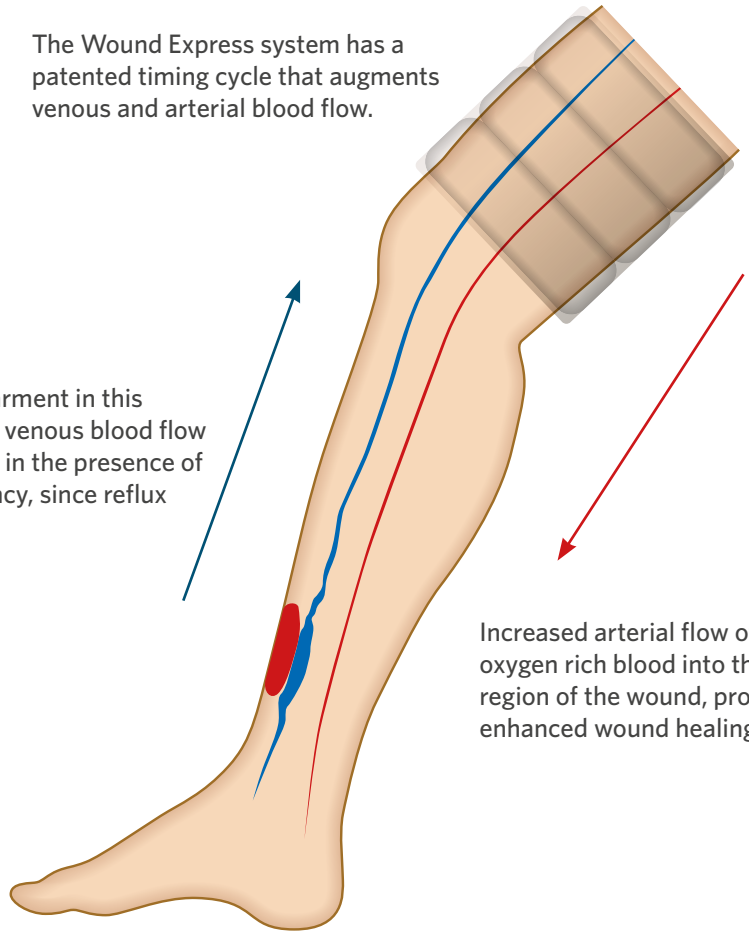
Stage 5:

Centre chamber deflated and the cycle repeats from Stage 1



The final stage is to inflate the distal chamber followed within 2 seconds by deflating the proximal chamber.

The Wound Express system has a patented timing cycle that augments venous and arterial blood flow.



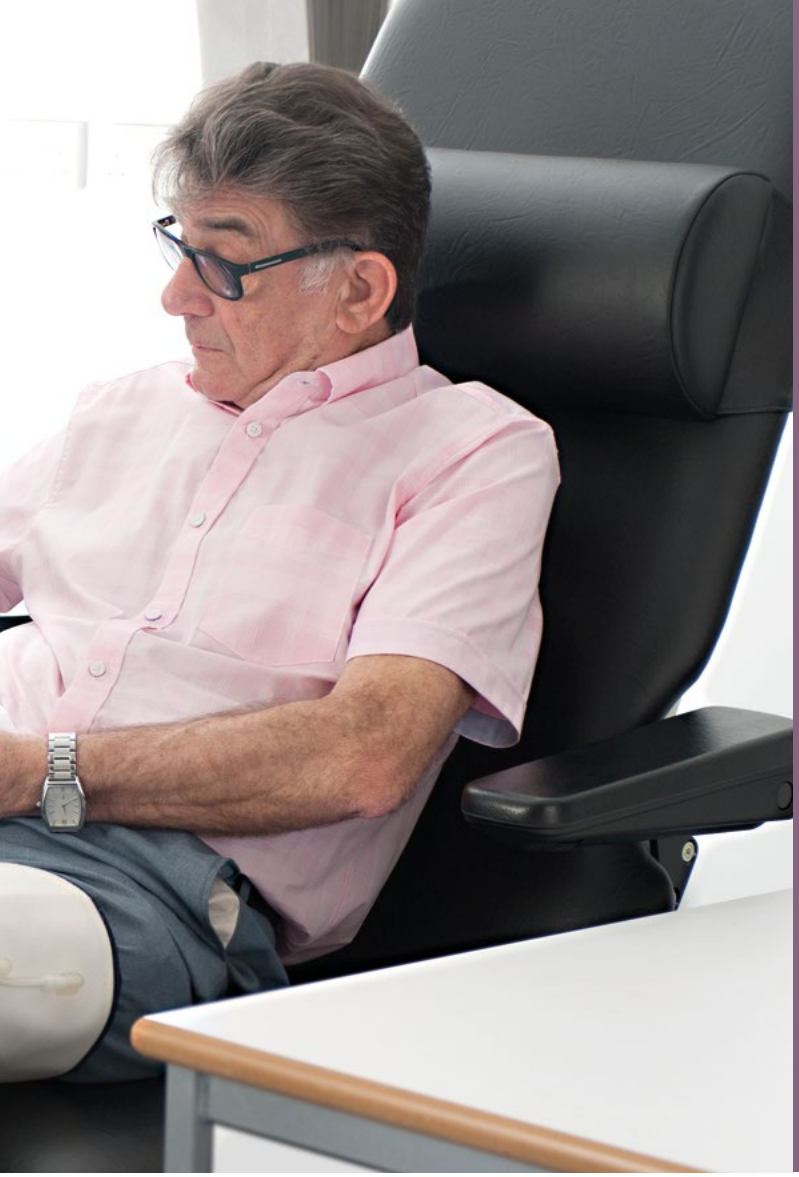
By inflating the garment in this special sequence, venous blood flow is increased, even in the presence of venous insufficiency, since reflux is prevented.

Increased arterial flow of nutrient and oxygen rich blood into the affected region of the wound, promoting enhanced wound healing performance.

Used in the clinic, prescribed for the home

The Wound Express comprises a single patient use garment and a pump. Treatment has been shown to be effective from as little as 8 weeks in significantly reducing the size of a chronic leg ulcer.

Unlike standard treatment, the Wound Express universal garment has been designed to be placed on the thigh and not on the wound site. The combination of location and gentle action provides a comfortable therapy and 83% of patients have reported a significant reduction in pain (Naik et al, 2019).



"Wound Express is an innovative and exciting new approach for treating patients with lower limb problems. It has the potential to be a real game changer in managing a difficult aspect of clinical practice."

Prof K Harding

Optimum therapy is achieved by having the affected leg elevated and commences with a simple push of a button.

In addition to being used in the clinic setting by healthcare professionals, the Wound Express can also be prescribed for use at home after appropriate guidance is provided to the patient.

Ideal for use in the home

The Wound Express is ideal for use in the home and the single patient use garment can be easily fitted by the patient to the thigh of the ulcerated leg.

The lightweight, portable and quiet pump allows the two hour therapy cycle to be delivered whilst minimising disruption to lifestyle and daily activities.

"The garment is easy to put on and the therapy is gentle and pleasant"

Again, when used in the home, optimum therapy is achieved by having the affected leg elevated and commences with a simple push of a button.

The garment is easy to apply and can be used over lightweight clothing.

A diary is provided with each pump for the patient to complete daily which will assist the healthcare professional to ensure concordance to the therapy and assess progress.

Clinical evidence

The recent clinical study by Naik et al, 2019 has demonstrated that Wound Express is highly effective in reducing the size of 'hard to heal' ulcers. In the 21 patient study, the average reduction in wound size was 44% with only 8 weeks of therapy. Most of these wounds were present for more than one year. 48% were of mixed aetiology and 52% were VLUs.

The average VAS pain score also reduced from 34 to 15 with 5% of patients reducing their level of analgesics.

Examples of patients using the Wound Express are shown below:

Case Study 1

Before

- 67 year old man
- 1 year duration of venous ulcer
- Painful leg
- Ulcer size 2.5cm²

After 8 weeks of therapy

- Ulcer healed

Case Study 2

Before

- 63 year old man
- 4 year duration of venous ulcer
- Ulcer size 3.4cm²
- Current high compression > 8 weeks

After 8 weeks of therapy

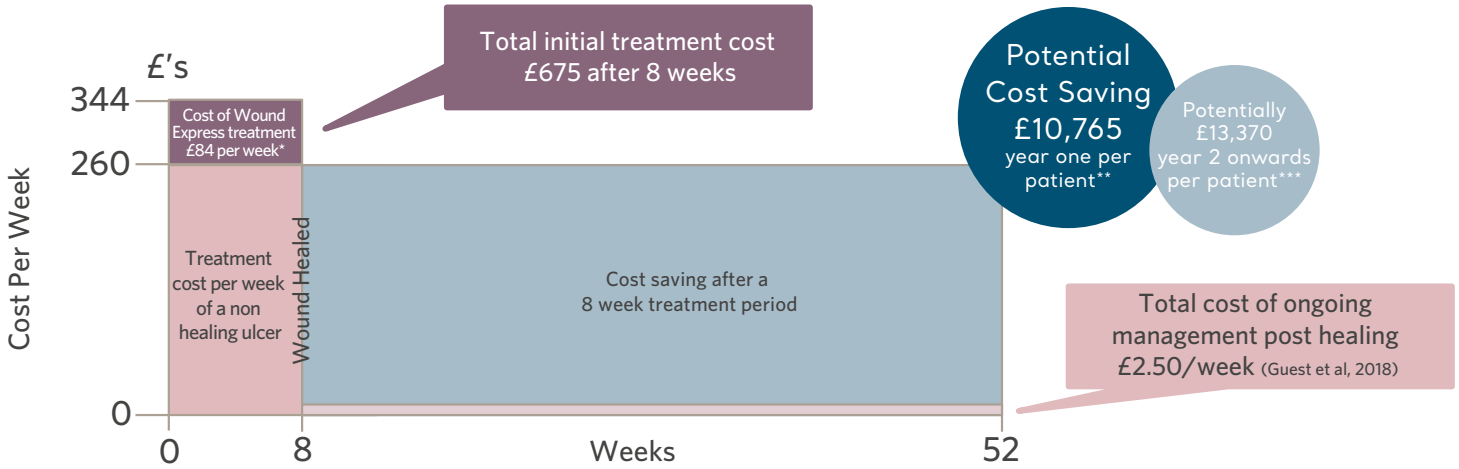
- Ulcer size decreased to 1.3cm²
- Pain decreased
- Reduction in oedema

Health economics

The Financial Benefits of Wound Express

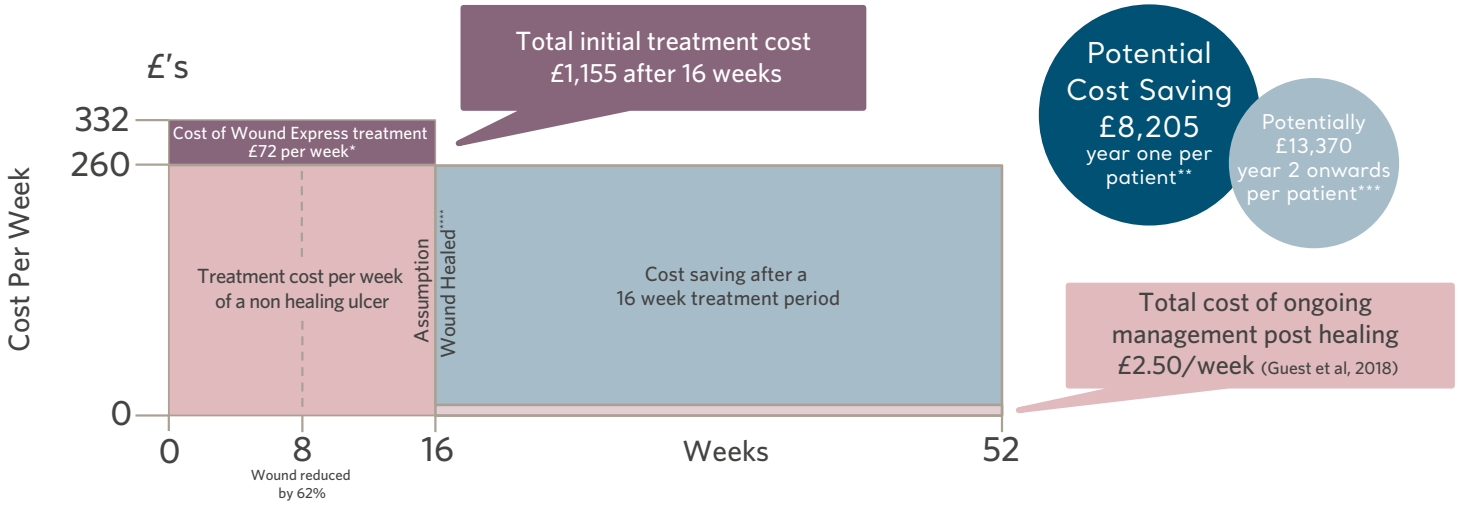
Existing annual cost of a non-healing ulcer

Case Study 1; Wound Express treatment used for 8 weeks



*Wound Express costs (£84 per week) based on 8 week rental (£60 per week) and 1 garment at £195
** Cost saving of £10,765 calculated from £11,440 (£260 x 44 weeks) - £675 based on healing after 8 weeks.
*** Year 2 onwards savings calculated from £13,500 - £130 (£2.50 per week ongoing management costs)

Case Study 2; Wound Express treatment used for 16 weeks



*Wound express costs (£72 per week) based on 16 week rental (£60 per week) and 1 garment at £195
** Cost saving of £8,205 calculated from £9,360 (£260 x 36 weeks) - £1,155, based on assumed healing after 16 weeks.
*** Year 2 onwards savings calculated from £13,500 - £130 (£2.50 per week ongoing management costs)
**** Assumption based on the linear extrapolation of the 8 week healing rate.

Technical

Technical Specifications	
Model	WoundExpress™ Therapy Device
Part Numbers	WE100P
Pressure Range	60 mmHg ± 5mmHg
Supply Voltage	230 V AC
Supply Frequency	50Hz
Pump Fuse Rating	F500 mAH 250 V
Power Input	14 VA
Case Material	Fire Retardant ABS Plastic
Size	270 x 130 x 150 mm (10.6 x 5.1 x 5.9")
Weight	2.5 kg (5.5 lb)
Standards Compliance:	IEC 60601-1:2005 + A1:2012, IEC 60601-1-2: 2014, IEC 60601-1-11:20105, IEC62366:2015, BS EN 980:2008, ISO 14971:2007, ISO 10993-1:2018, IEC 62366-1:2015.

References:

Guest JF, Fuller GW, Vowden P. Venous leg ulcer management in clinical practice in the UK: costs and outcomes.
Int Wound J 2018; 15:29–37

Naik G, Ivins NM, Harding KG. 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. 2019;1–6.

Morris RJ, Ridgeway BS, Woodcock JP, The use of intermittent pneumatic compression of the thigh to affect arterial and venous blood flow proximal to a chronic wound site.
In press, 2019.

As a proud member of the Arjo family, we have been committed to supporting healthcare professionals in improving outcomes and enhancing patient wellbeing since 1979. We do this through our proven solutions for Vascular Assessment & Treatment and Fetal & Patient Monitoring. With innovation and customer satisfaction as our guiding principles, we strive for clinical excellence and improved performance, for life.

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Registered No: 942245 England & Wales. Registered Office:
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AW:: 1001043-2

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