

# Reducing variation in venous leg ulcer management: a focus on compression

## KEY WORDS

- ▶ Venous leg ulcer
- ▶ Compression
- ▶ Reducing variation
- ▶ UrgoKTwo

There were an estimated 3.8 million patients with a wound managed by the NHS in 2017/2018 at a cost of £8.3 billion (Guest et al, 2017). The cost to the patient and their quality of life is immense. Evidence has shown that there are wide variations in the care of people with chronic wounds, with many patients not receiving the correct assessment or a diagnosis on which to base decisions about their care (Guest et al, 2015; Gray et al, 2018). Delivering efficient and effective care to patients with a venous leg ulcer (VLU) requires collaborative working across specialist and community settings to tackle inequalities in care, improve outcomes, enhance productivity, and provide value for money.

There are many examples in the literature of failure to correctly assess patients and to implement evidence-based best practice in leg ulcer care, often due to lack of resources and constraints on time (Guest et al, 2017; Dowsett and Taylor, 2018). Without a clear diagnosis, there is a very real risk of an effective care pathway, such as compression therapy, not being implemented. A cross-sectional survey of 3,179 patients with complex wounds in the community found that 40% of people with leg ulcers either had not received the recommended assessment of ankle brachial pressure index (ABPI), or it was unclear whether a recording had been taken. Furthermore, 31% who had a venous leg ulcer (VLU) were not receiving compression therapy (Gray et al, 2018). Without therapeutic levels of compression, patients with a VLU will not heal. It is estimated that healing rates for VLUs is 47% at 12 months (Guest et al, 2017).

## BEST PRACTICE RECOMMENDATIONS

The National Wound Care Strategy Programme (NWCSP, 2020) is seeking to improve the care of people with wounds and reduce unwarranted variation in the UK. The programme recommendations offer wound care services and community clinicians the opportunity to improve healing rates and thus reduce patient suffering and cost of inappropriate and ineffective treatments, as well as the amount of clinical time spent on wound care. In addition, the

restoration of Commissioning for Quality and Innovation (CQUIN) has been announced by the NHS Operating Plan 22/23 to include a CQUIN on the assessment, diagnosis, and treatment of lower leg wounds (NHS England, 2022). A minimum of 40mmHg should be commenced in line with best practice for patients with a leg wound with an adequate arterial supply (ABPI >0.8–1.3), and where no other condition that contraindicates compression therapy is suspected. In recent years, collaborative research has led to a growing consensus on what constitutes best practice for leg ulcer management, based on a higher quality of evidence. Compression therapy is recognised as the 'gold standard' for treating patients with VLUs (O'Meara et al, 2012). International and local guidelines recommend the use of multi-component bandages as a first-line treatment (Scottish Intercollegiate Guidelines Network, 2010; O'Meara et al, 2012; Harding et al, 2015).

Many community services provide leg ulcer care under a traditional model of nurse-led community leg ulcer clinics that are organised and run by specialists and have demonstrated good patient outcomes (Dowsett, 2011; Probst et al, 2014; European Wound Management Association, 2016). However, patients who are unable to attend specialist clinics may experience care that is less favourable, leading to inequalities in care delivery and outcomes. The NWCSP highlights

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the importance of specialist input and support in the management of patients with VLUs, but bridging the gap remains a challenge for many clinicians, with poor outcomes for patients who do not receive the ‘gold standard’ of care (i.e. therapeutic compression).

**QUALITY IMPROVEMENT**

Quality improvement (QI) methodology is a useful tool to bring about changes in practice and service delivery and offers a solution to reducing variation and inequalities in VLU management. There are good examples in the literature where use of QI methods improved outcomes for patients with lower limb wounds (Dowsett and Taylor, 2018; Irvin et al, 2018). This approach can also be utilised to support the implementation of the lower limb best practice recommendations from the NWCSP, ensuring patients with a VLU receive therapeutic levels of compression.

To address unwarranted variation in care and improve outcomes for housebound patients with VLUs, the tissue viability service undertook a QI project in collaboration with community nurses. The project aimed to reduce variation and inequalities in VLU care between patients who were housebound with VLUs and those attending the specialist leg ulcer clinics.

The model for improvement is a framework to drive continuous growth. It is essentially a method for structuring an improvement project that consists of two parts (Figure 1). The first part helps to define what we want to accomplish and what changes we should make to achieve these improvements. The second part is the Plan-Do-Study Act (PDSA) cycle, outlining the steps for testing the change ideas (Langley et al, 2009). The three fundamental questions from the first part include (Langley et al, 2009):

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What change can we make that will result in improvement?

The second part focuses on testing/implementing change ideas to help achieve the aim and to measure the outcomes to see if they are beneficial to improving care.

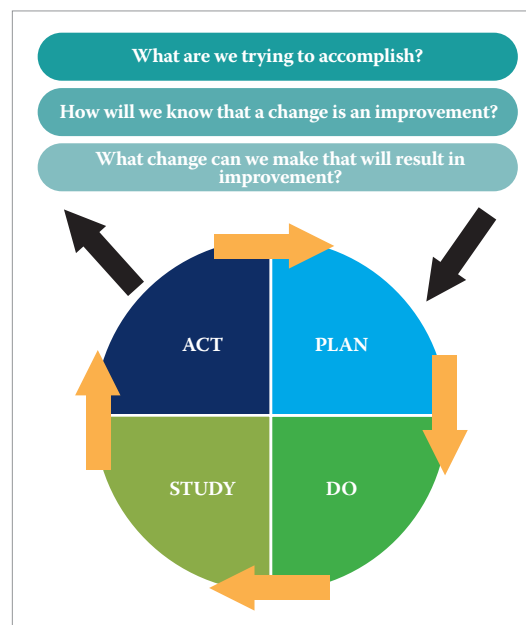


Figure 1. Model for improvement

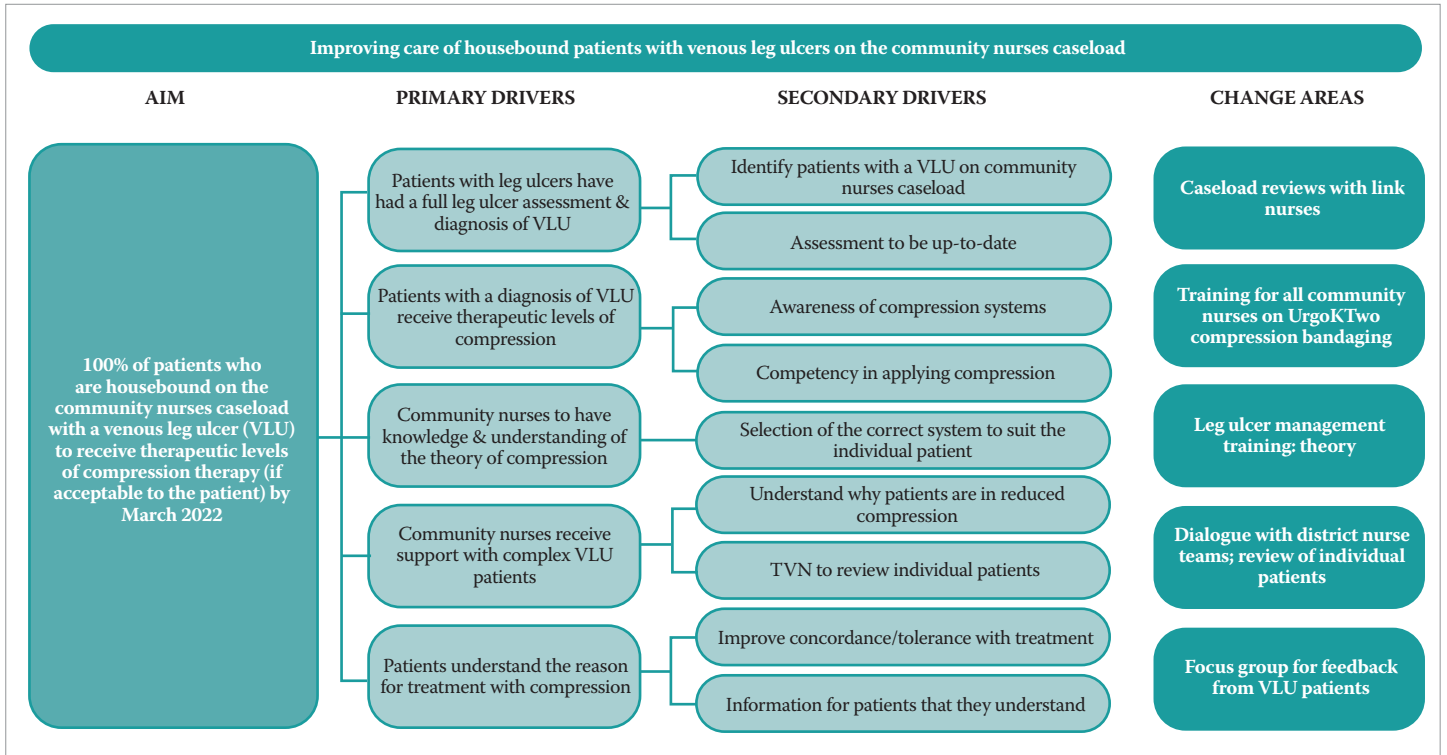
**VARIATION AND INEQUALITIES**

Evidence from patient referrals into the tissue viability service suggested that some patients with lower limb wounds did not have a diagnosis, and those that had a diagnosis of venous leg ulceration were not receiving evidence-based care in the form of compression therapy. Variations in care were observed, as well as inequalities between patients attending the leg ulcer clinics (specialist services) and patients cared for by community nursing teams in the home.

To address these unwarranted variations in clinical care and practice, a QI project commenced in July 2021. The aim of the project was for all housebound VLU patients on the community nurses caseload to receive therapeutic levels of compression (if acceptable to the patient) by March 2022. The primary and secondary drivers and associated change ideas were developed in collaboration with multiple stakeholders including representation from community nurses, patients and the tissue viability service, see Figure 2.

The community nurses, link nurses and tissue viability nurses (TVNs) identified some change ideas to deliver on the aim, including:

- ▶ TVNs undertaking caseload reviews to identify patients with VLUs and if they were in compression. If they were, then to identify if it was full therapeutic levels of compression



**Figure 2. Primary and secondary drivers and associated change ideas for improving care of housebound patients with VLUs on the community nurses caseload**

- » The clinical lead for the leg ulcer service to deliver education and training sessions to the community nurses on leg ulcer assessment and management including both virtual and face-to-face bandage workshops
- » To have UrgoKTwo compression bandage system introduced as the first-line compression system, as this system has pressure indicators that show the correct level of compression has been applied, making it safe, with less margin for error, and easier to use
- » To understand why some patients are not concordant/tolerant with therapeutic levels of compression through dialogue with patients.

**COMPRESSION**

A variety of compression systems are available to clinicians for the treatment of VLUs, but this alone can be overwhelming if they are expected to use multiple systems requiring different application techniques. Caseload reviews to collect baseline data showed that only 42% of patients with VLUs were receiving therapeutic levels of compression. Many patients were receiving sub-optimal reduced compression because clinicians felt they did not have the confidence or competence to apply full

therapeutic compression. Confusion existed when multi-layer (four-layer) bandages were in use, with some clinicians incorrectly believing that layer one and two provided compression. In addition, house-bound patients who were immobile were receiving compression with short-stretch bandages, which rely on movement for therapeutic effectiveness. The need to standardise the type of compression used and to provide education, training and support was highlighted as part of the patient reviews and feedback from the community nurses.

**TWO-LAYER BANDAGE WITH PRESSURE INDICATORS**

The UrgoKTwo compression bandage system was introduced following a review of the evidence for its use and local evaluation. It was found to be easy to apply, comfortable for the patients and promoted patient concordance/tolerance with compression therapy. The two-layer bandage with pressure indicators (UrgoKTwo) comprises two dynamic layers. The short-stretch layer combines viscose and polyester wadding with a polyamide and elastane knitted layer. This is the first layer that is applied in contact with the skin to spread the

pressure uniformly over the limb and allows for absorbency when needed. It provides 80% of the compressive pressure of the system. The second layer, a cohesive bandage, is made from acrylic, polyamide, elastane and natural latex or latex-free material. This layer provides the additional compression necessary to reach the required therapeutic pressure of 40mmHg at the ankle, graduating up the leg.

The system is designed to help clinicians achieve optimal levels of compression consistently — the oval pressure indicator becomes a circle when the correct bandage stretch is achieved and, by overlapping the bandage to the bottom of the pressure indicator, a consistent 50% or two-third overlap can be achieved (depending on kit size and ankle circumference). A review by Tai et al (2021) demonstrated that the two-layer compression bandage system with indicators provides continuous, consistent, and comfortable treatment that may be easier to apply with accurate pressure levels.

A number of leg ulcer management workshops were delivered to introduce the bandage system and to ensure community nurses developed confidence and competence in application. The feedback from staff was that they found it easy to apply and felt confident they were giving consistent and continuous therapeutic levels of compression based on the visual pressure indicators. These findings are similar to a study by Hanna et al (2008) where over 63% of the nurses felt the two-layer bandage system was very easy to apply in comparison to the four-layer system.

It was also considered to be quicker to apply by the clinic nurses, which reduced overall consultation time and freed up clinic time. The feedback from patients was that it was comfortable, allowed them to continue with wearing their own footwear and helped them to be concordant/tolerant with treatment. The two-layer system was successfully used on a wide variety of patients, both mobile and immobile, and with and without oedema present. These findings are consistent with previous reviews where the two-layer system was analysed for the outcomes of care, including wound healing, appropriate application, time-saving and better patient acceptance and adherence (Tai et al, 2021).

## IMPROVEMENT

To measure the impact of the QI project and introduction of the two-layer bandage system, follow-up caseload reviews were carried out five months after implementation of the change ideas. A total of 54 cases of patients with VLUs on the community nurses caseload were reviewed by the specialist nurses in collaboration with the community nurses — 83% of patients were found to be receiving therapeutic levels of compression therapy, an increase from 42% in the baseline reviews. Additionally, the number of patients referred to the tissue viability service with venous leg ulceration and sub-optimal care reduced.

The case studies featured in this article (*Case 1 and 2*) demonstrate successful use of the UργοKTwo compression system achieving healing at 6 weeks and 8 weeks of treatment.

## CONCLUSION

Delivering efficient and effective care to patients with a VLU requires collaborative working across specialist and community settings to tackle inequalities in care, improve outcomes, enhance productivity, and provide value for money. Specialist services need to look at their current models of service delivery, benchmark them against best practice recommendations outlined in the NWCSP and make the changes necessary to improve patient outcomes.

The project aimed to reduce variation and inequalities in the management of patients with VLUs receiving care in specialist clinics, and in their homes using QI methodology. QI methodology provided a structured approach that facilitated implementation and testing of change ideas, leading to service improvements and improved patient outcomes. By collecting baseline data, the team were able to show significant improvements over time in the number of patients who were receiving therapeutic levels of compression (42% versus 83%).

The project was welcomed and supported by the community nursing teams who have increasing demands on their time and are expected to deliver a high-quality service. Introducing the UργοKTwo compression bandage system has been a critical factor for the success of the project, helping to address the lack of confidence and competence in the application of compression therapy as

Case 1. Patient 1

Mr B

- ▶▶ Referred to the leg ulcer clinic (29.07.22) following discharge from hospital for treatment of cellulitis
- ▶▶ History of pre-diabetes, DVT, cellulitis and leg oedema
- ▶▶ Extensive ulceration of the leg
- ▶▶ Wound pain score of 8/10 (self-reported)
- ▶▶ ABPI: 1.0 on the right and left leg
- ▶▶ Ulcer measured 18cm x 25cm
- ▶▶ Wound consisted of 50% slough
- ▶▶ Exudate levels were high



- ▶▶ UrgoKTwo compression bandage system applied
- ▶▶ Reduction in oedema
- ▶▶ Reduction in exudate levels
- ▶▶ Wound pain score of 4/10 (self-reported) in 1 week



- ▶▶ Healed after 6 weeks (13.09.22)

**Patient feedback:** Compression reduced the pain and discomfort in his leg. The ulcers healed faster than he was expecting.



Case 2. Patient 2

Mrs R

- ▶▶ Referred to the leg ulcer clinic by GP for assessment (17.06.22)
- ▶▶ History of arthritis, hypertension and previous leg ulceration
- ▶▶ Wound pain score of 9/10
- ▶▶ ABPI: 1.0 on the right and left leg
- ▶▶ Ulcer measured 2cm x 2cm
- ▶▶ Wound consisted of 100% slough
- ▶▶ Malodour was present
- ▶▶ Diagnosis: VLU with infection



- ▶▶ UrgoKTwo compression bandage system applied
- ▶▶ Silver dressing used as a primary dressing to treat infection
- ▶▶ Infection resolved in 2 weeks
- ▶▶ Wound pain score of 2/10



- ▶▶ Healed after 8 weeks (16.08.22)

**Patient feedback:** Compression was comfortable to wear. She was able to get her shoe on. Very pleased with outcome.



highlighted by the community nursing teams.

Sustaining change is one of the key challenges going forward as demands increase and the community nursing workforce changes. Implementing change and sustaining improvement will only continue when services work collaboratively in the best interest of patients and constantly seek out and use opportunities to improve outcomes.

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