

Impact of specialist intervention on VLU healing rates in the community

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Venous leg ulcers (VLUs) are known to place a significant burden on healthcare services, with unhealed ulcers costing 135% more than their healed counterparts over the course of a year (Guest et al, 2016). This is a consequence of unwarranted variation in care attributed to difficulties experienced by non-specialist clinicians caring for VLU in the community. VLU healing rates are relatively unknown, and national targets for healing do not yet exist, but there is evidence in the literature that specialist VLU services improve healing rates (Moffatt et al, 1992). Healogics is a specialist third party provider of VLU and lymphoedema services to the NHS, that takes a systematic approach to the assessment and management of these co-existing conditions. This paper presents the healing rates of 1015 people with VLU treated by Healogics for the full 65-month duration of an any qualified provider (AQP) contract. Healing rates of 86.14% were obtained in an average of 117 days in line with the published healing rates from other specialist leg ulcer services (Moffatt et al, 1992; Edwards et al, 2005). The healing rates reported in this paper demonstrate that a consistent, specialist approach to VLU management that is underpinned by best practice and national guidelines can help to achieve timely healing in the majority of patients, and can identify more complex patients for whom healing is not possible, enabling them to be placed on a maintenance pathway. The authors suggest that grading of VLUs according to complexity and data collection and analysis of healing rates could help to improve healing outcomes on a national level.

KEYWORDS:

- Venous leg ulcers
- Specialist service delivery
- Healing rates
- Treatment pathways

It is recognised that venous leg ulcers (VLUs) present an increasing challenge to health services in the UK, but despite this, wound healing rates remain infrequently reported

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and relatively unknown (Guest et al, 2015; 2016; Atkin et al, 2019). The most recent study of VLU prevalence estimated that they affect one in every 170 adults in the UK (Guest et al, 2015). Guest et al (2016) also determined that over the course of a study year, 47% of people with VLU were healed versus 53% who remained unhealed. Non-healing was attributed in part to difficulties encountered by non-specialist clinicians in the community setting, such as failure to differentially diagnose leg ulcers and carry out Doppler ultrasound

as part of assessment, despite the existence of best practice guidelines which recommend this (Royal College of Nursing [RCN], 1998; Scottish Intercollegiate Guidelines Network [SIGN], 2010). Such disparity in approach to VLU management can lead to unwarranted variation in care which can result in unnecessarily prolonged healing rates.

NHS England's paper *NHS Right Care Scenario: The Variation Between Sub-optimal and Optimal Pathways* (2017) highlighted the negative impact upon patients when care is not delivered in line with evidence-based best practice, but that good care delivery can result in better clinical outcomes, a better patient experience and optimal use of resources (NHS England, 2017).

The National Wound Care Strategy Programme (Adderley, 2019) is working to develop recommendations for the management of patients with lower limb wounds. Such a strategy could assist in the improvement of standards by reducing variations in treatment nationally. Currently, however, there is no national registry or data set that facilitates the monitoring of VLU healing rates, unlike in other fields of care delivery, such as cancer (White et al, 2017). Without recognition of acceptable healing timeframes for VLUs, patients can have ulcers for years, at great cost to healthcare system and more significantly, to the patient who lives with a chronic, debilitating condition (Finlayson et al, 2017). The personal cost of living with a VLU for patients and their carers is high, with a significant impact upon quality of

life and psychological wellbeing that is often overlooked and under-estimated by clinicians (Green et al, 2014).

The annual cost of managing VLU is an estimated £1.94 billion with an unhealed wound costing 135% more than a healed wound annually (Guest et al, 2016). With an increasing elderly population, the prevalence of VLUs and the costs associated with their management are set to increase exponentially over the coming years (Guest et al, 2016). Clearly, steps are needed to reduce the number of people with VLU, and where present, manage them efficiently so healing is achieved as quickly as possible in order to minimise the costs and the negative impact on patient quality of life.

Guest et al (2015) stated that wound management is a specialised area of care, and as such, should be delivered by clinicians with specialist training. Currently, the majority of care for VLU is delivered in a community setting by generalist practitioners, despite evidence existing that specialist intervention is of benefit in improving healing rates (Moffatt et al, 1992). In a landmark paper, Moffatt et al (1992) reported outcomes of 67% healing at 12 weeks, and 81% at 24 weeks when VLU patients underwent specialist intervention, compared with healing rates of 22% at 12 weeks beforehand.

This article will present an overview of the specialist service provided by Healogics, a third-party provider of wound and lymphoedema services to the NHS, and report on the healing rates obtained for all patients with a diagnosed VLU in the period November 2013 to March 2019 (n=1015); the full duration an Any Qualified Provider (AQP) contract.

SERVICE DELIVERY

Healogics is a third-party provider of NHS wound and lymphoedema specialist services that held an

AQP contract across multiple sites in the South East of England from 2013–19. The service was commissioned by the local Clinical Commissioning Group (CCG) and enabled GPs and nurses in the CCG to make direct referrals to the service if a patient had a VLU of more than four weeks' duration.

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Location

The specialist service operated from six different geographical locations in the Crawley, Horsham and Mid-Sussex CCG area utilising a hub and spoke service delivery model. A hub wound healing centre was sited in Horsham, providing three clinical rooms, administration space and storage. The nurse consultant and administration team were based in the hub, providing clinical supervision and administrative support for all clinicians operating within the spoke sites, each of which consisted of two treatment rooms.

Staffing

The clinical team consisted of a nurse consultant and seven band 6 specialist tissue viability nurses (TVNs), supported by three healthcare support workers. Due to the isolation of the sites, the TVNs needed to make expert clinical judgements regarding the patients in their care. Therefore, it was considered essential to employ nurses at a specialist grade and to provide them with ongoing clinical support and supervision. Each member of staff was inducted via a four-day course and their competencies tested annually. Many of the nurses were trained

as hybrid tissue viability and lymphoedema practitioners.

ASSESSMENT AND MANAGEMENT

On referral to the service, each new patient underwent a comprehensive, holistic nine-step assessment that considered all medical, physical and psychological elements of the patient's condition, aiming to identify underlying aetiology and any factors that may delay healing. During the assessment phase, the nursing staff considered the best method of wound debridement, dressing, and compression for the individual patient to meet identified treatment objectives, e.g. oedema reduction and exudate control.

Debridement

All staff were trained to perform curettage debridement of the wound bed to remove dead tissue, debris and potential biofilm. Staff were formally trained either attending the Birmingham City University debridement skills course, or had previously undertaken debridement training before joining Healogics. All staff had their competency in debridement verified via a qualified supervisor and could receive guidance from more experienced colleagues if required. Patients provided written consent to debridement, with the exact method, e.g. with or without EMLA cream, chosen by the nurse specialist, based upon individual patient requirements.

Debate exists surrounding the evidence base for the use of debridement in VLUs. Wilcox et al (2013) reviewed outcomes in 312,744 cases via a retrospective analysis and found a relationship between faster healing and frequency of debridement. In the study, 26% of the wounds were VLUs, indicating that there may be a clinical benefit of debridement in this wound type. A systematic review by Gethin et al (2015) concluded that while the literature points towards

debridement being of recognised benefit in wound healing, there was a scarcity of high-quality evidence to support its use in VLU management. More recently, Hall and Adderley (2020) reviewed the literature and confirmed the findings of Gethin et al (2015) that there was no robust evidence to support debridement of VLU and that autolytic debridement could be achieved using effective compression, mitigating the need for active debridement.

However, the papers by Gethin et al (2015) and Hall and Adderley (2020) post-date the AQP contract reported upon here and highlight the disparity that sometimes exists between published evidence and clinical opinion. It was the authors' belief at the time based upon clinical experience and the findings of Wilcox et al (2013), that debridement performed primarily by curettage would make up a core part of their treatment of patients with VLU.

Wound dressings

Wound dressings were selected according to individual need from the local CCG wound formulary with the focus on non-adherent and antimicrobial dressings, if clinically indicated. Staff training provides guidance on dressing selection from the local formulary. A key message is that compression and debridement are more of an influence on wound healing than dressing choice, except where infection is present.

Compression

Appropriate compression was applied following the findings of assessment. As VLUs often co-exist with lymphoedema and chronic oedema, interventions which address swelling are used where needed. The lymphatic system is central to fluid drainage and tissue fluid balance (Mortimer and Rockson, 2014). However, in patients with oedema, protein-rich fluid accumulates over time in the tissues leading to extensive fibrosis, which then makes it difficult to heal VLUs.

Table 1: Specialist adaptations of compression therapy for patients with VLU and lymphoedema

Cause	Additional information
	<ul style="list-style-type: none"> ▶ Creative foam applications such as chip pads or custom-cut, flat foam pieces to maximise the effect of compression bandages by distributing consistent pressure over a greater surface area within the bandage structure ▶ Kinesiotape bandage techniques to manage areas of densely fibrotic tissue ▶ Inelastic compression bandages applied in a figure-of-eight application, rather than a spiral for people with late-stage lymphoedema ▶ High-length application of short-stretch compression bandages to effectively manage oedema to the knee and above, including the use of knee and thigh wraps rather than bandage application ▶ Bandaging, hosiery and/or kinesiotape to manage foot and/or toe oedema (Stanton, 2020).

This is particularly the case for VLUs around the medial and lateral malleolus, where normal compression techniques can fail to reduce fibrosis, preventing the oxygenation and nutrient exchange within the tissues that is needed for healing to occur. To minimise fibrotic changes, interventions that facilitate lymphatic drainage are incorporated as part of management, where needed (Bjork, 2018). The use of stiffer levels of compression, exercise, manual and simple lymphatic drainage techniques and the introduction of adaptive foams and fibrotic tissue softeners are all utilised where indicated (*Table 1*)

All staff are trained in the methods outlined in *Table 1*, supervised in their application and competency tested to ensure consistent standards in all compression methods used across the authors' sites. Staff attended internal compression training courses and external lymphoedema courses, where needed.

Patient-clinician relationship

It is recognised that VLU care delivery is often wound focused, and that psychosocial factors and the impact of VLU on quality of life is often overlooked by clinicians delivering care (Green et al, 2014). Integral to the service reported in this paper is the need to place the patient at the centre of their care, to ensure they feel safe and welcome with an emphasis place on engaging with the patients in their care to earn their trust. The staff understand that a positive patient relationship will help build a base for patient

concordance, especially when it comes to working with the patient to choose the long-term hosiery or wraps that they will eventually be discharged with (Stanton et al, 2016). In the friends and family evaluations carried out as part of the service, patients have consistently rated their approval of this element of the service at 99%.

Treatment pathways

Following the initial holistic assessment, a four-week treatment period is started based upon RCN (1998) and SIGN (2010) guidelines. At four-week review, the patient was reassessed and discharged if healed, or assigned to one of two treatment pathways. Patients were allocated to pathway one if the wound was uncomplicated, or pathway two, if one of the following criteria were met:

- ▶ A history of non-concordance
- ▶ A history of infection
- ▶ A wound greater than 10cm²
- ▶ If the wound has been present for more than 12 months.

Wound bed progress was monitored regularly with photographs and measurements taken and recorded in the notes. Full reviews were performed every four weeks to assess the effectiveness of compression, debridement, and antimicrobial dressing choices. If certain aspects of the wound plan were seen to be ineffective, or no longer appropriate for the patient/wound condition, they were discontinued, and new strategies put in place. Patients who were identified as failing to progress in line with expectations were placed upon the complex review caseload and

Table 2: Patient gender

	Number /percentage
Male	406/ 40%
Female	609 / 60%

discussed with the senior clinical team at monthly caseload reviews. This did not necessarily result in a change to the patient's treatment pathway but would result in an intense review of the care and treatment being delivered and an exploration of other potential interventions. Patients were moved between pathways as appropriate according to need.

METHODS

Data were collected on all referrals (n=1015) to the service over the period of the AQP contract as required by the commissioning CCG. All patient notes were retrospectively reviewed by hand to determine healing outcomes.

RESULTS

Over a 65-month period (2013–19), 1015 patients with VLU were referred to the centres. Patient demographics are presented in *Tables 2 and 3*.

Of the 1015 patients, 86.14% (n= 874) were discharged as healed. The mean time to healing was 117 days (Range = 3–602 days) with an average of 17 appointments (range = 2–163 appointments).

Six (0.59%) patients declined to start or continue with treatment and were discharged unhealed; eight (0.78%) patients died and a further sixteen (1.57%) were discharged from the centres unhealed due to relocation or admission to secondary care. Twenty-one patients (2.06%) were placed on a maintenance pathway as they had insurmountable barriers to healing. Ninety (8.86%) patients were referred to other specialities, such as vascular, dermatology and plastic surgery, as the need arose (*Table 4*). The

Table 3: Patient age

	Number /percentage				
	18-30 years	31-50 years	51-70 years	71-90 years	90 - 97 years
	19 [2%]	50 [5%]	215 [21%]	640 [63%]	91 [9%]

Table 4: Outcomes for every patient (n=1015) referred to the service*

		Discharged before allocation to a pathway at four weeks	Patients allocated to pathway 1	Patients allocated to pathway 2	Total
Referrals	Referrals received	193	232	569	994
	% mix of pathways	20%	23%	57%	100%
Discharge reason	Declined treatment and discharged	0	1	5	6
	Discharged healed	180	214	480	874
	Moved away — discharged non-healed	0	5	11	16
	Referred to other specialist service, e.g. vascular or dermatology, so discharged as non-healed	13	12	65	90
	RIP	0	0	8	8
Healing rates	Healing rate of patients referred to service	93%	92%	84%	Mean= 89.7%
Time in care	Mean number of appointments to healed (Range = 2–163)	6	10	21	Mean =117
	Mean number of days in care (Range = 3–602)	33	71	136	Mean =17

*21 patients were still undergoing initial assessment or active treatment at the end of the AQP contract and are not included here, therefore n=994.

largest group of patients were allocated to pathway 2. This group took the longest time on average to heal, required the largest number of appointments, and had the worst healing rates (*Table 4*)

LIMITATIONS

The data used for this retrospective analysis was drawn from reports that form part of the contract review specified by the CCG. A detailed analysis of other outcomes recorded in the patients' notes was not performed. The data for these outcomes is in places incomplete; however, there were no omissions impacting upon healing rate calculations — there

are no missing patients and the healing outcomes for every patient accepted for treatment were recorded.

DISCUSSION

In terms of age, the patients referred to the service were mainly aged over 70, with 72% of the patients aged between 71–97 years. This is to be expected given the increased prevalence of wounds with age, and the existence of multiple co-morbidities known to both result in wounds and delay healing (Guest et al, 2015).

Twenty-one patients referred to the service reported here did

not heal and remained under the service at the contract end as they were unsuitable for practice nurse management. This cohort had barriers to healing that the combined efforts of the multidisciplinary team could not overcome. Issues such as mental health, complex social circumstances, significant carers' duties, inflexible employment, competing co-morbidities, and inoperable conditions resulted in these patients being placed on a maintenance pathway where infection prevention, and pain and exudate management were key goals of the care plan. Moffatt et al (1992) also reported upon a small group of patients who did not heal, suggesting that while the majority of patients with venous leg ulcers can be healed, for some with complex cases, healing may not be achievable.

Ninety patients were referred to other specialist services, including vascular surgery, dermatology and rheumatology. This is an area where closer working relationships between specialist services could reduce the number of patients who leave the service for a specialist review. Where specialist services are commissioned separately it is more difficult to achieve direct referral pathways or achieve shared care, highlighting this as an area for future improvement.

It would be easy to consider a group of 1015 patients with the same confirmed diagnosis of VLU as homogenous. However, Table 4 identifies clear differences within the group in terms of time to healing and supports the idea that there are significant differences of severity and complexity within patients with VLUs. Such a variation in time to heal maybe expected within a number of different sites with care being delivered over a five-year-period; however, the in-house training processes and competency checks of Healogics clinicians are designed to reduce variation in care and deliver consistency. This would appear to suggest that the differences in outcomes for

the different groups are based on clinical complexity, not as a consequence of a variation in the treatment delivered. This raises the question, should VLUs be graded to recognise the different degrees of complexity and management requirements? The authors' data would appear to suggest that grading patients according to the criteria for pathway 2 (Department of Health [DH], 2011) would be a

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good starting point in considering how to grade VLUs. The data reported here certainly underpins this, as it demonstrates that while some ulcers may heal in under four weeks, more complex cases may require 20 months. Some of the VLUs referred to the service had already been in place for many years upon referral, while others had early referral, at approximately six weeks' duration, enabling timely intervention. NHS England's website states 'Most venous leg ulcers heal within three to four months if they're treated by a healthcare professional trained in compression therapy for leg ulcers', but the authors argue this is inaccurate, based on the findings of Guest et al (2015) who reported that only 54% of VLUs managed by non-specialist nurses were healed at 12 months, when compared with the healing rate of 86.14% in a mean of 117 days reported in this study.

Furthermore, Moffatt et al (1992) demonstrated that specialist care of VLU in UK community clinics resulted in improved healing rates (67% at 12 weeks and 81% at 24 weeks) compared to non-specialist care (22% at 12 weeks), leading the

authors to conclude that specialist intervention was of benefit in a community setting. Unfortunately, the findings of Guest et al (2015) seem to suggest that in the intervening years the community management of VLUs has lost its way in some parts of the UK, with healing rates of 54% at 52 weeks. The retrospective data analysis presented in this paper produced a mean healing rate of 86.14% in a mean time of 17 weeks. While other specialist services operate in the UK, for example, the Lindsay Leg Club model and Accelerate CIC, it would appear that there is still a generally insufficient provision of specialist VLU management clinics and support for the management of patients with VLUs who do not heal in under four weeks.

To better understand the true nature of wound healing in the UK, healing outcomes should be recorded and used as a measure of the quality of the service provided. If every patient whose treatment was funded by the NHS was tracked and their outcomes reported, any variations in care provision would become apparent. Ennis et al (2017) reported on a comparison of healing rates between a USA-wide network of clinics and an academic tertiary wound clinic; the two data sets were 667,291 and 1,788 wounds, respectively. This is to date the largest data set of wounds reported on. The authors were able to demonstrate similar healing rates of between 75–8% between both data sets. A wide variety of wounds were treated at the centres in this study, including patients with severe pressure ulcers, arterial disease and diabetic foot ulcers, which may have impacted negatively on the healing rates reported, and possibly explains why the healing rates reported here and by Moffatt et al (1992) are higher. Ennis et al (2017) suggested that their findings support the belief that consistent healing rates could be achieved where a consistent plan is followed in a well organised environment. This concurs with the authors'

opinion that to achieve consistent healing rates across multiple sites, with multiple staff changes over a period of 65 months, a consistent, specialist, evidence-based approach to the management of VLU is warranted. Currently, there is very limited insight into the healing outcomes being achieved. Perhaps a requirement placed upon organisations in keeping with the reporting of pressure ulcers may be the type of initiative that is required to raise standards and see the spread of best practice in VLU management.

CONCLUSION

All healthcare organisations providing VLU services would benefit from the collection of wound healing data that allows for a transparent understanding of performance locally and nationally.

While the healing rates reported in this paper are in keeping with those reported by Moffatt et al (1992), the authors believe that there is still room for improvement. To date, the authors have focused upon the effective use of the most appropriate level of compression for the patient, combining techniques from venous and lymphoedema management along with frequent debridement and the use of antimicrobials where clinically indicated, in line with best practice guidelines. These interventions are delivered by a team of specialists who are highly trained and are required to pass regular competency evaluations to ensure the delivery of consistent, evidence-based care to every patient.

It is the authors' assertion that the healing rates presented in this paper are the product of an evidence-based, specialist-led approach that results in consistency of care for patients. Central to their clinical effort is the nurturing of relationships between patients, their families and the clinicians treating them, which the authors believe is a contributing factor to the results presented in this paper, but which is an area that is too often overlooked. **JCN**

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