

Best Practice Statement

Primary and secondary prevention in lower leg wounds

2024



The current landscape

Identifying at-risk individuals

Assessment and leg checks

Focus on compression

Active prevention measures

The future

BEST PRACTICE STATEMENT: PRIMARY AND SECONDARY PREVENTION IN LOWER LEG WOUNDS

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Foreword

We know that the numbers of patients affected by lower limb wounds and ulceration are staggeringly high (Guest et al, 2020). While care has long reflected the evidence that healing patients quickly is of paramount importance, there is a need for a change of mindset that focuses on prevention rather than management.

Care should start with a focus on risk assessment and identifying those who are at risk of developing a wound – as opposed to managing a wound that has developed (Fletcher, 2022). Where primary prevention is not possible, early intervention is key.

An example of best practice is the model of risk assessment for pressure ulcers (PUs), which provides a useful illustration of the importance of focusing on prevention. Prevalence data over recent decades shows that almost 20% of hospital inpatients (1 in 5) had PUs in the 1990s (O’Dea, 1995), which has now significantly reduced to around 8–9%, so fewer than 1 in 10 patients (Smith et al, 2016; Stephenson et al, 2021).

In October 2023, a multidisciplinary group of experts met to develop this Best Practice Statement on prevention and early intervention in lower limb wounds.

The expert group discussed strategies for primary and secondary prevention of lower limb wounds, changing mindsets and improving patient quality of life.

This Best Practice Statement aims to:

- Identify and acknowledge gaps within current protocols for preventing venous leg ulcers (VLUs) and lower limb wounds
- Provide a rigorous and active strategy for both primary and secondary prevention of VLUs
- Promote change and extend mindsets to encompass not just healing but also primary and secondary prevention.

The ultimate aim is to provide all clinicians with the tools to identify individuals at risk of developing lower limb wounds, and to prevent – or minimise – the risk of patient harm.

Jacqui Fletcher (Chair)

The current landscape

Box 1. Overview of venous leg ulcers (adapted from Fletcher et al, 2022)

A venous leg ulcer (VLU) is defined as a break in the skin between the malleolus (bony prominence on each side of the ankle) and the knee, which has not healed within two weeks (NICE, 2021; NWCSP, 2023). A VLU occurs in the presence of venous disease (NICE, 2021). People with VLUs can present with repeated cycles of ulceration, healing and recurrence, so it is important to diagnose and identify the patient's needs and preferences and build a sustainable relationship through clear communication, language and terminology.

It is acknowledged that treating underlying venous disease prior to the occurrence of ulceration will lead to a much lower rate of ulceration, improving a person's wellbeing, as well as lowering impact on workload and associated costs. Therefore, ideally, a relationship should start prior to a wound developing, identifying at-risk individuals and minimising risk to prevent ulceration.

According to data on wounds in the UK, it has been calculated that there were over 1 million ulcers of the lower limb, which equates to 2% of the adult population having a lower limb ulcer (Guest et al, 2020). In patients with underlying conditions such as venous disease, venous leg ulceration (VLUs) can develop easily – either spontaneously or as a result of mild trauma or injury – and often becomes a repeated cycle of non-healing and/or recurrence [Box 1]. Overall, only half of all people with VLUs heal within 12 months, and recurrence is common (Guest et al, 2018). It cost the NHS £8.3 billion to manage an estimated 3.8 million patients with a wound in 2017/2018 (Guest et al, 2020). Annual prevalence of wounds increased by 71% between 2012/2013 and 2017/2018, and there has been a substantial rise in resource utilisation attributable to wound management, including 54.4 million district/community nurse visits, 53.6 million healthcare assistant visits and 28.1 million practice nurse visits in 2017/2018.

There should be an opportunity to support primary care teams, such as GPs, practice nurses, pharmacists and podiatrists, in facilitating primary prevention as part of standard health checks. Primary prevention focuses on preventing wounds before they occur by addressing and reducing risk factors. For example, by examining both legs for lower limb oedema and haemosiderin skin staining (which occurs when red blood cells break down and begin to leak iron, often appearing as darkened patches above the ankles) in at-risk patients, as well as implementing other active prevention measures, such as promoting skin health, mobility and movement and overall health.

In addition to primary prevention, there should also be an opportunity for secondary prevention in primary care settings, involving the early detection and management of wounds to prevent their development and recurrence.

Lower limb ulceration has significant emotional and psychological consequences for patients, including depression, anxiety, shame, embarrassment and social isolation (Hughes and Balduyck, 2022). Like many other recurring or chronic conditions, living with a wound can affect all aspects of daily life, activities and overall wellbeing (Moore et al, 2016).

The impact on clinicians and healthcare systems is also significant. The mean NHS cost of treating a patient with a VLU over a 12-month period is estimated to be £7,600. However, the cost of managing an unhealed VLU is 4.5 times more than that of managing a healed VLU (£3,000 per healed VLU and £13,500 per unhealed VLU; Guest et al, 2018).

Focus on prevention wherever possible; where prevention is not possible, focus should be on early intervention and active healing.

Best Practice Statement

Early intervention and an active focus on healing (e.g. addressing underlying causes, use of compression) have been found to reduce overall costs; however, a shift in mindset to focus on prevention would benefit at-risk individuals, improving their overall wellbeing and quality of life, as well as decrease pressure on overworked clinicians, saving time and money for overstretched services.

Addressing underlying causes

Both venous and lymphatic disorders put individuals at high risk of developing lower limb ulceration. To prevent (and manage) ulceration, it is important to differentiate between the two and address the underlying causes to reduce risk.

■ Venous disease

The venous system functions through a combination of the heart muscle pump, the calf muscle pump and functioning valves

within the veins. In a healthy individual, blood is returned from the lower limb to the heart through the superficial veins, then into the deep veins via the communicating perforator veins.

In individuals with chronic venous insufficiency (CVI), this return of blood is compromised due to weakness in the walls of the superficial veins, along with valvular incompetence in the deep veins and suboptimal functioning of the calf and foot muscle pumps. This results in abnormally high pressures within the venous system (Young, 2017).

In functional venous disease (FVD), the symptoms of CVI occur without instrumental evidence of structural damage (Serra et al, 2017).

■ *Lymphatic disease*

The most common lymphatic disease is secondary lymphoedema. This is a life-long condition due to overloading of the lymphatic system (Bradford and Rossiter, 2020). This results in persistent, abnormal oedema (swelling) of the leg caused by an increase in fluid in the tissue. In the microcirculation of a normal limb, fluid containing oxygen, proteins and nutrients is released by the capillaries into the interstitial space and is reabsorbed into either the bloodstream or the lymphatic system to maintain fluid balance. However, when there's an imbalance due to underlying venous and/or lymphatic disease, the drainage of fluid is impaired, resulting in oedema (Bianchi et al, 2012).

In some cases, the excess fluid (lymph) can leak out of the tissue onto the skin, causing skin breakdown, irritation and putting the person at increased risk of cellulitis (Stephen-Haynes et al, 2015). Older age increases the likelihood of developing lymphoedema and of it becoming more complex, as the ageing process can cause changes in the structures of the lymphatic system and make damage more likely (Cooper-Stanton, 2018).

It is important to differentiate between venous and lymphatic disorders, and to address them as underlying causes of ulceration.

Best Practice Statement

If your patient has venous or lymphatic issues, it's important to explain these using clear and simple language.

Patient Expectation

Changing mindset

There is a need for a change in mindset from managing wounds to, whenever possible, preventing them altogether. This involves identifying individuals who are at risk of developing ulceration and actively implementing measures to reduce this risk through ongoing monitoring and assessment. This includes addressing any underlying causes and/or lifestyle factors, and considering measures such as skin integrity regimens and use of compression.

Some wounds may be unavoidable, in this circumstance the emphasis should be on early intervention and quick time to healing, which should involve active healing strategies and goals such as reducing oedema by compression (page 13), while also addressing underlying factors and preventing complications that may cause the wound to deteriorate (e.g. infection, peri-wound skin damage).

In cases where ulceration develops, it is important to take ongoing actions such as compression hosiery and, when appropriate, referring for venous intervention to reduce the risk of recurrence.

Pressure ulcer model

The focus of pressure ulcer (PU) work has almost exclusively centered on prevention, a strategy that has yielded significant reductions in PUs over recent decades

MYTH

The development and reoccurrence of wounds and ulcers is inevitable.

TRUTH

Wounds and ulcers can often be prevented by addressing risk factors (see page 7-9) and implementing prevention measures (see page 16-17) whenever possible.

MYTH

Lower limb wounds will not heal.

TRUTH

We should consider all wounds as being able to heal and establish "if not, why not?" We should also be careful about the language we use, not labelling a wound as "non-healing," "stalled," or "delayed."

(Fletcher, 2022). Prevalence data from the 1990s indicated that nearly 20% of hospital inpatients (1 in 5) had PUs (O’Dea, 1995), a figure that has now significantly decreased to around 8–9%, meaning fewer than 1 in 10 patients (Smith et al, 2016; Stephenson et al, 2021). This improvement has led to better outcomes and quality of life for patients; from an economic point of view, the numbers and costs of PUs are significantly lower than those for lower limb wounds (Guest et al, 2020).

Guidance for PU reduction strategies includes screening, risk assessment and taking immediate action to reduce risk (NWCSP, 2023). There is potential to apply this mindset and approach to the management of individuals at risk of lower limb wounds.

In PU strategies, the language and mindset used is that of preventing ‘patient harm’. If a leg ulcer is avoidable, there is scope for this mindset to be extended, with a focus on prevention, as inaction or insufficient action on oedema and lymphoedema can cause harm (Legs Matter, 2023).

The diabetic foot is another therapeutic area where prevention and early intervention strategies have been widely implemented with good success (Stang and Leese, 2017).

Care pathways should start with prevention whenever possible, with a clear start and end goal.

Best Practice Statement

If your patient has risk factors for developing ulceration, they should receive support to reduce their risk.

Patient Expectation

The Fletcher pathway

It is important to note that in all patient care pathways, there needs to be a standardised start point and end goal. The ideal pathway should, wherever possible, start with prevention rather than management. This mindset is reflected in the Fletcher Patient Wound Prevention and Healing Pathway (Fletcher, 2022). See **Figure 1** for a model of this pathway, where ideally, every patient is screened for their risk of developing various types of wounds, including skin tears, moisture lesions, diabetic foot ulcers, and more.

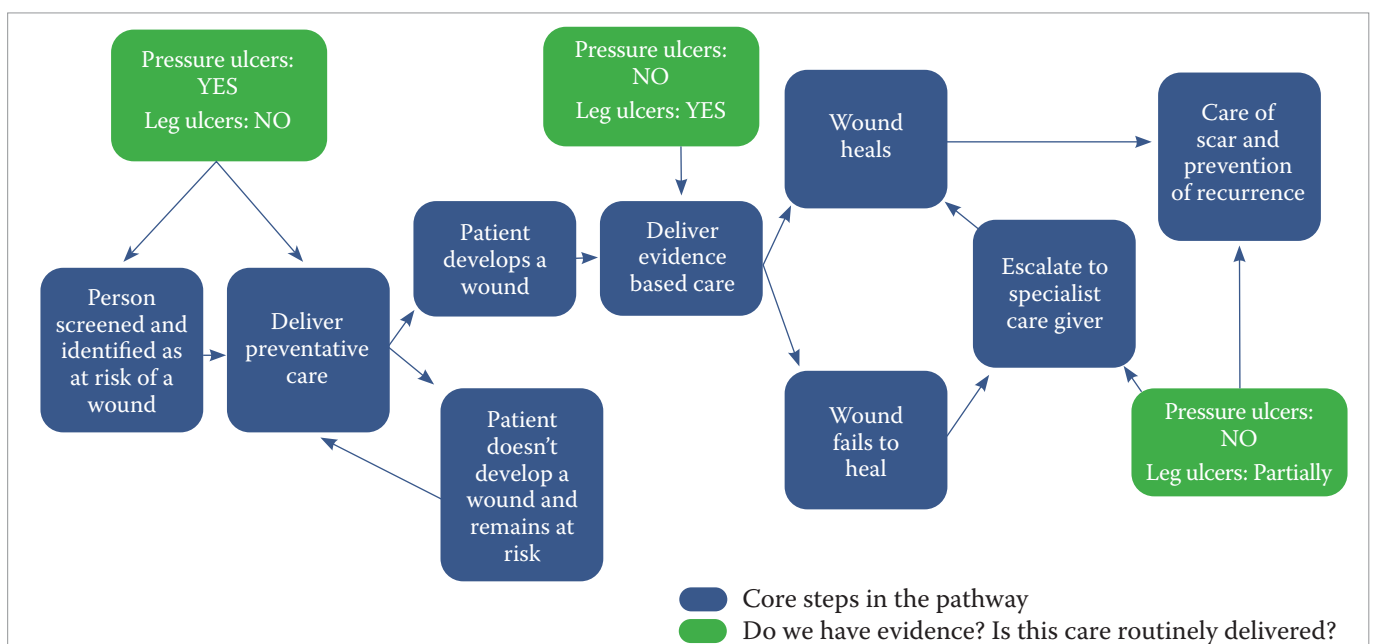


Figure 1. The Fletcher Patient Wound Prevention and Healing Pathway (Fletcher, 2022)

Identifying at-risk individuals

The first step is identifying individuals who are at risk (see **Box 2**), ideally before a lower limb wound develops. For example, prevention can start early for people with swollen legs, where measures to maintain skin integrity can be implemented to reduce the risk of skin damage in individuals with fragile or frail skin. It is important to note that “every contact counts,” whether this be with a nurse or another healthcare professional (HCP). Taking opportunities to observe patients for signs such as swollen legs and assessing their overall health, wellbeing and lifestyle is essential. This is also an opportunity to refer patients to any additional resources or services they may require, such as tissue viability, podiatry, vascular, lymphoedema and dermatology services. It is also important for patients to gain an understanding of their condition and the significance of continued treatment to prevent ulceration from developing. **Establishing a partnership with the patient is key.**

Swelling and oedema

When a patient presents with swelling (oedema), it is important to establish the cause and what is considered ‘normal’ for that particular patient. For example, some oedema after air travel, long periods of standing/sitting, or after an insect bite is typically not a cause for concern, and should subside relatively quickly. However, in patients with a high BMI (over 30), oedema may be directly associated to their weight, and lifestyle measures may be required as a first step. Oedema results from an imbalance between capillary filtration into, and lymphatic drainage from, the interstitial space (Moore et al, 2022). Additionally, hormonal changes or natural fluctuations can also contribute to fluid retention.

Identifying oedema that is soft and easy to press (leaving an indentation) early makes it easier and more cost-effective to treat, and improves overall patient outcomes

If your patient has risk factors such as swelling (that isn't 'normal' for them), they should receive information and support on how to reduce their risk and improve their health.

Patient Expectation

When a patient presents with oedema, it must be spotted as early as possible and the patient assessed to establish the cause.

Best Practice Statement

Box 2. Patient risk factors that may contribute to developing a VLU (adapted from NHS, 2022):

- High body mass index — this increases the hydrostatic pressure in the veins of the lower limb and abdomen
- Issues with mobility and/or walking — this compromises the activation of the calf and foot muscle pump, which aids venous return
- Previous deep vein thrombosis (DVT) — blood clots in the deep venous system can result in obstruction or damage to the valves in the veins, which will affect venous return
- Varicose veins — swollen and enlarged veins caused by malfunctioning valves, resulting in venous hypertension
- Previous injury to the leg, such as a fractured bone, which may cause changes to lymphatic drainage and venous valve function, make the tissue more fragile, impair walking or alter the patient's gait
- Previous surgery to the leg, such as fractures or flap surgery, which can cause damage to the veins, lymphatics, ankle mobility or gait
- Increasing age — people find it harder to move around as they get older, particularly if they suffer from arthritis
- Chronic oedema — associated with inflammatory processes, and compromises skin and tissue condition
- Familial history of venous and lymphatic disease
- Fragile or frail skin
- Smoking
- Pregnancy.

MYTH

Oedema is an inevitable part of ageing, or ‘just one of those things’.

TRUTH

Oedema should not be seen as inevitable; the cause should be established and diagnosis given.

MYTH

Ongoing oedema can be normal.

TRUTH

Ongoing oedema should not be considered normal and the cause should be investigated and addressed.

REMEMBER

Compression therapy is usually a lifelong commitment, but in some conditions (e.g. DVT or pregnancy), this may not be the case. Reassessment should be considered as part of the treatment plan.

Figure 2. Checklist for patients with chronic swelling of the lower limb (used with permission of Rebecca Elwell and Gill Boast)

For full list of red flags to contraindicate compression therapy as per the NWCSP (2023; see Box 4, page 15)

compared to managing later-stage oedema. Therefore, it is crucial that oedema is spotted early. Patients should be assessed to establish the cause, and when suitable, interventions such as compression should be initiated as soon as possible. Identifying the underlying cause is particularly important, as it may be linked to conditions such as atrial fibrillation and heart failure, which require further management.

Lymphoedema

Lymphoedema, also known as chronic oedema, is defined as oedema lasting for more than 3 months (Keast et al, 2015). Lymphoedema results from a failure of the lymphatic system; if left untreated, it can lead to changes in the skin and deeper tissues, increasing the risk of infection and cellulitis (BLS, 2021; Legs Matter, 2023).

See Figure 2 for a checklist outlining red flags to look out for, questions to ask, and factors to consider when evaluating patients presenting with chronic oedema in the lower limb. HCPs should also remain alert for signs and symptoms such as tired, aching and heavy legs, as well as the

The underlying cause of your patient’s oedema will be explored and explained to them.

Patient Expectation

presence of spider veins and ankle flare (see Figure 5, page 14 for additional examples).

Pregnancy

While some oedema may be a ‘normal’ part of pregnancy, it could be indicative of an underlying problem. Pregnancy is another risk factor that presents an opportunity for assessment that should include the lower limb to spot any issues and take preventative measures if necessary.

In pregnancy, oedema may fall into one of three categories:

- Normal oedema – requiring no intervention
- Mild oedema – would benefit from compression therapy
- Oedema indicating an urgent issue and need for action/referral – consult local guidelines for further information.

Checklist for chronic swelling lower limb

<p>1 Escalate if any red flags e.g:</p> <ul style="list-style-type: none"> • Red, hot & swollen leg or foot • Spreading infection of leg or foot • Acute and chronic limb threatening ischaemia or recent/current treatment for PAD • Suspected DVT • Suspected skin cancer • In acute cardiac failure or last few weeks of life – discuss with relevant clinical specialist <p>Referrals</p> <ul style="list-style-type: none"> • Refer to hospital for urgent care if apply or to GP or ACP for further assessment & examination and/or blood tests if needed. • Refer to other specialists as necessary. 	<p>2 What to ask</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is the swelling unilateral? <ul style="list-style-type: none"> • Exclude DVT • Exclude pelvic pathology <input type="checkbox"/> Any history of cancer? <input type="checkbox"/> Any recurrence of cancer? <input type="checkbox"/> Is the swelling bilateral? <ul style="list-style-type: none"> • Exclude other causes of oedema <p>Medication side effects consider:</p> <ul style="list-style-type: none"> • Calcium channel blockers • Pregabalin • Gabapentin • Corticosteroids • NSAIDs • Parkinson’s medications <p>Other considerations</p> <ul style="list-style-type: none"> • Any venous insufficiency? Refer to Vascular if ulcer for more than 2 weeks • Immobility 	<p>3 What to consider</p> <p>CARDIAC</p> <ul style="list-style-type: none"> • Any signs and symptoms? • Bloods for NT Pro-BNP, CXR, ECHO <p>ABDOMINAL</p> <p>Is there a pelvic mass?</p> <ul style="list-style-type: none"> • Abdominal investigations? • Lymphadenopathy? • Pain <p>RENAL</p> <ul style="list-style-type: none"> • Any signs and symptoms? • Bloods for FBC, U&E Creatinine <p>HEPATIC</p> <ul style="list-style-type: none"> • Any signs and symptoms? • Bloods for liver function tests and albumin <p>THYROID/ENDOCRINE</p> <ul style="list-style-type: none"> • Bloods for thyroid function • Exclude diabetes <p>HAEMATOLOGICAL</p> <ul style="list-style-type: none"> • Any anaemia? <p>SKIN</p> <ul style="list-style-type: none"> • Suspicious looking lesion? • Yellow nails?
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NHS Staffordshire and Stoke-on-Trent Local Care Board
 Authors: Rebecca Elwell and Gill Boast Nov 2021, revised Jan 2023 Version A-04– Review due Jan 2024

If a patient has been pregnant before and experienced oedema, preventative measures such as compression stockings (e.g., British Standard Class 1) can be given to prevent recurrence.

Evidence has also shown a strong association between pregnancy and the development of varicose veins, a common sign of venous disease, with an 82% increase (Ismail et al, 2016). Therefore, all pregnant women should be offered the opportunity to wear compression socks as part of their pregnancy care to prevent venous disease.

Deep vein thrombosis

People who have developed deep vein thrombosis (DVT) may be at increased risk of factors contributing to lower limb ulceration. Compression therapy may be offered to manage leg symptoms after DVT; typically, this will be for a limited time, as opposed to a lifelong treatment (NICE, 2023).

Fragile or frail skin

Another at-risk group for lower limb ulcers includes individuals with fragile or frail skin. This vulnerability is particularly notable in specific patient populations, including (Beeckman et al, 2020):

- Older adults
- Individuals with mobility issues/paralysis
- Individuals with spina bifida and cerebral palsy
- Bariatric patients
- Oncology patients
- Individuals with chronic underlying conditions, illnesses or other health issues.

In patients at increased risk of compromised skin integrity, it is important to make sure that holistic assessment incorporates monitoring the patient's skin for any changes (see [page 10](#) for more information on skin assessment).

Importance of a multidisciplinary team

There is an opportunity for HCPs, such as community pharmacists, to collaborate within the multidisciplinary team (MDT) to identify at-risk patients and implement prevention and early intervention measures. This includes referring patients to wellbeing programmes such as help with weight loss

and smoking cessation. Pharmacy teams are also often the first point of contact for patients, so they are well-positioned to assess causes and begin prevention strategies (Ousey et al, 2021). In primary care, support is needed to spot early signs and focus on prevention.

Maintaining knowledge of local and up-to-date resources will help clinicians signpost people with VLUs to community support and resources they can access, while also strengthening local connections and the integration of services and communities. The Legs Matter coalition offers a wealth of resources for both patients and clinicians, including health advice, information, and knowledge to increase awareness around lower limb issues. Clinicians can direct patients to the Legs Matter patient resources, which provide invaluable information on the importance of leg care, concerning signs and symptoms to watch for, healthier lifestyle changes, and patient-friendly education on compression therapy (Ousey et al, 2023; Legs Matter, 2023).

Throughout the care process, it is important to increase patient activation through techniques such as motivational interviewing (Mishra et al, 2018). Motivational interviewing is a patient-centered method for enhancing intrinsic motivation to change by exploring and resolving uncertainty (see [Box 3](#)). By doing so, HCPs can consistently engage patients in their care journey, ultimately improving outcomes. Resources such as the Dialogue Tool, developed by Lohmann & Rauscher (L&R), are available to enable effective communication to support self-care and facilitate better conversations with patients (Wounds UK, 2023b).

Box 3. Example of a motivational interview

- **Exploring:** "What are some things you enjoy doing that have been affected by your lower limb condition?"
- **Motivation:** "On a scale of 0 to 10, how important is it for you to improve your leg health?"
- **Supporting:** "It's understandable to have concerns about sticking to changes. Can you think of a time when you successfully made a change in your life? What helped you succeed then?"
- **Encouraging:** "Those are excellent strategies. You've already shown you can make positive changes, like quitting smoking, I believe you can do this too. I'm here to support you every step of the way."

REMEMBER

Every contact counts and health promotion is everyone's business.

REMEMBER

The clinical workforce needs clear guidance on how to help and direct patients to the right services.

Assessment and leg checks

REMEMBER

While some patient groups may automatically be higher risk (e.g. older adults or those with mobility issues), risk factors can be present in any patient and should be investigated.

MYTH

Patients do not like compression due to the appearance of compression garments.

TRUTH

There are now lots of different styles of compression products available to suit the patient and their individual needs. Involving the patient in decision-making can improve their engagement to certain treatment options.

Getting the initial assessment right is considered the cornerstone of all treatment. Without an accurate assessment, we know that treatment is unlikely to be effective, resulting in delayed or failed healing, and adversely affecting the patient's quality of life (Moore et al, 2022).

In adopting a prevention mindset, accurate holistic assessment for patients identified as being at risk of developing ulceration can play a key role in preventing damage from occurring.

Identifying patients at risk of ulceration should be a priority in preventing ulceration from occurring.

Best Practice Statement

Holistic assessment

Holistic assessment means looking at the whole person; this includes their general health and wellbeing, limb and skin integrity. This approach is important because it helps to identify underlying issues and potential causes of damage at the point of assessment, allowing prevention and management strategies to be tailored to the individual patient (WUWHS, 2020a).

A detailed history should be taken from the patient, to include (Stephen-Haynes et al, 2015):

- Past medical and surgical history
- History of limb trauma
- History of skin conditions/infection
- Medications
- Concurrent illnesses
- Family history of venous disease or limb oedema
- Ankle mobility.

Other issues such as wellbeing, quality of life and lifestyle factors should also be considered. These may include (WUWHS, 2020b):

- Occupation
- Mobility

- Limitations to daily activities
- Psychological and social issues
- Nutrition status and weight
- Smoking status.

Assessment should also address the patient's general quality of life and treatment expectations. Pain is an important issue to address, as it can significantly impact the patient's quality of life and their willingness to tolerate certain treatment options (Fletcher et al, 2016).

See [Figure 3](#) for a checklist of the essential elements of assessment.

Full holistic assessment should be carried out for all patients.

Best Practice Statement

Skin assessment

Assessment of the skin should give a picture of the overall condition, including the affected area if applicable. It is important to establish what is 'normal' for the patient, including their baseline skin tone and general skin condition, as monitoring any changes to the skin may enable accurate risk assessment and early intervention before a wound develops.

It is important to look at both limbs to make a comparison and assess whether both legs are affected (Moore et al, 2022). It should also be noted that 'redness' (erythema) may appear differently across different skin tones, and particular care should be taken in patients with dark skin where 'redness' may not be easily identified (Dhoonmoon et al, 2021). Visual cues may also include dryness or changes in skin texture.

Touch is an important tool that should be used in skin assessment in order to gain a more accurate overall picture of the patient's skin and its condition rather than solely relying on the appearance. For example, in cellulitis, the affected



Figure 3. Essential elements of assessment

skin feels different from the surrounding skin, with tightness apparent to the touch (Dhoonmoon et al, 2021).

It is important to listen to the patient's perspective and their views and feelings on their own wound and overall skin condition (Dhoonmoon et al, 2021). Asking the patient questions and allowing them

to describe their skin in their own words is important; see **Box 4** for suggested questions to consider at assessment stage.

Leg assessment

A thorough assessment should be the first step that triggers appropriate action, typically summarised as “assess, dress, compress™.”

You should reassess your patient if treatment is not working or their condition changes.

Patient Expectation

Box 4. Questions to consider as part of skin assessment (adapted from Dhoonmoon et al, 2021)

- What is the affected skin like in comparison to the surrounding skin?
- Are there any differences in colour?
- Does the skin feel warm/cool? Are there any changes in temperature?
- Does the skin feel spongy or firm to the touch?
- Does the skin look or feel shiny or tight?
- Is there any oedema or inflammation?
- Are there any changes in the texture of the skin and underlying tissue?
- How is the overall condition/integrity of the skin?
- Is there any pain, itchiness or change in sensation?
- What is the patient's perspective on their own skin and how they are feeling?

For patients with identified risk factors or a history of ulceration, ongoing assessment of the leg is important. Factors to consider during the assessment stage (Fletcher et al, 2016):

- Presence and distribution of oedema; note that oedema may become non-pitting with chronicity due to the development of fibrotic tissue
- Limb size and shape (e.g. reduction or loss of calf muscle, inverted champagne bottle shape)
- Mobility and/or ankle movement
- Colour and condition of skin
- Limb temperature
- Ankle-brachial pressure index (ABPI) to check for arterial insufficiency
- Vascular history
- Erythema, pallor and/or cyanosis
- Signs of arterial insufficiency (e.g. hair loss, pallor, coldness on palpation, dusky appearance when the leg is lowered)
- Signs of venous insufficiency (e.g. oedema, ankle flare, hyperpigmentation, lipodermatosclerosis, atrophie blanche, varicose eczema).

Reassessment

Patients with VLU often present with repeated cycles of ulceration, healing and

recurrence. Therefore, ongoing management and prevention of recurrence should be treated as a priority (Ashby et al, 2014).

If an assessment and diagnosis has been made and treatment commenced, but the patient's condition has not improved or is deteriorating, it is important to make a full reassessment of the patient. It is vital to identify and address any barriers to healing and underlying causes that may have been missed. A new treatment plan should be developed accordingly, including multidisciplinary team members if appropriate. (Moore et al, 2022).

Triggers for reassessment should include (adapted from Fletcher et al, 2016):

- Inability to tolerate compression therapy
- Compression therapy applied but not delivering improvement
- Wound development, deterioration, or static condition despite treatment; presence of malodour
- Deterioration of the general skin condition e.g. maceration and exudate damage
- Increase or change in pain
- Decrease in mobility
- Depression or patient quality of life issues
- Inability to deliver consistent management.

Focus on compression

Compression is widely recognised as the gold standard treatment for lower limb wounds, yet is often underused as a tool in prevention. Compression should be seen as a long-term commitment for people who are at risk of developing a wound and for preventing recurrence (Wilson, 2016). Compression treatment should be started as early as possible, as it can effectively prevent ulcer development in at-risk patients (Fletcher et al, 2016).

Primary prevention using compression should be made in all patients presenting with pre-ulceration risk factors such as oedema, pain and changes to the lower limb (Fletcher et al, 2016).

See **Figure 4** for an oedema community process map, which aids decision-making around compression therapy, signposting and further treatment/referral in patients with oedema as a risk factor.

When appropriately applied to the right patient, compression therapy is the best treatment to improve venous return, reduce oedema, heal VLU's and improve skin condition, to reduce the risk of recurrence. The earlier that compression therapy can be started, the better the outcome is likely to be (NWCSP, 2023).

For guidance on compression types and product selection for prevention, early intervention and ongoing management, see **Figure 5**. The CHROSS checker is an easy-to-use tool that can be used as a prompt to check for skin and limb changes as part of a holistic patient assessment. This tool also helps clinicians appropriately select compression hosiery based on the patient's signs and symptoms.

MYTH

Compression is expensive and will increase costs.

TRUTH

It is more important to look at overall costs. An increase in compression will result in better healing rates, fewer complications and reduced spend on dressings and nursing time. Compression is also important in reducing recurrence rate of ulcers, supporting prevention.

All patients with pre-ulceration risk factors should be offered compression therapy as a prevention tool.

Best Practice Statement

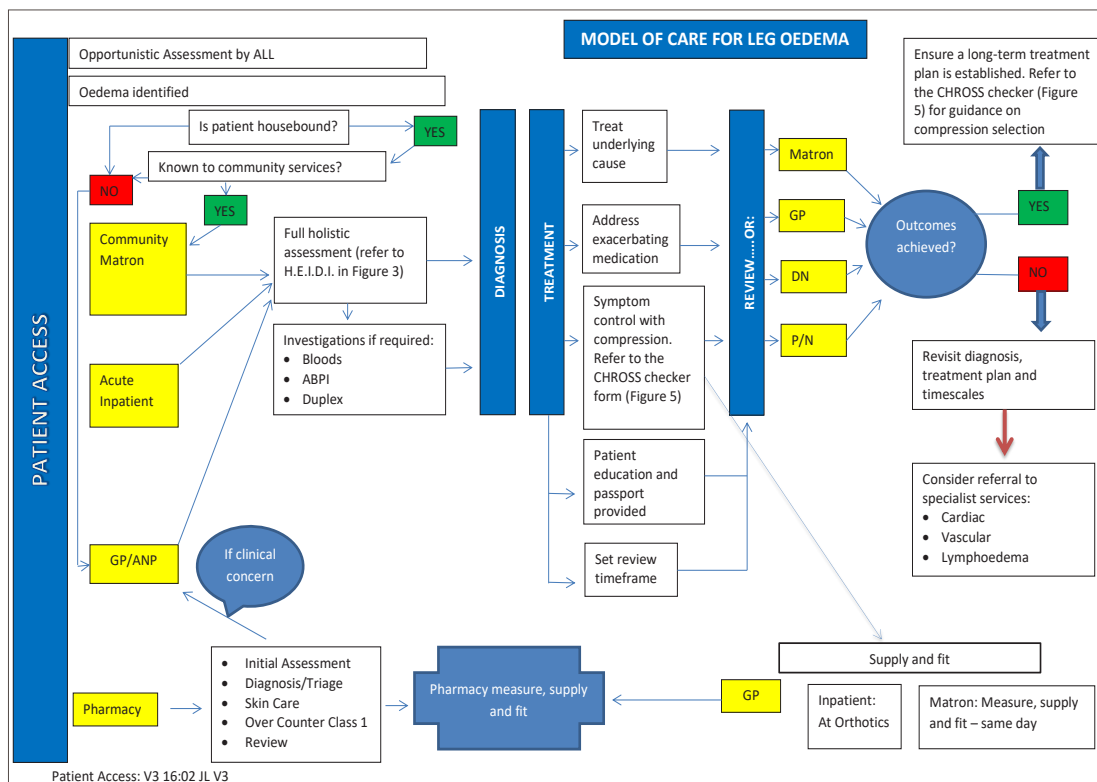


Figure 4. Oedema community process map. ABPI=Ankle-brachial pressure index; ANP=Advanced nurse practitioner; DN=District nurse; GP=General practitioner; H.E.I.D.T=History, Examination, Investigation, Diagnosis, Treatment; P/N =Palliative nurse

Figure 5. The CHROSS checker form

Patient name
Date:

The CHROSS checker form

NB: Please retain this form in the patient's notes for future reference of previous assessment(s)

It is important to check for the signs and symptoms of venous and lymphovenous disease, which are listed in the chart below.

- The chart should be used as a prompt to check for skin and limb changes as part of holistic patient assessment.
- The compression products recommended should be used as part of an overall management plan, which includes medical management of underlying disease(s), skin and wound care, and patient education.
- Vascular status must be determined before applying compression. If in doubt, do not use and refer for specialist advice.
- If no ticks are recorded, the limb is healthy and no action is needed, other than a good skin care regimen.
- In the 'early/medium intervention' and 'intensive management' phases, before managing with hosiery, a period of treatment with compression bandaging (e.g. Actico®) may be required.
- For further information on the signs/symptoms listed below, including photographs and description, please refer to the hosiery selector app or the CHROSS checker images.

	1. Tick the box below if the sign/symptom is reported, or present on the limb of the patient	2. Is oedema also present? Tick 'YES' or 'NO' (in the colour band of the lowest tick in step 1)	3. Consider application of the compression below, depending on disease severity (mild, moderate or severe) as part of management
Prevention	Tired, aching, heavy legs <input type="checkbox"/>	NO <input type="checkbox"/> →	Activa® British Standard hosiery*
	Spider veins <input type="checkbox"/>		Mild: Class 1 (14–17mmHg) <input type="checkbox"/>
	Ankle flare <input type="checkbox"/>		Moderate: Class 2 (18–24mmHg) <input type="checkbox"/>
	Mild/moderate hyperkeratosis <input type="checkbox"/>	YES <input type="checkbox"/> →	ActiLymph®/Adore® European Class hosiery**
	Mild/moderate varicose veins <input type="checkbox"/>		Mild: Class 1 (18–21mmHg) <input type="checkbox"/>
	Hyperpigmentation <input type="checkbox"/>		Moderate: Class 2 (23–32mmHg) <input type="checkbox"/>
	Venous dermatitis <input type="checkbox"/>		
Early/medium intervention	Varicose eczema <input type="checkbox"/>	NO <input type="checkbox"/> →	Activa® British Standard hosiery*
	Atrophie blanche <input type="checkbox"/>		Moderate: Class 2 (18–24mmHg) <input type="checkbox"/>
	Induration <input type="checkbox"/>		Severe: Class 3 (25–35mmHg) <input type="checkbox"/>
	Moderate/severe varicose veins <input type="checkbox"/>		Activa® Leg Ulcer Hosiery Kit <input type="checkbox"/>
	Moderate/severe hyperkeratosis <input type="checkbox"/>	YES <input type="checkbox"/> →	ActiLymph®/Adore® European Class hosiery**
	Healed ulcer** <input type="checkbox"/>		Moderate: Class 2 (23–32mmHg) <input type="checkbox"/>
	Recurring ulcer/open ulcer** <input type="checkbox"/>		Severe: ActiLymph® Class 3 (34–46mmHg) <input type="checkbox"/>
	Cellulitis*** <input type="checkbox"/>		ActiLymph® Hosiery Kit <input type="checkbox"/>
Before hosiery can be effectively used in the intensive management phase, the use of compression bandaging may be required			
Intensive management	Lipodermatosclerosis (acute or chronic) <input type="checkbox"/>	NO <input type="checkbox"/> →	Activa® British Standard hosiery*
	Chronic oedema/lymphoedema <input type="checkbox"/>		Severe: Class 3 (25–35mmHg) <input type="checkbox"/>
	Severe hyperkeratosis <input type="checkbox"/>		ActiLymph® European Class hosiery**
	Skin folds <input type="checkbox"/>	YES <input type="checkbox"/> →	Moderate: Class 2 (23–32mmHg) <input type="checkbox"/>
	Papillomatosis <input type="checkbox"/>		Severe: Class 3 (34–46mmHg) <input type="checkbox"/>
	Lymphangiomata <input type="checkbox"/>		ActiLymph® Hosiery Kit <input type="checkbox"/>
	Lymphorrhoea (wet legs) <input type="checkbox"/>		ActiLymph® MTM Ease or MTM Dura
	Moderate: Class 2 (23–32mmHg) <input type="checkbox"/>		
	Severe: Class 3 (34–46mmHg) <input type="checkbox"/>		

* Activa® Leg Ulcer Hosiery Kit (40mmHg)

**ActiLymph® Hosiery Kit

***Acute cellulitis should be treated before using compression

Once the correct Class of hosiery has been selected for disease severity, if limb measurements do not match stock sizes, use either ActiLymph® Made to Measure flat knit hosiery or Credalast® Velvet Made to Measure hosiery



National Wound Care Strategy Programme recommendations

It is important to note that according to recommendations from the National Wound Care Strategy Programme (NWCSP, 2023), all individuals presenting with a lower limb wound who could benefit from compression therapy should be initiated on a ≤ 20 mmHg therapeutic dosage of compression (e.g. British Standard Class 1 hosiery) as soon as possible. This means that compression can be commenced without ABPI testing, provided that the patient does not exhibit any of the red flags listed in **Box 5**.

Box 5. Red flags to contraindicate compression therapy (NWCSP, 2023)

- ▶ Acute infection of the leg or foot (e.g. increasing unilateral redness, oedema, pain, pus, heat)
- ▶ Symptoms of sepsis
- ▶ Acute or suspected chronic limb threatening ischaemia (e.g. peripheral arterial disease [PAD] in combination with rest pain, gangrene or lower limb ulceration > 2 weeks duration)
- ▶ Suspected acute DVT
- ▶ Suspected skin cancer
- ▶ Bleeding varicose veins.

ABPI testing

However, within 14 days of initial presentation, an ABPI assessment should be carried out (NWCSP, 2023) to determine whether stronger compression can be used. The primary aim of an ABPI assessment is to exclude the presence of peripheral arterial disease (PAD) and ensure that compression therapy is safe, as compression therapy is contraindicated in individuals where severe PAD is present (Fletcher et al, 2019). See **Box 6** for more information about ABPI testing results and how these can be interpreted for initiation of compression therapy.

All people who could benefit from compression therapy should be put into a ≤ 20 mmHg dosage of compression, in the absence of red flags, as soon as possible.

Best Practice Statement

Box 6. ABPI testing results for compression (adapted from Wounds UK, 2021)

- Normal ABPI will range from 0.8–1.3
- 0.5–0.79 indicates moderate to mild PAD and perhaps mixed aetiology
- < 0.5 is an absolute contraindication for compression therapy, and referral to specialist services is urgent
- If ABPI is > 1.3 , the result is unreliable, and those patients should also be assessed by a specialist before considering compression.

Patient engagement

An increasing drive towards greater patient engagement and self-care has potential to benefit patients with wounds, especially in the case of chronic lower limb ulcers, where demand for care is growing due to the rising prevalence (Ousey et al, 2023).

Since compression is a long-term treatment, individuals need to be motivated and actively engaged in their own care. It is worth taking the time to discuss the treatment with the individual, make sure they have all the information they need, and address any concerns they may have (Wounds UK, 2021). Additionally, when selecting compression hosiery, it's crucial to consider both physical and psychological factors (Newton, 2015).

Compression as a therapy is only effective if it is worn consistently. To enable this, individuals should have options and the assurance that if they cannot tolerate one type of compression system, alternatives are available. Therefore, when selecting the appropriate compression system for a patient, several factors should be taken into account, including:

- Limb size
- Presence of skin folds
- Patient's ability to apply and remove it
- Presence of oedema
- Presence of ulceration
- Degree of desired compression
- Practitioner's competency
- Bulkiness of compression
- Patient's choice of clothing/footwear
- Fragility of the skin
- Hygiene needs.

See **Box 7** for a checklist for initiating compression therapy.

MYTH

'Redness' (erythema) means that infection is present and should be considered a red flag to contraindicate compression therapy.

TRUTH

Redness is inflammation and may not signal infection/cellulitis. It should be noted that bilateral cellulitis is extremely uncommon.

REMEMBER

Use clear language and make sure the patient understands their treatment.

MYTH

All patients need ABPI testing before being started on any compression therapy.

TRUTH

Patients can be started on ≤ 20 mmHg compression without ABPI testing.

If your patient would benefit from compression therapy, this should be explained to them and started as soon as possible.

Patient Expectation

Box 7. Compression checklist (adapted from Wounds UK, 2021)

- Have you conducted a full holistic assessment, including the patient's overall health as well as their skin/wound?
- Has the patient had ABPI testing to ensure therapeutic compression is safe (in the absence of red flags, ≤ 20 mmHg can be started without ABPI testing)?
- Have you chosen a suitable compression system in collaboration with the patient, discussing their needs, concerns and lifestyle?
- Does the patient understand how it works and why it is needed?
- Are they happy with their treatment?
- Do they know how to apply compression garments and take them off?
- Do they have support if needed?
- Do they know the red flags to look out for and how to contact their clinician if they need to?
- Have you discussed general health, nutrition and smoking cessation, if applicable?
- Does the patient have any other concerns they would like to discuss with you?

Communication and language

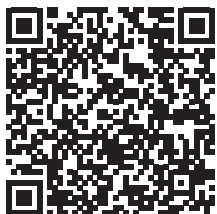
It is important to communicate clearly with the patient, making sure that language and terminology used around compression is neither confusing or off-putting. Assessing the patient's capacity to understand their treatment, either independently or with the assistance of a caregiver, is important (WUWHS, 2020b; Wounds UK 2023). Patients should not be labelled as 'non-concordant'; instead, clinicians should strive to help them understand their treatment and find a care plan that they are happy with and able to engage with (WUWHS, 2020b; Wounds UK 2023).

Recurrence

Additionally, a key function of compression therapy alongside the prevention and healing of VLU is preventing their recurrence. Managing VLUs requires a significant investment of effort and time from both HCPs and patients. HCPs must accurately

assess the wound and provide appropriate treatment, while patients are responsible for engaging with treatment plans, which may involve regular wound care, wearing compression garments, and making lifestyle adjustments to facilitate healing.

Despite these combined efforts, the risk of recurrence remains significant. VLUs can take weeks or even months to heal, with recurrence rates estimated between 18% and 28% within 12 months (Ashby et al, 2014). Additionally, other studies have reported even higher recurrence rates, reaching up to 70% within three months after healing (McDaniel et al, 2002; Abbade et al, 2005; Finlayson et al, 2015), highlighting the importance of compression therapy as a long-term treatment (Fletcher et al, 2019). Therefore, patients undergoing compression therapy should be reviewed every 3-6 months, taking into consideration factors outlined in **Box 8**.



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Box 8. Factors to consider when reviewing a patient in compression (adapted from NICE, 2022)

Review every 3–6 months to:

- Reassess their condition and overall health, as well as any underlying factors
- Ensure that the person is continuing to wear the stockings successfully and is replacing them regularly
- Ask the person to attend the review appointment wearing their compression garment so that the fit can be re-evaluated
- Repeat leg measurements to ensure that the compression continues to be the correct size
- Assess the fit: compression garments should not feel loose, and the fabric should be evenly distributed. Knee-length stockings should sit two fingers' width below the crease at the back of the knee, and thigh-length stockings should sit four fingers' width below the gluteal fold. Compression garments should not pinch the skin or cause pain.

Ideally, ABPI testing should be repeated every 6–12 months, or earlier if clinically indicated. Follow local policies, if available.

Active prevention measures

Considering holistic health and wellbeing is important when focusing on prevention, in terms of skin health, mobility, movement and overall health, including psychosocial factors. Prioritising patient quality of life is essential.

Skin integrity and protection

Maintaining skin integrity and protection is vital. While the benefits of moisturising to treat specific skin conditions are well recognised, it should also be integrated into the daily skincare regimen for patients at risk of skin breakdown (Callaghan et al, 2018). The use of moisturisers (emollients) have also been found to aid in the prevention of skin damage (Beeckman et al, 2020).

In people with skin at risk of developing damage, regular moisturising should be viewed as a fundamental part of skincare to promote overall skin health and reduce the risk of skin damage (Wounds UK, 2015). This practice can help restore the skin's barrier function, reduce itching and increase the level of hydration, thus promoting overall skin health (Beeckman et al, 2020).

Moisturising products are available in various forms, including creams, ointments, lotions, liquid body wash and gels. It is important that these products are pH-balanced, with a pH level of 4.5–6.5, fragrance-free, and are non-sensitising (Callaghan et al, 2018). They can be used at all stages of the bathing regimen for people with frail skin, for washing as well as moisturising, and should be applied in the direction of hair growth to minimise the risk of irritation and/or folliculitis. If necessary, products containing additional ingredients such as humectants (e.g. urea, glycerol or isopropyl myristate) that have moisture-attracting properties, actively drawing water from the dermis to the epidermis, replacing lost moisture in the skin can be used (Wounds UK, 2015).

When caring for at-risk skin, it is also important to consider other factors such as reducing sun exposure, minimising the frequency of bathing, ensuring that water temperature is not too hot, and patting the

skin dry with a soft towel rather than rubbing (LeBlanc et al, 2018).

The use of suitable products should be incorporated into a full self-care regimen. Using a moisturising body wash instead of soap for cleansing can help protect and hydrate vulnerable skin at risk from damage (Callaghan et al, 2018). Therefore, a full skincare plan is recommended for suitable individuals, which includes the use of a combination of moisturising wash products, as well as 'leave-on' products where necessary (Callaghan et al, 2018).

Individuals at risk of skin damage should be given a skincare regimen to help preserve or improve skin integrity.

Best Practice Statement

You should give your patient a plan for a skincare regimen to help protect their skin from damage.

Patient Expectation

Movement and mobility

Evidence shows that incorporating a routine of basic lower limb exercises at home and daily ambulation into the self-care of older people with VLU's helps not only to improve wound healing, but also enables individuals to have a more active and autonomous lifestyle, improving their self-perception and perceived quality of life (Herraiz-Ahijado et al, 2023).

It is important that this is made as accessible as possible for individuals, within their capabilities and willingness to engage. Small measures can make a big difference.

You should discuss movement and mobility with your patient, and how this can help their condition.

Patient Expectation

MYTH

Self-care is all-or-nothing.

TRUTH

Self-care looks different for everyone. It is not an all-or-nothing endeavor. For patients, self-care could be as simple as making a treatment choice. At the other end of the spectrum, more willing and capable individuals can be supported to change their own dressings and apply different compression systems safely. Starting small may be the best approach to avoid overwhelming patients.

The most effective exercises will be those that are sustainable, such as small daily exercises while sitting.

Promoting patient health

Good nutrition is regarded as a major factor for maintaining skin integrity and health, as well as in ensuring optimal healing (Beeckman et al, 2020). A nutritional assessment should be used, such as the Malnutrition Universal Screening Tool (MUST; Malnutrition Advisory Group, 2018) to ensure that the patient's nutrition and hydration is adequate to maintain skin integrity or promote healing. Continuous monitoring of the patient's holistic health is necessary, and patients should be educated about the importance of nutrition and hydration where necessary and appropriate.

Health-related measures such as smoking cessation, alcohol moderation and weight management, should also be addressed where possible. Any other health factors or polypharmacy issues should also be taken into consideration where necessary, as some medications can cause changes to the skin that need to be managed appropriately (Le Blanc et al, 2018).

You should discuss all aspects of your patient's health and carry out a structured medication review for them, including mental health, and whether any support or lifestyle changes may help them.

Patient Expectation

Psychosocial wellbeing

As with other chronic conditions, the impact of living with a wound can be significant and should not be underestimated, often affecting activities of daily living and overall wellbeing (WUWHS, 2020b; Ousey et al, 2023). The links between wounds and conditions such as depression and anxiety

are well established, with leg ulcers the most commonly associated with depression (Fino et al, 2019). Patients with chronic leg ulcers often report negative emotions such as shame, embarrassment, and loneliness, and they present higher levels of depression and anxiety compared to healthy individuals (Platsidaki et al, 2017).

The psychosocial impact of chronic oedema should also not be underestimated: the impact on a person is unique and may be multifaceted, and psychological adjustment to living with oedema may be needed (Creedon, 2013; Ousey et al, 2023).

In addition to physical symptoms, varicose veins can also lead to psychological distress for many individuals. They may experience feelings of isolation or hopelessness as they contend with managing their symptoms independently, as well as feeling self-conscious and embarrassed, leading them to avoid wearing clothing that exposes their legs.

Preventing the development of damage in at-risk patients is always the best strategy, and it is important to discuss this with the patient and listen to their perspective. Improving the patient's psycho-emotional state has been shown to result in improved patient engagement and efficacy of treatment, making it an important consideration at all stages of management (Fino et al, 2019; Ousey et al, 2023).

When there has previously been, or a VLU is currently present, recurrence and non-healing can contribute to a vicious cycle for patients: if the expected healing results do not occur, patients may feel as if they have no control over their condition, and this ongoing frustration contributes to depression, anxiety and psychological stress (Platsidaki et al, 2017). Integration and links between health and social care should be made wherever possible.

The future

There needs to be a change in mindset from managing wounds to, wherever possible, preventing wounds. Where a wound develops, the focus needs to be on active healing, supported by a clear treatment plan and clear, documented goals. Practical steps need to be taken within healthcare teams to change practice and prioritise prevention.

Taking opportunities

Leading with a prevention mindset means taking every opportunity to assess the patient, their condition and their overall health and wellbeing. Opportunistic checking and assessments across healthcare settings may help to optimise patient care, identifying issues early even if a patient is seeing a clinician for something else (e.g. spotting swollen legs or fragile skin). For example, podiatrists could conduct initial checks on a patient's legs while examining their feet, and pharmacists could identify issues early in the patient's journey, facilitating early intervention before conditions worsen. The patient can then ideally be referred if necessary or signposted to additional support. Improved links between health and social care are required, particularly in easing the transition from health to social care.

Considering the patient's health and wellbeing holistically should encompass psychosocial as well as physical issues.

Best Practice Statement

Assessment

Risk assessment is a vital part of prevention, and standardised assessment is key in ensuring no signs are missed and avoiding variation in practice. With a focus on prevention, there's a need to promote the adoption of a standardised template for assessment.

Challenges in use of compression

While compression therapy is regarded as the mainstay treatment for patients who have developed a lower limb wound (Atkin and Byrom, 2022), many individuals do not receive appropriate compression therapy (Harding, 2016). Key issues

which need to be addressed in the use of compression include patient engagement and acceptability. Difficulty with the application of compression hosiery is one of the most common reasons provided for non-engagement, with many patients finding compression uncomfortable or challenging to wear, especially during hot weather (Perry et al, 2022). A patient study found that different compression therapies presented different challenges for patients, with organisation of services impacting on patient engagement, including heavy/increasing workloads, lack of knowledge/skills and training and prescribing issues. No clear relationship between an understanding of the cause of VLU or the mechanism of compression therapy and adherence was found, and 'patient non-adherence' was frequently mentioned (Perry et al, 2023).

Additional barriers to effective compression therapy that need to be addressed include:

- Lack of choice, inhibiting patient preferences or everyday activities
- Difficulties in application
- Poor language that is confusing or off-putting for the patient (e.g. 'too tight')
- Lack of knowledge and support
- Discomfort with ill-fitting compression.

Therefore, it is important to break down barriers wherever possible to ensure that patients are happy with their treatment and have a plan that they are able to sustain, giving them the best chance of preventing ulceration or reoccurrence. Regarding ill-fitting compression, compression hosiery measurement should be carried out by a healthcare professional with knowledge of the underlying causes of venous ulceration, compression hosiery treatment, the effect of different types of hosiery knit, and is competent in the measuring technique required for the selected hosiery type.

Every opportunity should be taken to assess the patient, their condition and their overall health and wellbeing.

Best Practice Statement

REMEMBER

Preventing wounds wherever possible is more clinically and cost effective than managing wounds.

Education and awareness

There is a need for education and raising awareness among both patients and clinicians, reinforcing the message that swollen (oedematous) legs are not 'normal' and should be investigated, so that an underlying cause can be established and symptoms managed before further damage occurs. Patients can be signposted to additional information and resources, such as

Legs Matter (2023). It is important that they are aware of the importance of prevention, and the measures that can be taken to prevent ulceration and reoccurrence. A focus on prevention will have a significant effect on patient quality of life, clinician workload and healthcare systems, and its importance cannot be overestimated. Awareness of simple measures that can be taken can have a huge impact.

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