

Venous leg ulcers

– a short guide to symptoms, causes and treatment



This guide is for information purposes only and may not be considered nor relied upon as a medical advice for treatment. Please contact your health care professional for medical advice and treatment of the condition.

Understanding venous leg ulcers

Venous leg ulcers are often hard to heal wounds that can develop after a minor injury and when blood doesn't flow properly through the veins. This can be caused by reflux in any of the venous systems – whether superficial, perforator, or deep – when the valves of the veins have failed, or the vein has become obstructed. With an aggressive recurrence rate, they are one of the most common types of wounds that clinicians encounter and treat.^{1,2}

- **50-60%** of leg ulcers are Venous leg ulcers (VLUs).^{3,4}
- 70% of VLUs recur within **3 months after wound closure**.^{5,6,7}
- **1% of the population and 3% of people over 80 years of age** are affected by VLUs in westernized countries.⁸
- 4 million **work days are lost** every year due to venous insufficiency.⁹

Definition of Venous leg ulcers:

An open lesion that usually occurs on the medial (inner) side of the lower leg between the ankle and the knee as a result of chronic venous insufficiency (CVI) and ambulatory venous hypertension, and that shows little progress towards healing within 4–6 weeks of initial occurrence. (Wounds International)¹



“Minor injuries can lead to major ulcers, anything that can cause even the most minor “ding” on the legs - even scratching a mosquito bite - will cause the skin to open up and ulcerate.”
- Dot Weir, RN, CWON, CWS.



Dot Weir, RN, CWS, CWON

Certified Wound and Ostomy Nurse. Certified Wound Specialist. Co-chair for SAWC and founding Board Member of the AAWC. Consultant and educator at Catholic Health's Advanced Wound Healing Center, Buffalo, NY.

Assessment - etiology

"We can't compress if we don't know whether the patient has an adequate blood flow or not. Regardless of the wound type - know the flow!" - *Dot Weir, RN, CWON, CWS.*

To ensure the correct treatment is provided to the patient, an accurate assessment must be performed to identify the underlying etiology of the leg ulcer. This can be done with a combination of holistic assessment and investigations.^{10,11}

To recognize the appearance of a venous leg ulcer, look for:

- Irregular sloping margins and shallow wounds, that can vary in size from small to encircling the leg.
- Often highly exuding with a fibrinous or/and granulating base.
- Hemosiderin staining.
- Causing a lot of pain for the patient.
- The arterial circulation is not significantly compromised.¹

"Remember: an atypical wound can be dressed up as something else. If it looks like a venous leg ulcer, but doesn't respond to the treatment - we need to have a low threshold for further investigation." - *Dot Weir, RN, CWON, CWS.*



Assessment - assess arterial blood flow

Compression therapy is the key to managing venous leg ulcers, but before deciding and initiating any sort of treatment an ankle-brachial pressure index needs to be performed (ABPI) to assess the arterial blood flow. Interpret the ABPI result for guidance on the amount of compression required and/or the need for vascular referral.¹²

Reading	Interpretation
≤ 0.5	Severe Peripheral arterial disease (PAD), critical limb ischemia unsafe to use compression. Urgent vascular surgeon referral. Poor healing potential.
0.51–0.79	Moderate PAD – Use modified compression with caution. Absolute systolic ankle pressure should be >60mmHg. Routine vascular specialist referral. Limited healing potential.
0.8–0.9	Mild PAD. Healing potential.
>0.91–0.99	Borderline PAD. Good healing potential.
>1.0–1.4	Normal. Good healing potential.
>1.4	Falsely elevated due to calcification of vessel wall. Common in diabetic population. Use Toe-brachial index (TBI) to confirm PAD and assess blood flow. Refer to vascular/diabetic specialist.

- Use a hand-held Doppler or an automated ankle-brachial index measuring device to assess arterial blood flow with a reading on ABPI.
- You should also listen for venous reflux in the valves.
- Using the Doppler and recording an ABPI is only part of the assessment. A full blood count should be carried out to exclude diabetes, anaemia, as well as to rule out other etiology and causes of edema. If possible, assess the venous system with a Duplex scan.¹²

“Our goal is to be 100% sure of what patients’ arterial status is. We need to go through all these things to make sure that we are ruling out all other kinds of vascular diseases so that we don’t cause the patients greater problems by compressing them.” - *Dot Weir, RN, CWON, CWS.*

Assessment - the wound

The compression therapy corrects the underlying venous disorder that allows the ulcer to heal. However, it is also important to ensure an accurate wound assessment and that an appropriate wound dressing is used.¹

When assessing the wound, please observe:^{10,11,13}

- Location, Size and Depth.
- Wound bed: Red granulation, presence of fibrin and slough. Check for areas of the ulcer that appear different such as abnormal granulation which may indicate malignancy.
- Wound margin and surrounding skin.
- Exudate: level, color and viscosity.
- Pain: Location, frequency, cause, type, intensity and duration.
- Odor: Presence and nature.
- Local signs of Infection or/and Biofilm.

The wound dressing is used to protect the wound and manage exudate effectively. Exudate levels are often high at the beginning of the compression therapy but exudate levels will reduce as venous return improves and limb edema and inflammation decrease.^{1,13}

Properties of the dressing that are important when used under compression therapy:¹

- Maintains a moist wound environment while able to handle varying levels of exudation.
- Absorbs and retains fluid when used under compression, i.e. prevents strikethrough.
- Low profile, i.e. unlikely to leave an impression in the skin.
- Conforms to the wound bed.
- Does not adhere to the wound bed (non-adherent).
- Comfortable.
- Atraumatic – does not damage the wound bed or periwound skin on removal.
- Low allergy potential.
- Remains intact on removal.
- Cost-effective, i.e. offers optimal wear time.

“The choice of dressing is going to be driven by the location of the wound on the leg, the condition of the skin and how often the dressing needs to be changed, as well as the possibilities for the patient to do so.” - *Dot Weir, RN, CWON, CWS.*



Treatment - managing the ulcer and the surrounding skin

An important aspect of venous leg ulcer management is care of the skin. Since it loses its natural oils, it will become very dry and hyperkeratosis may develop in the presence of venous hypertension.¹

- Regular, meticulous skin care is vital.
- Wash the skin with a soap substitute and debride all dead, dry skin carefully.
- The skin should then be dried thoroughly.
- The skin will also need to be moisturized with a moisturizer that is suitable for the patient.
- Moisturizers may contain preservatives, and some of these can be irritants, especially in patients with venous disease.



Treatment - compression

“Now we’ve made sure that we’ve ruled out anything that would make it contraindicated for any individual patient, but certainly - compression is our mainstay of treatment.”

- Dot Weir, RN, CWON, CWS.

Correctly applied, compression therapy is the gold-standard treatment and has been demonstrated to improve healing rates in patients with existing venous leg ulcers, and to reduce ulcer recurrence. It should be used wherever possible as a first-line treatment to restore a normal return of venous blood back to the heart. This is achieved by applying an external force or support to the limb – which reverses the venous hypertension, allows damaged valves to close and directs blood flow in the right direction.^{14,15,16}

When choosing the most accurate compression therapy system for an individual patient, several factors must be taken into consideration.¹

- Training, competency and experience of the clinician applying the compression.
- Wound status, e.g. size of the ulcer and exudate levels.
- Patient mobility: in patients who have low calf muscle pump activity or stiff compression therapy systems, a multi-component system is preferred. For patients who are completely immobile, intermittent pneumatic compression or hosiery may be more suitable.
- Patient dexterity and ability to self-apply compression therapy.
- Previous experiences of the patient and likely concordance with treatment.
- The patient’s pain levels.
- Access to care, e.g. the possible frequency of clinic or home care visits.
- Level of compression required.
- Availability of compression therapy systems.

Note: *A wound size reduction of less than 20–30% in 4–6 weeks should trigger reassessment. Reconsider quality of compression (i.e. level of compression applied, type of compression therapy) and assess level of concordance. Refer to a specialist if considered appropriate.¹*

Treatment - infected wound

The wound should be monitored for signs of infection, as part of the ongoing wound assessment. There is no single test to definitively diagnose infection; wound infection is diagnosed by clinical assessment of the wound and the whole patient. This is usually supported by microbiological data.¹⁷

Management of infection should include:^{17,18}

- Optimizing the host response.
- Pain control.
- Management of co-existing medical conditions, e.g. glycaemic control.
- Minimizing or eliminating risk factors for infection, where feasible.
- Optimizing nutritional status and hydration.
- Treating other sites of infection, e.g. urinary tract infection.

- Optimizing the wound bed and reducing the bacterial load.
- Preventing further wound contamination or cross- contamination with good infection control.
- Antimicrobial therapy – topical antiseptics/antimicrobials +/- systemic antibiotics, depending on stage of infection.
- Wound cleansing and debridement to remove dead tissue, such as yellow slough Debridement stimulate wound healing and it has been demonstrated that it provides a treatment window of opportunity in which the biofilm defences are temporarily interrupted.

Note: *Some patients may be more at risk of infections than others and include those with co existing medical conditions such as Diabetes Mellitus.¹⁷*

Educate and advise the patient¹⁹

1. Moisturize your legs with an unscented moisturizer every day.
2. Check your skin for breaks, cracks and swelling.
3. If broken areas are not healing or you notice any changes in the color or texture of your skin, visit your local health care provider for advice.
4. Try to walk for about 30 minutes, at least three times a week.
5. If walking is difficult, just move your feet around in circles, then up and down – you can do this sitting down. Move your legs and feet regularly in any way that feels good – it's great for circulation and to reduce swelling.
6. Avoid standing for a long time.
7. Maintain a healthy weight – carrying extra weight increases the chances of developing problems in your legs and feet and makes swelling worse. Aim to eat a well-balanced diet and get enough exercise.
8. Stop smoking – smoking decreases the blood flow to the legs and feet, and makes healing more difficult. Stopping will help to keep your legs healthy.
9. If you're prone to swelling in your legs and feet or you have problems with your veins, then compression may be helpful. Compression socks or tights are usually worn daily but your healthcare professional will advise you on what's best for you.
10. They might feel a little tight or uncomfortable at first but they shouldn't hurt. If they do, ask your healthcare professional for a different option of compression or just a different style.
11. Take charge of your own leg and foot health by paying attention to your legs and feet. Check with your health care providers if things aren't looking right, demand better or different care if your leg or foot isn't getting better.

Mölnlycke

At Mölnlycke, we deliver innovative solutions for managing wounds, improving surgical safety and efficiency, and preventing pressure ulcers. Solutions that help achieve better outcomes and are backed by clinical and health-economics evidence. In everything we do, we are guided by a single purpose: to help healthcare professionals perform at their best. And we're committed to proving it every day.

Do you want to know more?

This short guide aims to support and inspire healthcare professionals in their work to achieve the best patient, clinical and economic outcomes. For more in-depth information on treatment of venous leg ulcers or any medical solutions offered by Mölnlycke, please contact: contact@molnlycke.com

Mölnlycke Advantage

For customized information on wound care, we offer an online learning hub for healthcare professionals. This educational hub is designed to help you safely advance your career and knowledge while getting the best outcomes for your patients. Mölnlycke Advantage hub includes webinars, eLearning modules, clinical evidence and the latest information on best practices, technologies and therapies – all developed to empower you to improve your performance. <https://www.molnlycke.com/education/>

References: 1. Harding, K., et al. Simplifying venous leg ulcer management. Consensus recommendations. *Wounds International* 2015; 2. Sufian, S., Lakhanpal, S., Marquez, J., et al. Superficial vein ablation for the treatment of primary chronic venous ulcers. *Phlebology* 2011; 26: 301-6. 3. Lauchli, S., Bayard, I., Hafner, J. et al. [Healing times and the need for hospitalization for leg ulcers of different etiologies]. *Hautarzt* 2013; 64: 12, 917-922. 4. Hafner, J., Nobbe, S., Partsch, H. et al. Martorell hypertensive ischemic leg ulcer: a model of ischemic subcutaneous arteriolosclerosis. *Arch Dermatol* 2010; 146: 9, 961-968. 5. Abbade, L.P., Latoria, S., de Almeida Rollo, H., et al. A sociodemographic, clinical study of patients with venous ulcer. *Int J Dermatol* 2005; 44: 12, 989-992. 6. McDaniel, H.B., Marston, W.A., Farber, M.A., et al. Recurrence of chronic venous ulcers on the basis of clinical, etiologic, anatomic, and pathophysiologic criteria and air plethysmography. *J Vasc Surg* 2002; 35: 4, 723-728. 7. Finlayson, K., Wu, M.L., Edwards, H.E. Identifying risk factors and protective factors for venous leg ulcer recurrence using a theoretical approach: A longitudinal study. *Int J Nurs Stud* 2015; 52: 6, 1042-1045. 8. Posnett, J., Gottrup, F., Lundgren, H., Saal, G. The resource impact of wounds on health-care providers in Europe. *J Wound Care* 2009; 18: 4, 154-61. 9. Chandan K. Sen. *Advances in Wound Care*. Feb 2019. 39-48. <http://doi.org/10.1089/wound.2019.0946> O'Donnell, TF et al. Management of venous leg ulcers: Clinical practice guidelines of the Society for Vascular Surgery® and the American Venous Forum *Journal of Vascular Surgery*, Volume 60, Issue 2, 35 - 59S 10. Australian and New Zealand Clinical practice guidelines for prevention and management of Venous leg ulcers. 2011. 11. Wounds UK. Best Practice Statement: Holistic management of venous leg ulceration. 2016 London: Wounds UK. 12. Bjork, R., Ehmann, S., S.T.R.I.D.E. Professional guide to compression garment selection for the lower extremity. *Journal of Wound Care* 2019; 28: (6 suppl 1): 1-44. 13. World Union of Wound Healing Societies (WUWHS). Principles of best practice: Compression in venous leg ulcers. A consensus document. London: MEP Ltd, 2008. 14. O'Meara, S., Cullum, N., Nelson, E.A., et al. Compression for venous leg ulcers. *Cochrane Database Syst Rev* 2012; 11: CD000265. 15. Nelson, E.A., Bell-Syer, S.E. Compression for preventing recurrence of venous ulcers. *Cochrane Database Syst Rev* 2012; 15: CD002303. 16. Wounds UK. Best Practice Statement: Ankle brachial pressure index (ABPI) in practice. London: Wounds UK, 2019. 17. International Wound Infection Institute (IWII) Wound infection in clinical practice. Wounds International 2016. 18. Swanson, T., Grothier, L., Schultz, G. Wound Infection Made Easy. *Wounds International* 2014. 19. Legsmatter.Org. Knees to toes: What you need to know.