

This BPR Brief is an abridged version of the **Best Practice Recommendations for the Prevention and Management of Venous Leg Ulcers**. In alignment with a global health-care perspective, Wounds Canada is committed to provide support to patients to help them adapt to and self-manage their condition in the face of social, physical and emotional challenges. This document uses the **Wound Prevention and Management Cycle** (WPMC) (Figure 1) as the basis for clinical decision making. For clinicians, this document is meant as a cue for treatment; it provides non-inclusive examples listed below each recommendation. For policy makers, it highlights (in ***bold italics***) actions and policies that support best practice.

Wounds Canada follows a population health strategy for wound care that enables us to address the entire range of individual and collective factors that determine health, including:

- Better health: health of the general population improved; behavioral, social, economic and environmental determinants addressed; preventative care rewarded
- Better health care: patient-centred, reliable, safe, evidence-based treatment; care managers co-ordinate total health-care delivery; evidence-based treatment with outcome tracking
- Better value: costs and cost improvements monitored; readmissions to hospital reduced; early interventions to reduce per patient cost implemented; unnecessary or duplicate procedures eliminated; information management technologies utilized

For more information on content, levels of evidence or tools related to a particular recommendation, click on the links provided.

We strongly recommend that before using this BPR Brief the user read the full best practice recommendation (BPR) document. To obtain a copy of the full document, go to: www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/1521-wc-bpr-prevention-and-management-of-venous-leg-ulcers-1874e-final/file.

Introduction

A venous leg ulcer (VLU) is an opening in the skin of the leg or foot in an area affected by sustained venous hypertension. ***VLUs lead to approximately 60 to 80% of lower leg ulcers***, with the challenge that only 60% heal on average by 12 weeks, and once healed, 75% will recur within three weeks.

The pathophysiology of lower leg ulcers is associated with sustained venous hypertension due to CVI, including failure of the calf-muscle pump (CMP), incompetent valves and reflux in the venous leg system.

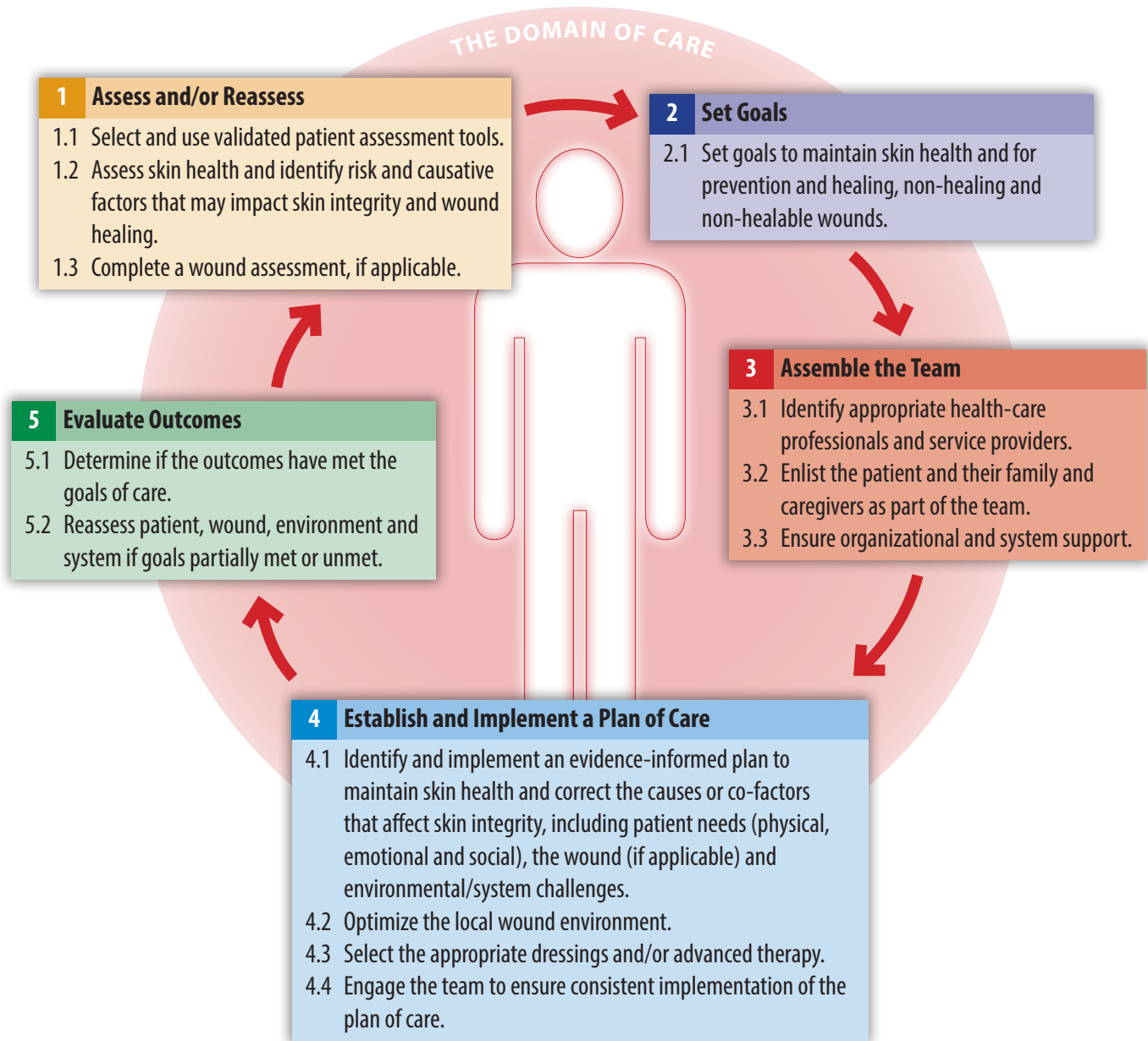
Each of these underlying issues together or singularly could contribute to reduced healing. Leg changes associated with venous disease are present in 10 to 35% of adults in the United States. This can lead to venous leg ulcers, which affect approximately 1% of the population (prevalence 0.12 to 1.69%); with age this prevalence increases to 4% in people older than 65 years.

VLUs are common and often recurrent and may result in significant economic and social burden to the patient, care partners, family and health-care system. Patient QOL is usually negatively affected. The role of compression has become well-established as a first-line therapy.

Edema which persists for more than three months and is minimally responsive to limb elevation and/or diuretics is defined as chronic edema. All chronic edema involves some lymphatic dysfunction and is appropriately classified as lymphedema (LE). For more information specific to lymphedema, see Chapter 13: Prevention and Management of Wounds Related to Lower Limb Lymphedema. As well consult the Canadian Lymphedema Framework (CLF) at <https://www.canadallymph.ca/>.

Disclaimer: This document provides a brief clinical enabler for the content provided in the relevant chapter(s) of *Best Practice Recommendations for Skin Health and Wound Management 2025*. It is not intended to provide comprehensive information on the given topic(s). For more complete information on specific best practice recommendations, refer to the full publication at: <https://www.woundscanada.ca/news/752-bpr-new>

Figure 1: Wound Prevention and Management Cycle (WPMC)



For the complete version of Best Practice Recommendations for the Prevention and Management of Venous Leg Ulcers, visit [here](#).

1 Assess and/or Reassess

- 1.1 Select and use validated patient assessment tools.
- 1.2 Assess skin health and identify risk and causative factors that may impact skin integrity and wound healing.
- 1.3 Complete a wound assessment, if applicable.

Assessment must occur to determine the causes and factors that may impact skin integrity and wound healing. Patient assessment includes history and current health status; skin status (and wound status, if applicable); environmental factors and system factors. If, after the WPMC has been completed, goals of care have not been fully met, reassessment must take place, followed by the rest of the recommendations in the WPMC steps. **Assessment tools need to be available and in use in all care settings, supported by staff education and policy.**

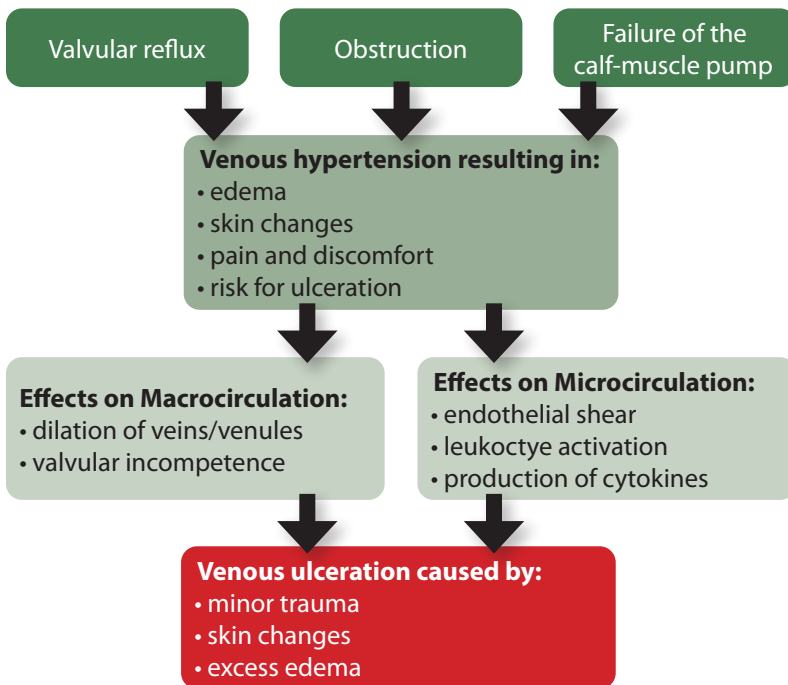
1.1 Select and use validated patient assessment tools

- **Clinical-Etiology-Anatomy-Pathophysiology (CEAP)** classification system is an international consensus method used to categorize chronic venous disorders and provide the clinician with a structured framework.
- **Leg Ulcer Measurement Tool (LUMT)** consists of domains and parameters to systematically assess leg ulcers and aid in assessing changes in wound healing.

1.2 Identify risk and causative factors that may impact skin integrity and wound healing

Table 1: Risk Factors Associated with Venous-related Complications

Causes	Reflux	Obstruction	Failure of the Calf-muscle Pump	Other
Risks	<ul style="list-style-type: none"> ▪ High body mass index (obesity) ▪ Multiple pregnancies ▪ Prolonged sitting or standing ▪ History of varicose vein stripping 	<ul style="list-style-type: none"> ▪ History of deep vein thrombosis (DVT) ▪ May-Thurner syndrome (anatomic variant at the left iliac vein) 	<ul style="list-style-type: none"> ▪ Joint issues in the lower extremity (ankle and leg) ▪ Surgery trauma ▪ Shuffling gait ▪ Medical conditions such as Parkinson’s Disease and others 	<ul style="list-style-type: none"> ▪ Medications (e.g., hydroxyurea methotrexate) ▪ Family history ▪ Female > Male ▪ Genetic conditions: Ehler-Danlos syndrome, Klippel-Trenaunay syndrome

Figure 2: Pathophysiology for the Development of a Venous Leg Ulcer

1.2.1 Patient: Physical, emotional and lifestyle

Table 2: Components of the History and Physical Examination to Detect Chronic Vein Insufficiency (CVI)

History	<ul style="list-style-type: none"> ▪ Risk factors for venous or arterial disease ▪ Co-occurring conditions (diabetes mellitus, connective tissue diseases, inflammatory conditions), arterial risk factors ▪ History of the ulcer(s) and recurrence and treatments used, tests conducted and effectiveness
Bedside examination	<ul style="list-style-type: none"> ▪ Blood pressure (BP) ▪ Lower leg examination and ulcer characteristics ▪ Pulses: femoral, popliteal, dorsal pedis and posterior tibial ▪ Ankle-Brachial Pressure Index (ABPI) (see table below) ▪ Gait assessment, including walking aids/footwear/physical activity and ankle joint range of motion
Laboratory	<ul style="list-style-type: none"> ▪ Blood glucose level ▪ Creatinine, CBC, AST, others depending on comorbid issues, diagnostic considerations (thrombophilia screen if DVT or history)
Vascular laboratory	<ul style="list-style-type: none"> ▪ Venous duplex Doppler ▪ ABPI and more extensive arterial studies if indicated
Allergies/Sensitivities	<ul style="list-style-type: none"> ▪ Medication(s) ▪ Topical agents ▪ Environmental
Self-care/treatment abilities and psychosocial issues	<ul style="list-style-type: none"> ▪ Ability to actively participate in skin health and wound care treatments/interventions⁴³ ▪ Quality of life assessment ▪ Continence status (urine, fecal or both, and associated devices) ▪ Patient support systems (care partner, family)

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Nutrition	<ul style="list-style-type: none"> ▪ Weight ▪ Use of tools to evaluate
Medications	<ul style="list-style-type: none"> ▪ Immunosuppressants ▪ Possible drug interactions if adding antibiotics or other agents
Pain	<ul style="list-style-type: none"> ▪ Procedural ▪ Related to disease ▪ Related to compression or dressings ▪ Use of validated tools to evaluate

Table 3: Assessing Arterial Flow and Perfusion

Grade	Ankle-Brachial Pressure Index	Toe Brachial Index	Toe Pressure	Waveforms	Transcutaneous Oxygen Pressure (indicating perfusion)
Non-compressible	> 1.40 Be aware of possible falsely elevated measures	Preferred when vessels are non-compressible	Preferred when vessels are non-compressible		Preferred when vessels are non-compressible
Normal Range	1.0–1.40	> 0.7	> 70 mmHg	Triphasic	> 40 mmHg
Borderline	0.91–0.99	> 0.6	> 70 mmHg	Biphasic/monophasic	> 40 mmHg
Abnormal	< 0.90	< 0.6	< 70 mmHg	Biphasic/monophasic	< 40 mmHg
Mild	0.7–0.9	> 0.4	> 50 mmHg	Biphasic/monophasic	30–39 mmHg
Moderate	0.41–0.69	> 0.2	> 30 mmHg	Biphasic/monophasic	20–29 mmHg
Severe	< 0.4 critical limb-threatening ischemia (CLTI)	< 0.2	< 30 mmHg	Monophasic	< 20 mmHg

1.2.2 Environmental: Socio-economic, care setting, potential for self-management

Assess the patient's ability and motivation to participate and engage in establishing the treatment goal and care plan.

Determine the patient's ability to conduct preventive self-care measures, including consistent management of leg edema. Ulcer formation and changes to mobility may contribute to employment changes, job loss or changes in one's level of social interaction. It is critical to provide a culturally sensitive environment for care.

1.3 Complete a wound assessment, if applicable

In the leg with CVI, wound and periwound area should be evaluated in terms of many parameters, including location (gaiter area, malleolar area), ulcer size (shallow), amount and type of exudate (mild to severe), appearance of the ulcer bed (irregular in shape), condition of the wound edge (attached, rolled), signs of clinical infection (see bacterial burden) and changes to the periwound skin.

The presence or absence of infection and osteomyelitis should be assessed. Assess for infection using the *International Wound Infection Institute (IWII, 2022) continuum*: <https://woundsinternational.com/consensus-documents/wound-infection-in-clinical-practice-principles-of-best-practice/>. Other tests may include swabs, bone biopsy, x-rays, blood tests for inflammatory markers, MRI.

Table 4: Physical Findings Associated with Venous Disease

Physical Changes and Presentation	Comments
	<p>Edema: Edema is the perceptible increase in volume of fluid in skin and subcutaneous tissue, characteristically indented with pressure. Venous edema usually occurs in the ankle region but may extend to the leg and foot. Edema worsens with dependency and improves with leg elevation.</p>
	<p>Stasis changes: Eczematous changes make skin vulnerable, with redness and scaling often associated with pruritus. Management involves the use of emollients or topical corticosteroids. Contact dermatitis and allergies and or sensitivities may occur from the use of some topical agents.</p>
	<p>Hemosiderin staining (hemosiderosis), hyperpigmentation: When vein valves fail and red blood cells are forced out of capillaries, they break down and release the pigment hemosiderin. This results in grey-brown pigmentation of the skin in the gaiter area.</p>
	<p>Corona phlebectatica: This fan-shaped pattern of numerous small interdermal veins on medial or lateral aspects of the ankle or foot is commonly thought to be an early sign of advanced venous disease. Synonyms include <i>malleolar flare</i> or <i>ankle flare</i>. "The corona phlebectatica (CP) is classically described as the presence of abnormally visible cutaneous blood vessels at the ankle with four components: venous cups, blue and red telangiectases, and capillary stasis spots."</p>
	<p>Retention Hyperkeratosis: Common, benign skin condition related to reduction of edema and routine desquamation. Managed with skin hygiene protocols.</p>
	<p>Varicosities: Usually tortuous, but tubular, saphenous veins with demonstrated reflux may be classified as varicose veins. Synonyms include <i>varix</i> (plural varices) and <i>varicosities</i>. Varicose veins are blue, swollen, twisted veins that may be superficial or deep. Common locations include the ankle, back of the calf or medial aspect of the leg</p>

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Acute lipodermatosclerosis (LDS): Acute lipodermatosclerosis presents with an extremely painful red to purple indurated warm area on the lower leg. It is often misdiagnosed as cellulitis, phlebitis or panniculitis. These changes progress over months to years to the chronic form.



Chronic lipodermatosclerosis (LDS): Localized chronic inflammation and fibrosis of skin and subcutaneous tissues of lower leg, sometimes associated with scarring or contracture of Achilles tendon. LDS may be preceded by a diffuse inflammatory edema of the skin, which may be painful, referred to as hypodermatitis LDS, or acute LDS. The chronic form is recognized as a sign of severe venous disease or C4 in the CEAP classification.



Inverted champagne bottle deformity: This is a form of lipodermatosclerosis with subcutaneous fibrosis, which leads to proximal leg swelling with skin tightening and a narrowing band at the distal leg or ankle.



Atrophie blanche: Characterized by localized, often circular, whitish and atrophic areas surrounded by dilated capillaries and sometimes hyperpigmentation, often described as porcelain white scars.

Atrophie blanche is common, occurring in a third of patients with venous disease, but also may represent livedoid vasculopathy.

This livedoid vasculopathy is associated with coagulation abnormalities in 50% of cases. The most common location for this is the medial malleolus extending to the dorsal aspect of the foot. Atrophie blanche is painful due to vascular occlusion.



Venous ulcer: This full-thickness defect of the skin, most frequently in the ankle region, fails to heal spontaneously and is sustained by CVD.

2 Set Goals

2.1 Set goals to maintain skin health and for prevention and healing, non-healing and non-healable wounds.

Goals of care need to revolve around the patient. Achieving goals will depend on the interplay of the patients' health status and lifestyle, the availability of resources and the knowledge and ability of care partners to provide optimal interventions. If these factors are not taken into consideration the goals of care may be unrealistic and unrealizable. The team should aim to set goals according to the **SMART principle**: **S**pecific, **M**easurable, **A**ttainable, **R**elevant and **T**imely.

2.1 Set goals for prevention, healing, non-healing and non-healable wounds

Examples of Preventative Skin and VLU Goals:

- Skin care regimen in place within one day
- Foot care and footwear plan established, with a focus on prevention of trauma to skin
- Leg edema reduced by elevating the affected limb above heart level for 30 minutes, three times per day
- Leg edema reduced through continuous use of compression therapy (wraps or pumps) within two weeks; including care and management of wraps
- Leg edema prevented through long-term use of garments once edema is reduced
- Calf muscle and calf-muscle pump activation exercises using elastic bands 10 times, three times per day
- Walking using heel-toe gait for 20 minutes two times per day
- The risk of injury reduced through the reduction of environmental hazards within two days
- Activities of daily living modified in two weeks to renew activity and full ADLs resumed within one month

Healing wounds require sufficient vascular supply, correction of underlying causes and optimized general health. Goals may include:

- Leg edema management goals, as in prevention
- Wound closure within three months
- Infection managed with antimicrobials within two days
- Exudate managed through dressing selection within two days
- Pain managed through analgesia within one day
- Awareness of signs and symptoms of infection learned within one day
- Planning purchase of lower leg compression stockings and application device to don stockings within seven days
- Hand hygiene education to reduce infection (cellulitis) within one day
- Proper hand-washing, hanging to dry of stockings and or garments within two days. (Note daily washing helps the elastic in the garment return to its original shape and may increase the life of the garments)
- Mental health screening for distress, depression, anxiety and supports within two weeks

Non-healing wounds have the potential to heal, but wide-ranging patient or health-care system factors may be compromising wound healing (e.g., the inability to accept or consistently wear compression therapy).

Goals for the patient may include:

- Leg edema managed (e.g., identify specific approach patient and care partner is able to achieve and maintain)
- Independence established with dressing changes using clean technique

For the complete version of Best Practice Recommendations for the Prevention and Management of Venous Leg Ulcers, visit [here](#).

- Drainage, itchiness and odour managed with recommended dressings
- Pain managed using analgesia
- Awareness confirmed of signs and symptoms of infection and/or deterioration, and to whom to report concerns
- Infection prevented and/or treated with antimicrobial dressings
- Mental health screening done for distress, depression, anxiety and hope, and referrals made to appropriate supports
- Lower leg compression stockings and donning application device purchased and appropriate education provided
- Hand hygiene to reduce risk of infection (cellulitis)
- Proper hand-washing and hanging to dry the compression stockings and garments supports the elastic in the garment to return to its original shape (this may extend the life of the garment)

Non-healable wounds have no ability to heal due to untreatable comorbidities (for example, severe PAD, CHF or a terminal illness). Goals for the patient may include:

- Same as for non-healing VLU
- Attendance at a chronic disease-management support group, as able
- Attendance at smoking cessation session(s), as able
- Continue to reassess to identify if wound status moves to non-healing or healable

2.1.2 Identify quality-of-life and symptom-control goals

Venous disease management requires patient collaboration to develop goals they can meet around smoking cessation, appropriate garments and footwear, medication management and ADLs such as exercise and physical activity.

3 Assemble the Team

- 3.1 Identify appropriate health-care professionals and service providers.
- 3.2 Enlist the patient and their family and caregivers as part of the team.
- 3.3 Ensure organizational and system support.

An integrated team is necessary to implement, adjust and sustain a plan to meet the patient-specific goals.

The team should include the relevant health-care professionals and other service providers as required as well as the patient, family and their support system.

3.1 Identify appropriate health-care professionals and service providers

Patients with chronic wounds such as VLUs may require the skill of numerous health care disciplines, depending on the patient's needs and the availability in the community, such as nurses, physicians (general, specialized), pharmacists, social workers, psychologists and spiritual advisers, vascular technicians and surgeons, physiotherapists, occupational therapists, pharmacists, mental health and chronic disease self-management groups, registered dietitians, diabetic educators and garment fitters. The team members will change over time depending on the patient's factors and the healing process.

3.2 Enlist the patient and their family and caregivers as part of the team

Enlisting the patient and their care partners within the health-care team is a critical component to the success of VLU prevention and treatment outcomes. Compression therapy and calf-muscle pump exercises are the mainstay in VLU therapy. Education and support are needed about the role of compression and the rationale for wearing life-long compression. Patients and care partners must receive appropriate and regular instructions focused on the mechanics of wearing compression therapy daily and why it is essential to do so.

3.3 Ensure organizational and system support

Wounds Canada's resources and education align with a population health management model. This model encourages the proactive management of a total population at risk for adverse outcomes through a variety of individual, organizational and cultural interventions to improve patient, clinical and financial outcomes. The interventions are based on a risk-stratified needs assessment of the population, supported by a comprehensive governance infrastructure.

Organizational and system support requires that decision-makers, and those who oversee financial budgets, understand the importance of providing evidence-based, cost-effective care for the prevention and management of VLUs. To support this model and secure successful outcomes, decision makers must:

- ***Use globally recognized risk classifications to identify risk, support prevention and develop management strategies by allocating appropriate resources such as therapeutic garments, patient education and clinical visits***
- ***Develop policies (federal, provincial/territorial, regional and institutional) based on current evidence that acknowledge and designate human, material and financial resources to support the team in executing an effective wound management program.***
- ***Establish a pathway for referral of people with venous leg problems to a multidisciplinary wound care service.***
- ***Work with the community and other partners to develop a process to facilitate patient referral and access to local resources and health professionals with specialized knowledge in wound management.***
- ***Work with community and other partners to advocate for strategies and funding for all aspects of preventative venous ulcer care including preventative and treatment garments.***
- ***Ensure wound care services and programs exist for the assessment and continuing surveillance of those considered at increased risk in order to prevent VLUs and to support management in their health-care or community setting.***
- ***Establish, train and support an integrated team composed of interested, skilled and knowledgeable persons to address and monitor quality improvements in the prevention and management of venous disease complications.***
- ***Establish and sustain a communication network between the person with venous disease and the necessary health-care and community systems.***
- ***Audit all aspects of the service to ensure that local practice meets accepted national and international standards of care.***

In order to achieve these steps and improve patient outcomes, establish or adopt a system-wide care pathway.

4 Establish and Implement a Plan of Care

- 4.1 Identify and implement an evidence-informed plan to maintain skin health and correct the causes or co-factors that affect skin integrity, including patient needs (physical, emotional and social), the wound (if applicable) and environmental/system challenges.
- 4.2 Optimize the local wound environment.
- 4.3 Select the appropriate dressings and/or advanced therapy.
- 4.4 Engage the team to ensure consistent implementation of the plan of care.

Ensure that care addresses the goals and considers patient needs, factors relating to the skin and wound (if applicable), as well as the environment and the system in which the team is situated.

4.1 Identify and implement an evidence-informed plan to maintain skin health and correct the causes or co-factors that affect skin integrity, including patient needs (physical, emotional and social), the wound (if applicable) and environmental/system challenges

Prevention of, and early intervention in, venous disease remains key for physical and mental quality of life. Venous leg skin care, leg elevation to manage edema and wearing of compression socks are considered proactive, preventative care.

Basic Skin Care for Persons with Venous Hypertension

Maintaining healthy skin for people living with venous leg disease is essential. Whether they have an ulcer or not, lower leg skin and the skin surrounding venous leg ulcers requires impeccable skin care and hygiene, as it is at risk for breakdown due to dermatitis and moisture-associated skin damage.

Leg Hygiene and Cleansing: In provision of care for patients living with venous leg edema, routine skin care as well as wound cleansing is part of care planning. When compression bandages and garments are removed from the patient's leg, it is essential that the full leg receive a careful cleansing.

Compression Therapy

Patients with venous insufficiency and/or lymphedema require the life-long use of therapeutic compression that may include compression bandaging systems, compression garments (stockings or loop and fastener systems) or compression devices/pumps. Compression improves CMP function and decreases reflux in the incompetent veins. See Wounds Canada's Product Picker: [Control of Venous Leg Edema](#) for details.

Important Note: Compression bandages/wraps and devices/pumps are primarily used to reduce edema; compression garments are fitted to the leg once the edema is controlled to prevent recurrence.

Calf-muscle Pump Activation

A treatment program that addresses the range of motion around the ankle joint, muscle strength and gait training are integral components of the overall care plan for the patient at risk for or currently living with a VLU. Exercise programs tailored to address venous hypertension need to include stretches and strengthening for the gastroc/soleus muscle complex in preferably weight-bearing positions but may also be of benefit done in a non-weight-bearing position. It is best if the exercises are monitored by someone specifically trained in exercise prescription, but the intervention can be successful when incorporated in an overall self-management program. Exercises are particularly beneficial when done while wearing compression.

Pharmacologic Treatment

The medications that have been studied in randomized control trials to support VLU healing include flavonoids, horse chestnut seed extract, pentoxifylline and glycosaminoglycans. Of these, pentoxifylline and micronized purified flavonoid fraction (MPFF) have been shown to improve VLU healing in RCTs.

Pain Control

Pain can be chronic and challenging due to ulcer factors or dressing changes, cleansing or debridement procedures. Pain in leg ulcers is ranked as the most severe when compared to other wounds, and removal of dressing causes the greatest pain. Specific management strategies should be targeted to the cause of pain specific to venous disease.

4.2 Optimize the local wound environment: cleansing, debriding, managing bacterial balance and managing moisture balance

4.2.1 Cleansing

Patients living with venous leg edema or ulcers require routine skin care as well as wound cleansing as part of their care planning. When compression bandages and garments are removed from the patient's leg, it is essential that the full leg receive a careful cleansing with a pH-appropriate skin cleanser. **Wound cleansing** should be done at each dressing change and wound assessment, and prior to the application of a new dressing. Wound cleansing reduces the odour that is very common in highly exudative venous ulcers. Cleansing of the periwound skin and surrounding skin allows for visualization and management of tissue surrounding the ulcer. See Wounds Canada's Product Pickers, below.

4.2.2 Debriding

Evidence for the benefit of **debridement** of VLUs is limited. The choice of debridement method depends on the expertise of the clinician, availability of resources, and patient and wound factors. See Wounds Canada's Product Pickers, below.

4.2.3 Managing bacterial balance

It is recommended that infected ulcers be treated with topical agents if **local infection** is evident, and systemic agents for **spreading or more systemic infection** (refer to IWII (2022) for more information). See Wounds Canada's Product Pickers, below.

4.2.4 Managing moisture balance

Moisture balance can be challenging in patients with VLUs with excessive exudate that may be the result of inflammation/infection or edema. Excessive drainage should be managed by using appropriate products and dressings, along with compression to control edema. See Wounds Canada's Product Pickers, below.

4.3 Select the appropriate dressings and/or advanced therapy

Dressing Selection

Dressings play an important role where there is a wound, along with compression. Once the wound is cleansed, leg hygiene is conducted and the wound assessed, the decision can be made as to which dressing to use. Dressings are chosen for a variety of reasons, including wound bed and periwound protection, exudate absorption and management, pain reduction and management, infection and odour control, and patient preference. See Wounds Canada's Product Pickers, below.

Advanced Therapies

For VLU that are failing to progress toward healing despite optimal treatment and certainty of the diagnosis, advanced wound therapies should be considered. These therapies include hyperbaric oxygen therapy, ultrasound, shock wave therapy, direct wound bed electrical stimulation, biologic skin equivalents, negative pressure wound therapy, pulsed electro-magnetic fields, laser therapy, growth factors and platelet rich plasma injections, stem cells, and low frequency nerve stimulation (muscle pump activator), and topical wound oxygen therapy.

Surgical Management

The role of surgery is to remove the incompetent superficial vein and divert venous flow to the deep system, thereby mitigating the effect of venous hypertension on the ulcerated skin. Surgical interventions include ligation and stripping, endovenous laser or radiofrequency ablation, and injection with foam or cyanoacrylate glue to chemically ablate the superficial veins. In patients with deep venous occlusive disease, surgical interventions may include stenting of the deep veins or creation of a venous bypass.

4.4 Engage the team to ensure consistent implementation of the plan of care.

To engage the patient as the key team member, health-care professionals can employ effective communication strategies, including the following:

- Provide education and engage the patient in the care plan process
- Screen for mental health and well-being, hopelessness, depression, anxiety
- Plan footwear and clothing changes ahead of initiating compression
- Refer patient to physiotherapy to assess gait and equipment needs ahead of initiating compression
- Provide effective education about the benefits of compression and leg hygiene
- Where possible, have consistent, well-trained nurses wrapping and caring for this patient group. This builds trust on which health-care planning can be more effectively built.

Self-Management with Venous Leg Disease and Ulcers

- Self-care is the ability of people with venous leg disease to care for themselves. Building self-care capacity is done with the patient, care partner, family and health-care professional(s). This may be done one-on-one, or in a small group.
- Managing preventative skin care, associated socking and garments, medications (oral, topical) and wound care and associated compression puts demands on the patient and care partner.
- See a supportive toolkit <https://wounds-uk.com/best-practice-statements/personalised-self-care-for-people-with-venous-leg-ulcers-a-toolkit-for-change/> for change focused on personalized self-care for people with VLUs.

5 Evaluate Outcomes

- 5.1 Determine if the outcomes have met the goals of care.
- 5.2 Reassess patient, wound, environment and system if goals partially met or unmet.

Evaluation of the plan of care should be routine and ongoing to identify whether the plan is effective in meeting the goals. If, after the cycle has been completed, goals of care have not been fully met, reassessment (Step 1) must take place, followed by the rest of the Wound Prevention and Management Cycle steps. ***The plan of care needs to be revisited at discharge to ensure that self-management strategies are in place to support the patient to sustain the outcomes achieved after discharge.***

5.1 Determine if the outcomes have met the goals of care

Using validated and responsive tools and feedback from the team, clinicians should determine if all goals previously set have been met. If goals have been met, the team should continue with discharge planning and ensure self-management strategies are effective and in place.

5.2 Reassess patient, wound, environment and system if goals are partially met or unmet

If the goals and response to the current management have been partially met or unmet, the team needs to return to Step 1 and reassess. The specific activities required will depend on patient and wound factors, but could involve further blood work, more in-depth evaluation of circulation, a wound biopsy or the involvement of other clinicians. Benchmark data show that, when compression is optimized, a VLU healing rate of 11 weeks is possible. Reassessment needs to consider gaps in care or the person's ability to adapt to their condition and engage in self-management.

If the plan of care is appropriate and the wound is not improving, consider a biopsy to rule out skin disorders or a malignancy.

5.3 Ensure sustainability to support prevention and reduce risk of recurrence. *Recurrence rates of VLUs have been reported as high as 70%. The ongoing use of compression is required to prevent VLU recurrence. Compression can be underutilized due to the lack of clinician knowledge and unavailability of bandages/hosiery.* The ideal compression system should be:

- Affordable
- Comfortable
- Easy to apply
- Non-allergenic
- Able to fit into the patient's footwear (seasonal)

A systematic approach to the prevention and management of VLUs—made possible by the Wound Prevention and Management Cycle—supports the team to make the correct diagnosis by evaluating the patient’s risks and knowing the characteristics and pathophysiology of venous disease. Management of venous disease of the lower leg can be complex as it is important to ensure arterial disease has been fully evaluated by physical exam and supported by quantitative vascular assessment before any treatment is initiated.

Additional Wounds Canada resources, including a variety of Product Pickers and brochures, are available online at: www.woundscanada.ca/health-care-professional/resources-health-care-pros/boutique.

Care at Home Series:

- [Caring for Your Swollen Legs at Home: Preventing and Managing Venous Leg Ulcers](#)
- [Caring for Your Wound at Home: Changing a Dressing](#)



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BPR BRIEFS

Venous Leg Ulcers

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