## Background

- Venous insufficiency occurs as the result of venous valve dysfunction in the lower legs, narrowing or occlusion of the deep veins in the lower legs, or failure of the calf muscle pump. These failures result in poor venous return from the lower legs, which causes venous hypertension, which can lead to the development of venous leg ulcers.
- Arterial insufficiency occurs as a result of either narrowed or blocked arteries. There is a reduction in the amount of blood that flows to the lower legs, resulting in tissue ischemia and potentially ulcerations. A history of smoking, diabetes, hyperlipidemia, hypertension, and cardiovascular disease are contributing factors.
- Approximately 15-25% of people with venous leg ulcers will also have peripheral arterial disease.
- An ABPI result of <0.9 is suggestive of peripheral arterial disease. However, it is important to note that clinical judgement and assessment are crucial. In some cases, patients can have “normal” ABPI results while still presenting with peripheral arterial disease signs and symptoms.
- Venous leg ulcers tend to have a longer duration and higher recurrence rate than non-venous wounds.
- The negative impact on the leg ulcer sufferer’s quality of life is significant, as individuals may experience mobility loss, chronic pain, fear, anger, depression, and social isolation.
- Leg ulcer disease is cyclical and chronic, with periods of healing followed by recurrence.
- It is imperative that a thorough general health, wound, and lower limb assessment is carried out in order to determine the most likely wound etiology, i.e. venous, mixed, or arterial, in order to properly and safely guide treatment decisions.

## Indications

This guideline is intended to be used by health care providers, to guide their assessment of individuals admitted with or presenting with a leg ulcer.

## Guideline


1. Upon discovery of a lower leg wound on a patient or upon admission of a patient with such a wound to your health care facility/service, conduct a history and focused physical assessment to determine the patient’s:
   a. Current and previous medical history, including medications
   b. Nutritional status
   c. Wound history
   d. Wound related pain and quality of life
   e. Extrinsic and intrinsic factors affecting wound healing
   f. Patient goals and ability to participate in the care plan
2. Determine the patient’s history of ulcers and pre-ulcerous conditions, and physically assess the patients lower legs for:
   a. Edema, lymphedema, lipedema
b. Signs of venous/arterial/mixed leg disease/ulcers (see the chart below):

<table>
<thead>
<tr>
<th></th>
<th>Venous Disease</th>
<th>Arterial Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>History</strong></td>
<td>Deep vein thrombosis, leg injury, vein surgery, venous disease, failure of calf-muscle pump</td>
<td>Cardiovascular disease, stroke, transient ischemic attack, diabetes, peripheral arterial disease (PAD), rheumatoid arthritis, advanced age</td>
</tr>
<tr>
<td><strong>Lifestyle</strong></td>
<td>Obesity, sedentary lifestyle, immobile, occupation requiring prolonged sitting or standing</td>
<td>Smoking, malnutrition, obesity</td>
</tr>
<tr>
<td><strong>Leg/Skin Appearance</strong></td>
<td>Hemosiderin staining, atrophy blanche, varicose veins, spider veins, ankle flare, lipodermatosclerosis, dermatitis, woody fibrosis, edema, scarring from previous ulcers, dermatitis</td>
<td>Pallor (on elevation), dependent rubor, distal gangrene of toes, hammer toes, shiny/thin skin, wasted leg muscles, leg hair loss, cool feet +/- poor capillary refill</td>
</tr>
<tr>
<td><strong>Peripheral Pulses</strong></td>
<td>Present</td>
<td>Weak or absent</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td>Tired, heavy feeling in legs, worse at end of day, better early in day and with limb elevation</td>
<td>Pain with elevation of lower limbs (ischemic rest pain), intermittent claudication. NOTE: pain may be masked in people with diabetes</td>
</tr>
<tr>
<td><strong>Typical Wound Location</strong></td>
<td>Gaiter region, superior to medial malleolus, circumferentially around the ankle</td>
<td>Below ankle, tip of toes, heels, sides of foot</td>
</tr>
<tr>
<td><strong>Wound Bed Appearance</strong></td>
<td>Moist, ruddy granulation +/- yellow slough/fibrin</td>
<td>Pale and dry +/- yellow/black fibrin</td>
</tr>
<tr>
<td><strong>Wound Shape, Depth</strong></td>
<td>Shallow, irregular shape with borders that are flat and slope into a shallow crater</td>
<td>Deep, round, punched out appearance</td>
</tr>
<tr>
<td><strong>Wound Exudate</strong></td>
<td>Minimal to copious</td>
<td>None to minimal</td>
</tr>
<tr>
<td><strong>Peri-Wound Appearance</strong></td>
<td>Dry, scaly, irritated (stasis dermatitis), macerated</td>
<td>Dry, shiny, hair loss, muscle wasting</td>
</tr>
</tbody>
</table>


c. The quality of the patient’s lower limb circulation (ABPI) – ABPI tests should be performed by a health care provider who has received training and has competency in performing the test.

**NOTE:** people with normal arterial circulation can have absent peripheral pulses due to edema or a fixed ankle joint. Palpable pulses in people with calcified vessels, i.e. those with diabetes, can be misleading and therefore the ability to palpate a pedal pulse does not necessarily indicate an absence of peripheral arterial disease.

**NOTE:** if a patient has long-standing diabetes, hypertension or advanced age, the vessels may not be compressible and segmental compression studies or toe pressures need to be ordered through a diagnostic imaging in order to accurately determine the status of the patient’s lower limb circulation.

ABIs should be repeated when:

i. A leg ulcer deteriorates

ii. An ulcer is not fully closed within three months

iii. The patient has a leg ulcer recurrence
iv. There is a sudden increase in pain
v. The color and/or temperature of the foot changes
d. Signs of unusual ulcers, i.e. malignant ulcers.

**NOTE:** malignancy can cause and may be a sequel of leg ulceration. Look for wounds that:
i. Have an irregular nodular appearance
ii. Raised or rolled edges
iii. Rapidly increase in size
iv. Fail to respond to treatment
e. Ulcer history, including:
i. The date the ulcer first occurred
ii. Site of current and any previous leg ulcers
iii. Number of episodes of previous leg ulceration
iv. Length of time required to close previous leg ulcers
v. Length of time with no recurrence of leg ulcers
vi. Past successful and unsuccessful treatments
vii. Previous operations on the venous system
viii. Previous and current use of compression therapy

3. Conduct a psychosocial assessment to determine the:
a. Patients understanding of the wound and their risk factors
b. Impact of the wound on the patient and their body image
c. Financial concerns and availability of support systems to address concerns
d. The impact of the patients environment, physical/medical/psychosocial factors, and end-of-life goals on their care, as applicable
e. Functional, cognitive, and emotional status of the patient and their family to manage self-care

4. Complete a validated wound assessment/monitoring tool (such as the “NPUAP PUSH Tool 3.0”). It is important to track wound progression over time using a validated tool so that treatment plan effectiveness can be evaluated. This should be done weekly at a minimum.

**NOTE:** Wound measurements (length and width) should be recorded on admission and at least weekly, with a calculation performed weekly to determine the percentage reduction in wound size, normal healing is a reduction of 30-40% every 3-4 weeks.

5. Assess the wound for signs/symptoms of increased bacterial burden using “NERDS and STONEES” or refer to the “Guideline: The assessment and management of bacterial burden in acute and chronic wounds” to help guide your assessment.

**NOTE:** visible evidence of infection may be muted or non-existent due to compromised arterial blood flow in arterial leg ulcers. In addition, peri-ulcer inflammation in venous leg ulcers may be the result of dermatitis, which presents as erythema, scaling, erosions, and excoriations, and which should **NOT** be treated with antibiotics

6. Assess for dermatitis versus cellulitis with venous disease (see chart below):

<table>
<thead>
<tr>
<th>Symptoms</th>
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<th>Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermatitis</td>
<td>Afebrile, itching, varicose veins/deep vein thrombosis</td>
<td>Normal temperature, erythema, inflammation, may be tender, vesicles and</td>
</tr>
</tbody>
</table>

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Developed in collaboration with SWRWCP Stakeholders and Health Care Partners

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7. Assess the wound’s moisture balance and appropriateness of the current dressing. See the “Guideline: The Assessment and management of Moisture in Acute and Chronic Wounds” for further guidance.

8. Assess the wound to determine if debridement interventions are warranted. See “Guideline and Procedures: Wound Debridement (excluding conservative sharp debridement)” and “Guideline: Conservative Sharp Wound Debridement”. **NOTE:** Follow your organization policies and standard operating procedures as well as your College’s Standards before completing care below the dermis.

9. Based on your holistic assessment of the patient, the wound, and ABI results, classify the leg ulcer as venous, mixed, arterial, or other, as this will help guide treatment.

10. Determine the healability of the patients leg ulcer based on your holistic assessment. Choose the most appropriate wound healing goals based on the wound’s ability to heal:
   a. Healing
   b. Not-healing (“Maintenance”)
   c. Non-healable/palliative

11. Once you have completed a thorough assessment of the patient and their leg wound proceed to implement appropriate interventions, as outlined in “Guideline: The Management of People with Leg Ulcers”.

**References**


