

DIAGNOSTIC RECOMMENDATIONS**History**

- ★ development, duration and course of the symptoms;
- ★ pain symptoms (beware of arterial ulcer);
- ★ infection: fever, general malaise and immobility caused by pain;
- ★ quality of life: nocturnal uneasiness, immobility, social isolation;
- ★ prior history: previous venous ulcer; causative factors (DVT, varicose veins, thrombophlebitis, symptoms of claudication or lymphoedema);
- ★ risk factors: DM, heart failure, oedema, hypertension, arthritis, immobility, varicose veins, standing for long periods, skin conditions such as eczema/psoriasis.

Physical examination

- ★ inspect the ulcer and note the localisation, size, aspect of the wound edges and wound base;
- ★ look for signs of infection and any expansion of infection to surrounding tissue;
- ★ look for signs of underlying causes (CVI, peripheral arterial disease, heart failure and insufficiency of the lymphatic system).

Additional investigations

- ★ *Laboratory examination*: determine (NT-pro)BNP, Hb, Ht, TSH and glucose for suspected heart failure and glucose for suspected diabetes mellitus.
- ★ *Ankle-arm index*: if the dorsal foot artery is not palpable.
- ★ *Duplex examination*: only on mobile patients with varicose veins who – following information about reducing the risk of a recurring ulcer – are interested in surgery for varicose veins.

EvaluationTable 1 *Distinguishing between a venous and an arterial ulcer*

Venous	Arterial
<ul style="list-style-type: none"> - Localisation: above medial malleolus - Boundary: unpredictable wound edges - Usually bad odour - Pitting oedema - Ankle-arm index ≥ 0.9 - Nocturnal pain, cramp <p><i>Other:</i></p> <ul style="list-style-type: none"> - Varicose veins - Hyperpigmentation, atrophie blanche and induration - Heavy, tired sensation when standing still, which decreases with walking - Itching 	<ul style="list-style-type: none"> - Localisation: lateral side of shin bone, front part of foot/toes - Boundary: clearly defined wound edges - Usually black wound base - Usually no oedema - Ankle-arm index < 0.9 - Often more pain than venous ulcers, pain at night, decreases when leg is lowered <p><i>Other:</i></p> <ul style="list-style-type: none"> - Intermittent claudication - Cold, blue/white foot - Weak/absent peripheral pulsations

Other differential diagnostic possibilities: neuropathic, neoplastic, infectious, auto-immune and exogenous ulcer.

THERAPEUTIC RECOMMENDATIONS**Education**

- ★ development of CVI and venous ulcer;
- ★ long duration (weeks to months) of the treatment;
- ★ the importance of combating oedema by means of pressure dressings and movement;
- ★ long-term use of therapeutic elastically stockings to prevent recurring ulcer. Discuss the benefits (prevention of recurrence, protection against bumps, prevention of oedema formation and less tired sensation in the legs) and disadvantages (difficult to put on, stiff feeling in the legs, cosmetically unattractive and need to wear for life);
- ★ the option of varicose vein surgery for mobile patients with a reasonable life expectancy, presence of varicose veins and lack of signs of arterial insufficiency. Results in approximately 50% reduction in recurrence.

Non-drug treatment

Wound treatment

- ★ clean venous ulcer using a shower or gauze soaked in clean tap water;
- ★ debridement for necrosis (associated with a lot of pain: start local analgesia);
- ★ protect edges of the ulcer with barrier cream/spray or zinc oil;
- ★ cover the ulcer with a wound cover, choice depends on: *wound phase* (black (necrosis), yellow (debris) or red (granulation/epithelialisation)), *degree of moisture in the wound* (wet, moist or dry) and *degree of infection* (see table 2);
- ★ apply *secondary dressing*: absorbent dressing for wet and moist ulcers, gauze dressing for dry ulcers;
- ★ start ambulant compression therapy.

Table 2 Choice of wound cover materials

Wound phase	Black (necrosis)		Yellow (debris)		Red (granulation/epithelialisation)	
Action	remove		remove/clean		protect	
Degree of Moisture	wet and moist	dry	wet and moist	dry	wet and moist	dry
Wound treatment	collagenase <i>hydrogel</i> <i>alginate</i>	<i>dry compress*</i>	<i>alginate hydrofibre</i>	<i>hydrogel hydrocolloid</i>	<i>fatty dressing hydrofibre silicone foam dressing</i>	<i>fatty dressing hydrogel silicone hydrocolloid</i>
Wound treatment for infected ulcer**	<i>alginate Ag hydrofibre Ag sodium hypochlorite</i>	collagenase <i>hydrogel</i> silver sulfadiazine	<i>alginate Ag hydrofibre Ag povidone iodine 10% or cadexomere iodine</i>	povidone iodine 10% or cadexomere iodine silver sulfadiazine	<i>alginate Ag hydrofibre Ag povidone iodine 10% or cadexomere iodine</i>	povidone iodine 10% or cadexomere iodine silver sulfadiazine

The wound covers listed in italics can be left in the wound for more than 24 hours, depending on the amount of exudate produced.

Ag = silver dressing.

* Exception: dry non-fluctuating necrosis may remain on the ulcer, the necrosis itself acts as a wound cover.

** Treat spread of the infection to tissue surrounding the ulcer with systemic antibiotics

Ambulant compression therapy

- ★ Frequency depends on: amount of exudate produced and condition of the venous ulcer, quantity of oedema and mobility of the patient.
- ★ First choice: short stretch dressings. Alternative: four-layer dressing (for immobile patients).
- ★ Refer for duplex examination if ankle-arm index < 0.9. Absolute contra-indication for pressure dressing: ankle-arm index < 0.6 and an arterial pressure < 70 mmHg (beware of arterial ischaemia).
- ★ Lots of walking and movement (exercises) to promote circulation and activate calf muscle pump.
- ★ Elevation of the leg in rest to prevent formation of oedema.

Drug treatment

- ★ Expanding infection (e.g. erysipelas or cellulitis): treat with systemic antibiotics in accordance with the NHG Guideline on Bacterial Skin Infections.
- ★ Treat pain (as a result of a venous ulcer, infection or arterial insufficiency) with adequate analgesia, see NHG Pharmacotherapeutic Guideline on Analgesia.
- ★ Painful wound care/debridement: 1 to 2 grams of lidocaine prilocaine cream per 10 cm² under occlusion, applied 30 to 45 minutes before debridement.

Follow-up

Follow-up times for general practitioner if treatment is delegated: after three weeks, two months and if indicated (e.g. debridement). Evaluate the wound, ask about therapy compliance, pain and quality of life.

Referral

Refer to a dermatologist or vascular surgeon if:

- ★ there is no tendency to heal after two months of treatment or if there is doubt about the venous origin;
- ★ large or deep ulcer requiring surgery;
- ★ an ulcer where the CVI is complicated by lymphoedema;
- ★ indication for duplex examination (mobile patients with varicose veins and an interest in vascular surgery, ankle-arm index < 0.9).