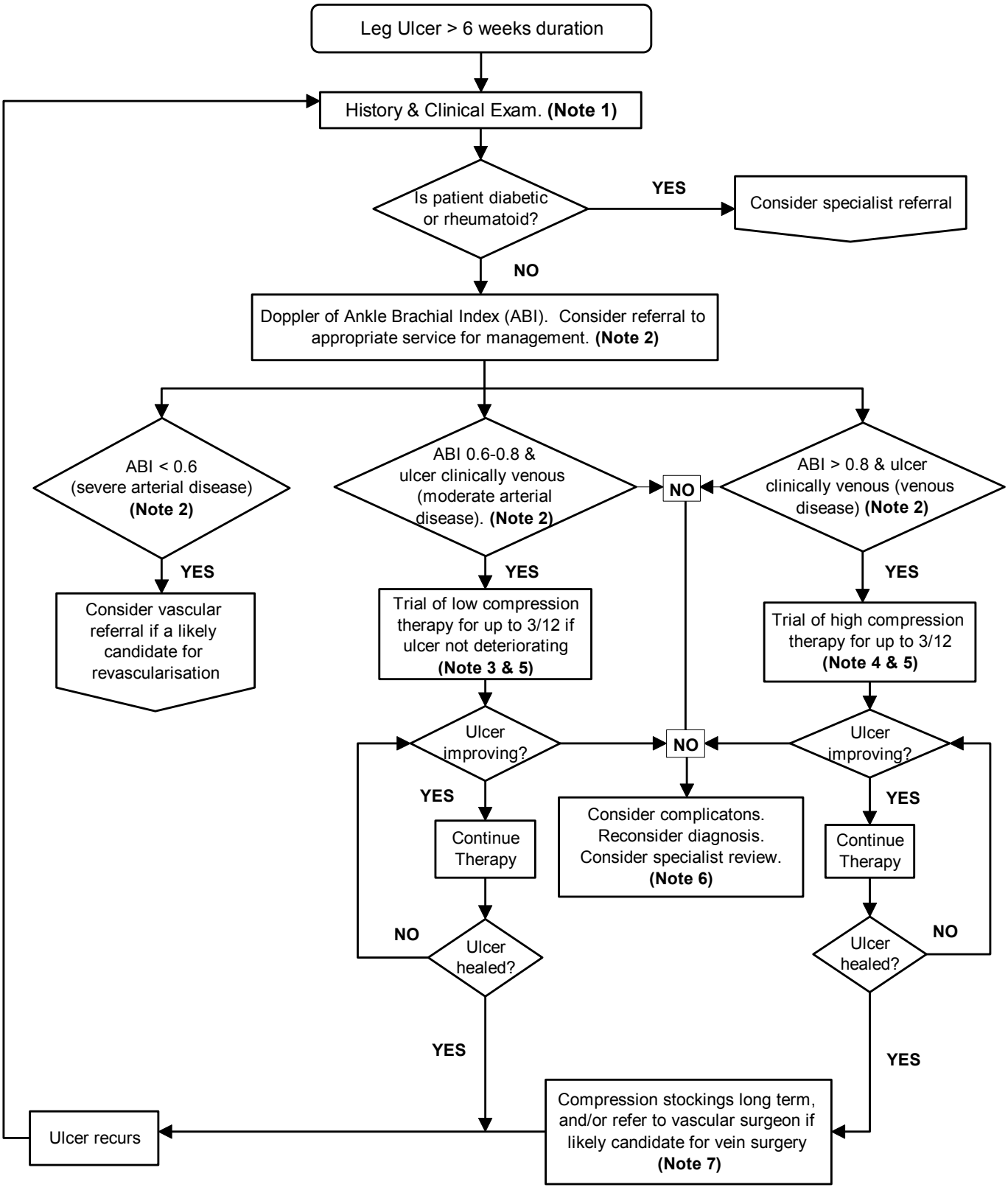
ALGORITHM FOR MANAGEMENT OF CHRONIC LEG ULCERS



See overleaf for recommendations

GRADING OF EVIDENCE

Each of the following recommendations is graded according to the level of evidence that supports it. Each recommendation receives the same level of support, despite the weight of evidence that stands behind the recommendation. The system was adapted from that of the Agency for Healthcare Policy and Research (AHCPR), but differs from the AHCPR model in that cross-sectional studies are graded as the gold standard for diagnostic studies and a caveat symbol has been introduced which downgrades the level of the recommendation if the evidence has been extrapolated, a systematic review found a lack of evidence (as opposed to no evidence of benefit), or if calculation of confidence intervals suggested reconsideration of the studies conclusions .

Grade	Level of Evidence	Source
A	Ia	Evidence from systematic review of randomised controlled trials or diagnostic studies
	Ib	Evidence from at least one randomised controlled trial (or cross-sectional study for diagnostic study)
B	IIa	Evidence from at least one controlled study without randomisation
	IIb	Evidence from at least one other type of quasi-experimental study
	III	Evidence from at least one non-experimental study
C	IV	Evidence obtained from expert committee reports, consensus conferences, opinions/experience of respected authorities or guideline team

A full copy of this guideline with supporting narrative and evidence tables is available for downloading from the New Zealand Guidelines Group website (www.nzgg.org.nz).

NOTE 1: Clinical History/Exam

- Assess history of ulcers, duration of current ulcer, mechanism of injury & previous methods of treatment. Record baseline size of ulcer. **[C]**
- Assess for venous insufficiency: family history of venous disease; patient history of DVT, lower leg fracture or other major leg injury; previous vein surgery; varicose veins; prior history of ulceration with/without compression bandaging. **[B]**
- Assess for arterial insufficiency: history of intermittent claudication, ischaemic heart disease, diabetes, smoking (or stopped < 5 years), high blood pressure (systolic ≥ 160, diastolic ≥ 95), unilateral lower skin temperature, auscultation of femoral bruit and normal pulses in one leg with abnormal pulses (weak or absent) in other leg. **[A]**
- Assess for diabetes & rheumatoid arthritis. Specialist assessment should be considered. **[B]**
- Assess for malignancy: can be a cause and may a sequel of leg ulceration. **[B]**
- Signs suggestive of malignancy are: irregular nodular appearance of the surface of the ulcer, raised or rolled edge, raised granulation tissue above the ulcer base, failure to respond to treatment, rapid increase in ulcer size. Biopsy and/or referral to dermatologist. **[C]**
- Assess for correctable factors that may delay healing, including smoking, anaemia and evidence of malnutrition or poor nutrition. **[C]**
- The surface area of ulcers should be measured at regular intervals to monitor progress. Maximum length & width ([length x width] x π/4) or tracings onto transparencies are useful methods. NB π = 3.142. **[B]**
- ***Venous ulcers*** generally shallow, moist and appear on gaiter area of leg; eczema, haemosiderian pigmentation, ankle oedema & ankle flare often present; varicose veins, atrophie blanche & lipodermatosclerosis may be present. **[C]**

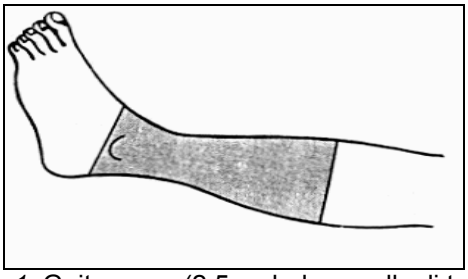


Figure 1. Gaiter area (2.5cm below malleoli to lower third of calf)

- ***Arterial ulcers*** have a punched out appearance, a poorly perfused base and are pale & dry; surrounding skin is shiny & taut; dependent rubor present. **[C]**

NOTE 2: Investigations

- Doppler measurement of Ankle-Brachial Index (ABI) should be done by staff who are trained to undertake this measure. **[B]**
- Palpable pulses alone are insufficient to rule out arterial disease. **[B]**
- All ulcers should be screened for arterial disease using Doppler ultrasound to determine

an ABI. An ABI<0.8 makes the presence of peripheral arterial occlusive disease (PAOD) highly likely. **[A]**

- Further tests should be considered before initiating compression bandaging if the patient has an ABI>0.8 in the presence of signs/symptoms of PAOD, rheumatoid arthritis, diabetes mellitus or systemic vasculitis. **[C]**
- Patients with an ABI<0.6 should be considered for referral to a vascular surgeon. **[C]**

Doppler ultrasound & compression bandaging are generally available through district nursing services or specialised outpatient hospital clinics.

- Repeat measurement of ABI when an ulcer deteriorates; is not fully healed by 3 months; or when patients present with recurrence (of whichever leg). **[B]**

NOTE 3: Treatment (ABI 0.6-0.8)

- Compression bandages should be applied by a practitioner who has received training in their application. **[B]**
- Reduced compression may be effective in selected patients with an ABI 0.6-0.8 and clinically venous ulcers. **[B]**
- Only patients who can detect increasing pain & are able to remove bandages themselves should be trialled on reduced compression. Patients should be closely monitored for impeded circulation/ischaemia & referred to a vascular surgeon if such occurs. **[C]**

NOTE 4: Treatment (ABI≥0.8)

- Compression bandages should be applied by a practitioner who has received training in their application. **[B]**
- High compression treatment increases the proportion of healed venous ulcers & is more effective than low compression, but it should only be used where the ABI≥0.8 & the ulcer is clinically venous. It is not clear which high compression system (3 layer, 4 layer, short stretch) is most effective. **[A]**

NOTE 5: Other treatment considerations

- Routine bacteriological swabs are unnecessary unless there is evidence of clinical infection. **[B]**
- Antibiotics should only be considered if the ulcer is clinically cellulitic as supported by the presence of some of the following: fever; increasing pain; increasing erythema; purulent exudate; rapid increase in ulcer size. **[C]**
- Topical antibiotics are frequent sensitisers in people with ulcers & should generally be avoided. **[B]**
- Dressing technique should be clean & aimed at preventing cross-infection – strict asepsis is not necessary. **[C]**
- Ulcers can be cleansed with either tap water or sterile saline. Ulcerated legs can be washed normally in tap water. **[C]**
- Necrotic tissue is not considered compatible with good wound healing. There is no evidence to favour any one method of debridement, whether mechanical, surgical, biosurgical, autolytic, chemical or enzymatic. **[C]**
- Dressings should be simple, low/non-adherent, cost-effective & acceptable to the patient. **[C]**
- Assess for pain and formulate plans that involves exercise (including ankle exercises) & leg elevation for venous ulcers, & adequate analgesia irrespective of aetiology. **[C]**
- Exercise programmes can improve walking distances & pain for people with intermittent claudication. **[A]**
- There is insufficient evidence to give clear direction on the use of laser therapy as an adjunct to compression bandaging in the treatment of venous ulcers. **[C]**

NOTE 6: Slow to heal ulcers

- Patients not responding to compression or those unable to tolerate compression may benefit from a trial of pentoxifylline. The majority of adverse effects experienced are likely to be tolerated by patients. **[A]**
- Patients can become sensitised to treatments at any time. Products which commonly cause skin sensitivity such as those containing lanolin, cetyl alcohol or topical antibiotics, are best avoided. **[B]**
- Patients with dermatitis that does not resolve following removal of common sensitisers and treatment with a moderate topical steroid should be considered for referral to a dermatologist. **[C]**
- Pinch skin grafting may be effective in promoting healing in venous, mixed aetiology and arterial ulcers resistant to conventional therapy. **[B]**
- Hyperbaric oxygen may reduce ulcer size in non-diabetic, non-atherosclerotic leg ulcers. **[A]**

NOTE 7: Preventing recurrence

- Correctly fitted graduated class 3 compression stockings (strong support) are more effective at reducing venous ulcer recurrence than class 2 stockings (medium support). Class 2 stockings are better tolerated than class 3 stockings & may encourage compliance. **[A]**
- Venous surgery followed by graduated compression is an option for consideration in patients with superficial venous insufficiency. **[B]**

- Inform patient regarding necessity of continuing with compression hosiery after the ulcer has healed; elevation of affected limb above the level of the heart (venous ulcers) when at rest, early medical/nursing attention at first sign of skin breakdown or trauma to limb; need for exercise and ankle-joint mobility, appropriate skin care & avoidance of products likely to be sensitisers. **[C]**

COMMON ALLERGENS IN VENOUS LEG ULCERS

Allergen	Type	Potential Product
Wool alcohols, amerchol L101	Lanolin	Bath additives, creams, emollients, barriers & some baby products
Neomycin, framycetin, bacitracin	Antibiotic	Medicaments, tulle dressings, antibiotic creams
Parabens (hydroxybenzoates)	Preservative	Medicaments, creams, paste bandages
Cetyl alcohol, stearyl alcohol, cetylstearyl alcohol, cetostearyl alcohol	Vehicle	Most creams, including corticosteroids, aqueous cream, emulsifying ointment & some paste bandages
Colophony, ester of rosin	Adhesive	Adhesive bandages & dressings
Mercapto/carba/thiuram mix	Rubber	Elastic bandages, stockings, latex gloves worn by worker
Chlorocresol	Biocide	Corticosteroid creams & some moisturisers
Quinoline mix	Biocide	Antispetic & antifungal creams
Chlorhexidine	Biocide	Antiseptics, tulle dressing
Tixocortal pivalate	Steroid	Steroid preparations eg hydrocortisone
Fragrance mix/balsam of peru	Perfume	Bath oils, moisturisers & baby products

COMPRESSION PRODUCTS FOR VENOUS LEG ULCERS

Type of compression	Examples	Characteristics
Multi-layer high compression bandages	Profore Charing Cross	Applies 40mmHg pressure at the ankle, graduating to 17mmHg at the knee; absorbent & sustainable for a week
Elastic or long stretch high compression bandages	Tensopress K Setopress Surepress	Sustained compression for up to 1 week; can be washed and re-used
Inelastic or short stretch compression bandages	Comprilan Tensolan	Low resting pressures but high pressure during activity; re-usable for up to 20 washes
Multi layer reduced compression bandage	Profore Lite	Applies 17-20mmHg pressure at the ankle and can be left on for up to one week
Compression stockings	Class 1 light Class 2:medium Class 3: strong	Used to treat varicose veins; 14 -17mmHg ankle pressure Used to treat severe varicosities & prevent venous leg ulcers; 18 – 25mmHg ankle pressure Used to treat severe chronic venous hypertension & severe varicose veins, & to prevent venous leg ulcers in patients with large diameter legs; 25 – 35 mmHg ankle pressure

This guideline was developed by Bruce Arroll, Russell Bourchier, Paul Gelber, Andrew Jull, Anita Latta, Richard Milne, Fergus Oliver, Nathan Tuuta, Natalie Walker & Jill Waters. It has been endorsed by the New Zealand Guidelines Group, the Royal New Zealand College of General Practitioners & the College of Nurses, Aotearoa. For further information contact Andrew Jull, Auckland Healthcare, Private Bag 92024, Auckland. The printing and dissemination of this guideline has been assisted by funding from ConvaTec.

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