Arterial Leg Ulcers

promoting healthy skin

Champions for Skin Integrity

These guidelines have been developed for health professionals caring for clients with arterial leg ulcers. Diagnosis of the aetiology of a leg ulcer should be undertaken by health professionals with expertise in the area.

GUIDELINES SUMMARY

For this summary, all recommendations have had their levels of evidence classified using the National Health and Medical Research Council levels of evidence, as follows:

Level I	Evidence from a systematic review or meta-analysis of at least two level II studies
Level II	Evidence from a well designed randomised controlled trial (for interventions), or a prospective cohort study (for prognostic studies)
Level III	Evidence from non-randomised studies with some control or comparison group (pseudo-randomised controlled trial; non-randomised experimental trial, cohort study, case-control study, time series studies with a control group; historical control study, retrospective cohort study)
Level IV	Evidence from studies with no control or comparison group

An additional rating of Expert Opinion (EO) has been added, for guideline recommendations which are consensus statements provided by a National or International Panel of experts in the area.

This is a summary of guidelines from the following sources, which should be accessed for further details as required:

1. Scottish Intercollegiate Guidelines Network, *Diagnosis and management of peripheral arterial disease: A national clinical guideline.* 2006, Edinburgh: SIGN. www.sign.ac.uk
2. Hopf H. et al. Guidelines for the treatment of arterial insufficiency ulcers. *Wound Repair and Regeneration*, 2006. **14**:693-710.
3. National Clinical Guideline Centre, *Lower limb peripheral arterial disease. Diagnosis and management. NICE Clinical Guideline 147,* 2012: London. http://publications.nice.org.uk
4. Hopf H. et al. Guidelines for the prevention of lower extremity arterial ulcers. *Wound Repair and Regeneration*, 2008. **16**:175-188.
5. Nelson E., Bradley M. *Dressings and topical agents for arterial leg ulcers.* Cochrane Database of Systematic Reviews, 2007. **1**: CD001836.
6. Registered Nurses' Association of Ontario, *Assessment and management of foot ulcers for people with diabetes*. 2005. http://rnao.ca/bpg

This project is funded by the Australian Government Department of Health and Ageing under the Encouraging Better Practice in Aged Care (EBPAC) program

QUT ihbi Institute of Health and Biomedical Innovation

Assessment

1. All clients with a leg ulcer should be screened for arterial disease, including:
   - examining pedal pulses
   - a Doppler Ankle Brachial Pressure Index (ABPI)

   An ABPI less than 0.9 is indicative of arterial disease
   An ABPI over 1.2 is unreliable and indicates further investigation is necessary. Referral for ultrasound duplex scanning may be helpful if there is uncertainty[1-3] (EO)
2. Assessment of leg ulcers and Doppler ABPI assessments should be undertaken by health professionals with training in this area[1, 3] (EO)
3. Signs of peripheral vascular disease include loss of hair, shiny or dry skin, mummified or dry and black toes, devitalised soft tissue with dry or wet crust, thickened toe nails, purple colour of limb in dependent position, or cool skin[4] (II)
4. Referral to a specialist is needed when:
   - there is uncertainty in diagnosis
   - there is a low or high ABPI
   - patient has symptoms which limit lifestyle and quality of life (e.g. rest pain)
   - complicated ulcers e.g. multiple aetiologies
   - signs of infection
   - the ulcer appears ischemic[1, 2] (EO)

Management

5. Restoration of blood flow by revascularisation is the intervention most likely to heal arterial leg ulcers. However, surgery must be considered in light of a patient's co-morbidities[2, 5] (II)
6. Adequate oxygenation of the wound environment will promote wound healing, and should be promoted through avoidance of smoking, dehydration, cold, stress and pain[2] (III)
7. Topical antimicrobial dressings may be beneficial when wounds are chronically or heavily colonized[2] (III)
8. In general, removal of necrotic and devitalised tissue should be undertaken through mechanical, sharp, autolytic or biological debridement[2] (II)
   If dry gangrene or eschar is present, however, debridement should not be undertaken until arterial flow has been re-established[2] (III)
   Sharp debridement should only be undertaken by health professionals with experience and training in the area[6] (EO)
9. Dressings should be cost effective, acceptable to the client and able to be changed daily or less often where possible[2] (II)
10. Dressings should:
    - maintain a moist wound-healing environment[2] (II)
    - however, dry gangrene or eschar is best left dry until revascularisation[2] (II)

    There is insufficient evidence to determine whether choice of topical agent/wound dressing material makes any impact on wound healing[5] (EO)

11. There is inadequate evidence that the application of
    topical negative pressure, (III)
    electrostimulation, (II)
    ultrasound, (III)
    intermittent pneumatic compression, (II)
    or topical oxygen therapy (III)
    speeds healing of arterial leg ulcers[2]
12. Hyperbaric oxygen therapy may be helpful in clients who are unable to be revascularised and whose ulcer is not healing[2] (II)

Prevention

13. Reducing risk factors may reduce the risk of arterial ulcer development, including:
    - cessation of smoking
    - maintaining control of diabetes mellitus
    - controlling elevated lipids and hypertension
    - taking anti-platelet therapy
    - controlling weight[1-3] (II)
14. Exercise to increase arterial blood flow is helpful to prevent arterial ulcers[2] (I)
15. Lower extremity protection is important for all clients with known or suspected peripheral arterial disease, including:
    - foot protection with soft, conforming, proper fitting shoes, orthotics and offloading as necessary[4] (II)
    - leg protection to avoid injury[4] (II)
    - protection of digits and heels in clients with decreased mobility with effective pressure relief devices e.g. foam or air cushion boots[4] (II)
    - extreme care is needed when cutting toenails, preferably undertaken by a podiatrist[4] (II)
16. Passive warming of the extremity improves perfusion and may be of benefit in preventing arterial ulcers (e.g. warm socks, rugs, warm environment)[4] (III)
17. Poor psychosocial status (i.e. psychiatric illness, living alone, alcohol abuse, malnutrition) is associated with a higher risk of arterial ulcers and should be addressed with a multidisciplinary care team[4] (II)