Public Health England

Venous leg ulcers: Infection diagnosis and microbiology investigation

Quick reference guide for primary care: Summary table

BACKGROUND

CKS ☑ ☐ Venous leg ulcer: *"the loss of skin below the knee on the leg or foot, which takes more than 6 weeks to heal"*.[1D]

☑ ☐ **An assessment should be carried out by a healthcare professional trained in leg ulcer management. This should include clinical history; Doppler studies;[2B+,3C] assessment of pain, odour and discharge; oedema; venous eczema and infection; assessment of risk factors and comorbidities.[3C,4C,5C]**

NICE ☐ If leg ulcer is associated with signs of venous hypertension, NICE recommends referral to a vascular service.[6D]

SIGN ☐ Ulcerated legs should be washed normally in tap water and carefully dried with a smooth, soft material.[2D,7C] Management includes: cleaning, debriding and dressing the ulcer;[1A+] applying compression therapy if the ulcer is not infected;[8A+,9A+,10A+] arranging a follow-up to assess the ulcer.[1A+,4C]

MICROBIOLOGY AND VENOUS LEG ULCERS

☑ ☐ **Routine samples should not be taken.[11B+,12C,13C] Treat the patient not the culture results.[1D,2B+,5C]**

☐ All venous leg ulcers contain bacteria. Most bacteria are colonisers; only some cause clinical infection.[5C,14B+,15A-]

☐ Chronic venous leg ulcers: only use systemic antibiotics if there is evidence of clinical infection.[4C,11B+,16A+]

☐ Do not use antibiotics routinely in venous leg ulcers, as overuse will select for resistant organisms.[5C,11B+,16A+]

WHEN SHOULD I TAKE A MICROBIOLOGICAL SAMPLE FROM A VENOUS LEG ULCER?

☐ If there are any of the following criteria that indicate the presence of infection:[2B+,11B+,13C]

- increased odour or increased exudate from the ulcer
- enlarging ulcer with abnormal bleeding or bridging granulation tissue
- increased disproportionate pain
- cellulitis (particularly if spreading), lymphangitis or lymphadenopathy
- pyrexia, systemic inflammatory response syndrome or sepsis

☑ ☐ **Microbiological samples should always be collected before antibiotics are started.[12C,17B-]**

☐ Non-healing or atypical venous leg ulcer: refer for consideration of biopsy.[2D,4C,14B+]

HOW SHOULD I TAKE A MICROBIOLOGICAL SWAB FROM A VENOUS LEG ULCER?

1. Use a swab with charcoal transport medium.[12C,18B+]
2. Cleanse the wound with tap water or saline to remove surface contaminants, slough and necrotic tissue.[2D,5C,7A+]
3. Swab viable tissue which displays signs of infection, whilst rotating the swab. Alternatively, use the Levine technique in which the swab is pressed into the ulcer bed, as this displaces deeper placed organisms.[1D,15A-]
4. Send the swab to the microbiology laboratory as soon as possible to aid survival of fastidious organisms.[12C]

☑ ☐ **For all specimens, include all clinical details (patient details, site, nature of wound and current or recent treatment), to enable accurate processing and reporting of the specimen.[13C]**

INTERPRETING THE LABORATORY REPORT

☐ The result will only provide information about the organisms present and their antibiotic susceptibilities.[17C] The results will not tell you if infection is present in a venous leg ulcer, as this is a clinical diagnosis.[2B+]

☐ All venous leg ulcers are colonised by bacteria,[5C] which may progress to a level of so-called "critical colonisation". Above this, healing is delayed and significant infection occurs.[16A+] No simple test can differentiate colonisation from infection. Early colonisation of venous leg ulcers is not considered adverse to healing.[16A+]

☐ Group A β-haemolytic streptococci can be associated with significant infection and delayed healing.[13B+,16A-] When diagnosed, these infections justify early, aggressive, systemic antimicrobial therapy.[17B+]

☐ Other streptococci, *Staphylococcus aureus* and anaerobes may be associated with clinical infection.[4B+,11B+,19C] Most other bacterial colonisation of wounds is not considered to adversely affect healing.[2B+,13C,16A-,17C]

☐ Treatment to be based on signs of infection, as inclusion of antibiotic susceptibilities on the report does not mean that an organism is significant or that it requires antibiotics.[1A+,13C,16C]

WHEN SHOULD I USE ANTISEPTICS OR ANTIBIOTICS IN VENOUS LEG ULCERS?

☐ Topical antiseptics may be of benefit to individual patients, but are not routinely recommended in the treatment of venous leg ulcers.[13C] Some evidence supports the use of cadexomer iodine for critically colonised ulcers or early infection, but further research is required before other recommendations can be made.[10A+,16A+]

☑ ☐ **Systemic antibiotics only if locally spreading cellulitis or other signs of clinical infection.[2A+,11B+,16A+]**

☑ ☐ **Give patient "safety net instructions" and review need for antibiotics at three days with swab results.[1D]**

☐ First line treatment if there is locally spreading cellulitis or other signs of clinical infection:

- empirical therapy with oral flucloxacillin, 500mg-1g (dependent on BMI),[17C] four times a day, to cover staphylococci and Groups A, C and G streptococci[19C,20C]
- if penicillin-hypersensitive, clarithromycin, 500mg, twice daily;[19C,20C] if penicillin-hypersensitive and on statins, doxycycline, 200mg stat and then 100mg daily[20C]
- if cellulitis is persistent, clindamycin is an alternative, 300-450mg, four times daily;[17C,19C,20C] stop clindamycin if diarrhoea develops
- all antibiotics to be prescribed for 7 days; if there is slow response, continue for a further 7 days[19C]

☑

☐ **Discuss with local microbiologist for any antibiotic advice needed, or treatment choice for MRSA.[20C]**

☐ Consider need for referral to secondary care if infection is non-responsive or patient is systemically unwell.[1D]

KEY: ☑ = good practice point

Produced: 2006 – Latest Review: March 2016
Next Full Review: March 2019

BSAC British Society for Antimicrobial Chemotherapy · BIA British Infection Association · RCGP Royal College of General Practitioners · Royal College of Nursing

GRADING OF GUIDANCE RECOMMENDATIONS

The strength of each recommendation is qualified by a letter in parenthesis. This is an altered version of the grading recommendation system used by SIGN.

STUDY DESIGN	RECOMMENDATION GRADE
Good recent systematic review and meta-analysis of studies	A+
One or more rigorous studies; randomised controlled trials	A-
One or more prospective studies	B+
One or more retrospective studies	B-
Non-analytic studies, eg case reports or case series	C
Formal combination of expert opinion	D

This guidance was originally produced in 2006 by the South West GP Microbiology Laboratory Use Group, in collaboration with the Association of Medical Microbiologists, general practitioners, nurses and specialists in the field. This guidance was reviewed and updated in 2016, with input from Professor Cliodna McNulty; Dr Philippa Moore; Professor David Leaper and Jacqui Fletcher (Cardiff University); the Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI); the British Society for Antimicrobial Chemotherapy (BSAC); the British Infection Association (BIA); the Royal College of General Practitioners (RCGP); the Royal College of Nursing (RCN); general practitioners; specialists in the field; and patient representatives. Full consensus of the recommendations made was given by all guidance developers and reviewers prior to the dissemination of this guidance. All comments received have been reviewed and incorporated into the guidance, where appropriate. For detailed information regarding the comments provided and action taken, please email sarah.alton@phe.gov.uk. Public Health England works closely with the authors of the Clinical Knowledge Summaries.

If you would like to receive a copy of this guidance with the most recent changes highlighted, please email sarah.alton@phe.gov.uk.

For detailed information regarding the search strategies implemented and full literature search results, please email sarah.alton@phe.gov.uk.