

# EVIDENCE BASED STATEMENT

DOMAIN **07**, Statement **4**

TOPIC: “**Antibiotics use in wound healing**”

## SEARCH TERMS & SOURCES

(antibiotic) AND (venous ulcer)

## INCLUSION CRITERIA

- Lower limb only
- Reviews
- Publication < 10 years, only ENG

## SEARCH RESULT BEFORE - AFTER SELECTION

31/18

## PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Cwajda-Białasiak J, Mościcka P, Jawień A, et al. Microbiological Status of Venous Leg Ulcers and Its Predictors: A Single-Center Cross-Sectional Study. *Int J Environ Res Public Health*. 2021 Dec 8;18(24):12965
2. Kruszewska K, Wesolowska-Gorniak K, et al. Venous leg ulcer healing time is increased with each subsequent bacterial strain identified in the ulcer. A retrospective study. *Phlebology*. 2021 May;36(4):275-282
3. Abushaheen MA, Muzahed, Fatani AJ, et al. Antimicrobial resistance, mechanisms and its clinical significance. *Dis Mon*. 2020 Jun;66(6):100971
4. Norman G, Westby MJ, Rithalia AD, et al. Dressings and topical agents for treating venous leg ulcers. *Cochrane Database Syst Rev*. 2018 Jun 15;6:CD012583
5. Di Domenico EG, Farulla I, Prignano G, et al. Biofilm is a Major Virulence Determinant in Bacterial Colonization of Chronic Skin Ulcers Independently from the Multidrug Resistant Phenotype. *Int J Mol Sci*. 2017 May 17;18(5):1077
6. Rahim K, Saleha S, Zhu X, et al. Bacterial Contribution in Chronicity of Wounds. *Microb Ecol*. 2017 Apr;73(3):710-721.
7. Moore K, Hall V, Paull A, et al. Surface bacteriology of venous leg ulcers and healing outcome. *J Clin Pathol*. 2010 Sep;63(9):830-4

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### IDENTIFIED REFERENCES

1. Kitchens BP, Snyder RJ, Cuffy CA. A Literature Review of Pharmacological Agents to Improve Venous Leg Ulcer Healing. *Wounds*. 2020 Jul;32(7):195-207.
2. Chin JS, Madden L, Chew SY, et al. Drug therapies and delivery mechanisms to treat perturbed skin wound healing. *Adv Drug Deliv Rev*. 2019 Sep-Oct;149-150:2-18.
3. Fitzpatrick E, Holland OJ, Vanderlelie JJ. Ozone therapy for the treatment of chronic wounds: A systematic review. *Int Wound J*. 2018 Aug;15(4):633-644
4. Freitas AL, Santos CA, Souza CA, et al. The use of medicinal plants in venous ulcers: a systematic review with meta-analysis. *Int Wound J*. 2017 Dec;14(6):1019-1024.
5. Zhao R, Liang H, Clarke E, et al. Inflammation in Chronic Wounds. *Int J Mol Sci*. 2016 Dec 11;17(12):2085.
6. Rahim K, Saleha S, Zhu X, et al. Bacterial Contribution in Chronicity of Wounds. *Microb Ecol*. 2017 Apr;73(3):710-721.
7. Withycombe C, Purdy KJ, Maddocks SE. Micro-management: curbing chronic wound infection. *Mol Oral Microbiol*. 2017 Aug;32(4):263-274.
8. Cooper MA, Qazi U, Bass E, et al. Medical and surgical treatment of chronic venous ulcers. *Semin Vasc Surg*. 2015 Sep-Dec;28(3-4):160-4.
9. Pugliese DJ. Infection in Venous Leg Ulcers: Considerations for Optimal Management in the Elderly. *Drugs Aging*. 2016 Feb;33(2):87-96.
10. Marston W, Tang J, Kirsner RS, Ennis W. Wound Healing Society 2015 update on guidelines for venous ulcers. *Wound Repair Regen*. 2016 Jan-Feb;24(1):136-44.
11. Maessen-Visch MB, de Roos KP. Dutch Venous Ulcer guideline update. *Phlebology*. 2014 May;29(1 suppl):153-156.
12. Ylönen M, Stolt M, Leino-Kilpi H, et al. Nurses' knowledge about venous leg ulcer care: a literature review. *Int Nurs Rev*. 2014 Jun;61(2):194-202.
13. O'Meara S, Al-Kurdi D, Ologun Y, et al. Antibiotics and antiseptics for venous leg ulcers. *Cochrane Database Syst Rev*. 2014 Jan 10;(1):CD003557.
14. O'Meara S, Al-Kurdi D, Ologun Y, et al. Antibiotics and antiseptics for venous leg ulcers. *Cochrane Database Syst Rev*. 2013 Dec 23;(12):CD003557.
15. Lazarus G, Valle F, Malas M, et al. Chronic Venous Leg Ulcer Treatment: Future Research Needs: Identification of Future Research Needs From Comparative Effectiveness Review No. 127 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2013 Nov. Report No.: 13(14)-EHC034-EF.
16. Lazarus G, Valle MF, Malas M, et al. Chronic venous leg ulcer treatment: future research needs. *Wound Repair Regen*. 2014 Jan-Feb;22(1):34-42
17. Richmond NA, Maderal AD, Vivas AC. Evidence-based management of common chronic lower extremity ulcers. *Dermatol Ther*. 2013 May-Jun;26(3):187-96.
18. Brölmann FE, Ubbink DT, Nelson EA, et al. Evidence-based decisions for local and systemic wound care. *Br J Surg*. 2012 Sep;99(9):1172-83.

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### TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 07, Statement 4, TOPIC: “**Antibiotics use in wound healing**”

Venous leg ulcers are often colonized by several bacterial species, potentially switching into virulent infections, slowing down the wound healing and potentially damaging the general status of the patient.

Choosing the proper therapy, while avoiding antibiotic overuse is mandatory to optimize the treatment while counteracting the drug resistance development

**\*[O'Meara S, Al-Kurdi D, Ologun Y, et al. Antibiotics and antiseptics for venous leg ulcers. Cochrane Database Syst Rev. 2014 Jan 10;(1):CD003557].**

Antibiotics should be considered in case of local and systemic symptoms and signs of infection, such as pain, erythema, tenderness, temperature increase, chills. Proper culture should guide the targeted therapy.

A Cochrane meta-analysis reported how cadexomer iodine. and silver dressings can be useful in this context, yet high grade evidence is missing, together with the related cost-effectiveness analysis.

**[Norman G, Westby MJ, Rithalia AD, Stubbs N, Soares MO, Dumville JC. Dressings and topical agents for treating venous leg ulcers. Cochrane Database Syst Rev. 2018 Jun 15;6:CD012583]**

A recent investigation focused on the comparison among systemic versus local versus combined systemic and local antibiotic therapy in venous ulcers. The combination of systemic and local showed higher healing velocity, lower recurrence rate, lesser risk of septicemia, lesser need of surgical intervention, shorter stay and better cost-effectiveness. Nevertheless, antibiotic resistance was up to 6 times higher. Further large studies are needed to confirm this finding and lead to high recommendations.

**[Abdulhamid AK, Khalaf RJ, Sarker SJ. What Is the Best Option for Treating Venous Leg Ulcer Infection? Is It Systemic or Local Antimicrobials or a Combination of Both? A Retrospective Cohort Study. Int J Low Extrem Wounds. 2021 Sep;20(3):236-243.]**

Indeed, another recent publication demonstrated how the venous leg ulcer healing time is prolonged by each subsequent bacterial strain, independently from the systemic antibiotic use.

**[Kruszewska K, Wesolowska-Gorniak K, Czarkowska-Paczek B. Venous leg ulcer healing time is increased with each subsequent bacterial strain identified in the ulcer. A retrospective study. Phlebology. 2021 May;36(4):275-282]**

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### STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 7, Statement 4

Culturing and systemic antibiotics are indicated only in presence of signs and symptoms of infection. Antimicrobials are not recommended in only contaminated wounds.

### SELECTED REFERENCES

1. \*O'Meara S, Al-Kurdi D, Ologun Y, et al. Antibiotics and antiseptics for venous leg ulcers. *Cochrane Database Syst Rev.* 2014 Jan 10;(1):CD003557
2. Norman G, Westby MJ, Rithalia AD, Stubbs N, Soares MO, Dumville JC. Dressings and topical agents for treating venous leg ulcers. *Cochrane Database Syst Rev.* 2018 Jun 15;6:CD012583
3. Abdulhamid AK, Khalaf RJ, Sarker SJ. What Is the Best Option for Treating Venous Leg Ulcer Infection? Is It Systemic or Local Antimicrobials or a Combination of Both? A Retrospective Cohort Study. *Int J Low Extrem Wounds.* 2021 Sep;20(3):236-243
4. Kruszewska K, Wesolowska-Gorniak K, Czarkowska-Paczek B. Venous leg ulcer healing time is increased with each subsequent bacterial strain identified in the ulcer. A retrospective study. *Phlebology.* 2021 May;36(4):275-282

### identified LITERATURE BIAS

Heterogeneity in investigated ulcer bacterial load

### SUGGESTED NEXT LINES OF RESEARCH

Multi-center studies on best antibiotic protocols in complicated ulcers