

Topical Preparations for Wound Healing

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Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (<http://www.cebm.net/?o=1025>).

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Clinical Question

Do topical preparations improve wound healing?

Evidence-Based Answer

Topical silver should not be used for treatment of nonburn wounds because it does not hasten healing. (Strength of Recommendation [SOR]: A, based on a systematic review of randomized controlled trials [RCTs].) Medical-grade topical honey can be used to reduce healing time for partial-thickness burns, but it produces no effect on lacerations, surgical wounds, chronic wounds, or vascular ulcers. (SOR: A, based on a systematic review of RCTs.) Topical antibiotics can be used to reduce the incidence of clinical infections in children with minor acute wounds. (SOR: B, based on a single RCT.) Mupirocin (Bactroban), bacitracin/neomycin/polymyxin B ointment (Neosporin), and other topical preparations containing neomycin do not improve healing for biopsy wounds and may cause dermatitis and antibiotic resistance.

Evidence Summary

A systematic review and meta-analysis of 10 RCTs (N = 1,356 patients) evaluated complete wound healing, wound size reduction, and healing rate of nonburn wounds dressed with topical silver.¹ There was no improvement in complete wound healing (risk difference = 0.02; 95% confidence interval [CI], -0.02 to 0.06) and equivalent rates of healing at four and eight weeks (weighted mean difference = 0.01; 95% CI, -0.02 to 0.04). Topical silver reduced wound size as measured by absolute area and depth (weighted mean difference = 10.37%; 95% CI, 3.86 to 16.71).

A Cochrane review of 25 RCTs (N = 2,987 patients) evaluated the use of medical-grade topical honey for the treatment of acute and chronic wounds.² Acute wounds included burns, abrasions, lacerations, and minor surgical wounds; chronic wounds included venous leg ulcers, pressure wounds, postsurgical wounds, cutaneous leishmaniasis, diabetic foot ulcers, and Fournier gangrene. There was no consistent distinction between infected and uninfected wounds. Compared with conventional dressings, honey modestly reduced healing time for partial-thickness burns (weighted mean difference = -4.68 days; 95% CI, -4.28 to -5.09). For all other types of wounds, there was insufficient evidence to recommend its use. In patients with cutaneous leishmaniasis and when compared with prompt surgical intervention for burns, the use of honey delayed healing.

In an RCT, school nurses treated 177 scratches and abrasions in 107 elementary school students with either a topical cetrimide, bacitracin, and polymyxin B compound or placebo.³ A medical professional evaluated the wounds on the third day and classified them as resolved or possibly infected. Wounds in the treatment group had a lower rate of clinical infection, as defined by the presence of redness, pain, exudate, and positive wound cultures (1.6% vs. 12.5%; 95% CI, 0.11 to 0.207; number needed to treat = 9).

A blinded RCT found that mupirocin did not improve healing in clean postexcisional skin wounds (1,801 wounds in 778 patients).⁴ Investigators compared mupirocin vs. paraffin vs. no medicated topical preparation before the placement of an occlusive dressing, and found no differences in infection rates among the groups (2.3%

in the mupirocin group vs. 1.5% in the paraffin and no-treatment groups combined; $P = .490$) or overall rates of complications (4.8% vs. 4.0%; $P = .590$). Patients using mupirocin had a nonsignificant increase in wound edge necrosis ($P = .077$).

A small, double-blind, multicenter trial ($n = 30$) compared the effectiveness and safety of Aquaphor Healing Ointment and Neosporin for the treatment of wounds after shave removal of seborrheic keratoses.⁵ There was no difference between the groups in rates of erythema, edema, epithelial confluence, crusting, or scabbing. More patients in the Neosporin group reported burning during the first week ($P < .05$).

Recommendations from Others

A practice guideline published by the Infectious Diseases Society of America and used by the Veterans Affairs Puget Sound Health System recommends using topical antiseptics instead of topical antimicrobials.⁶ It recommends short-term use of cadexomer iodine or silver formulations in addition to debridement, dressings, and pressure reduction for burns and chronic wounds. It also recommends their use as an adjuvant to systemic

treatment for wounds clinically infected with highly resistant pathogens.

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