Effectiveness of silver in wound care treatment

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CRD summary
The authors concluded that the silver dressings and topical agents were promising, safe and effective for wound care, but further research was needed. These conclusions reflect the evidence, but given the small samples, poor quality, and clinical variation between trials, as well as the lack of effect sizes, the findings may be overestimated.

Authors' objectives
To examine the effectiveness of silver in wound care.

Searching
CINAHL, ProQuest, MEDLINE and Cochrane Database of Systematic Reviews were searched, for studies published in English, from 2000 to 2009. Search terms were reported.

Study selection
Clinical trials were eligible for inclusion if they compared or evaluated the effectiveness of dressings containing silver, for patients (of any age) with any type of wound, including burns. At least one of the study groups had to have received a topical solution, cream, foam or impregnated dressing, containing silver. One of the following outcomes had to be reported: wound healing; resolution of exudates, odours or inflammation; pain and overall comfort; cost-effectiveness; safety; or patient quality of life.

In the included trials, the wounds included second-degree burns, venous leg ulcers, diabetic foot ulcers, pressure ulcers, open surgery, and trauma. The mean age of patient groups ranged from 34 to 75.5 years. The assessment periods, for the outcomes, varied from three over two weeks, to multiple assessments over six weeks.

The authors did not state how many reviewers selected trials for inclusion.

Assessment of study quality
Trial quality was assessed using the Physiotherapy Evidence Database (PEDro) scale. This evaluated the basis of randomisation, concealment of allocation, baseline comparability, blinding, adequacy of follow-up and reporting of intention-to-treat analysis, between-group comparisons, and point estimates with measurements of variability, for at least one outcome. Total scores ranged from 0 (low quality) to 10 (high quality). Only those trials that scored 4 or more were included.

Two reviewers independently assessed trial quality; discrepancies were resolved through discussion.

Data extraction
Two reviewers independently extracted the study characteristics and outcome measures.

Methods of synthesis
The authors conducted a narrative synthesis.

Results of the review
Five trials (three randomised controlled trials) were included, with 410 participants (range 27 to 129). Most trials had a problem with randomisation, allocation concealment and blinding (especially of the therapist and assessor). The PEDro scores ranged from 4 to 9. Follow-up ranged from two weeks to six weeks.

All trials showed positive effects of silver dressings or topical agents. Three that evaluated the safety of the silver dressings and topical agents found that they were safe for wound dressing. Treatment-related adverse events were rare across all five trials.

The quality of life scores increased for patients with silver dressings, in all five trials.
Cost information
Three trials reported that silver dressings and topical agents were more cost-effective, as they required less frequent changes than more traditional treatments – no further details were provided.

Authors' conclusions
The silver dressings and topical agents were promising, safe and effective for wound care, but further research was needed.

CRD commentary
The review question and inclusion criteria were broadly defined. Relevant sources were searched, but unpublished trials, and those in languages other than English, were excluded, so relevant evidence may have been missed. Appropriate methods to reduce reviewer error and bias were used for quality assessment and data extraction, but it was unclear whether similar methods were used for study selection.

Trial quality was assessed, using appropriate criteria; there were issues with randomisation and blinding for most trials. A narrative synthesis was appropriate in view of the diversity of the trials (different outcome measures, on different types of wounds), but the effect sizes were not reported, making it impossible to assess the actual effect of silver dressings.

The authors' conclusions reflect the evidence, but given the small samples, poor quality, and clinical variation between trials, as well as the lack of effect sizes, the findings may be overestimated. As acknowledged by the authors, all the included trials had short follow-up, so the effectiveness and safety of the dressings, beyond treatment, is unclear.

Implications of the review for practice and research

Practice: The authors stated that it was not possible to generalise these treatments to the general population.

Research: The authors stated that further research was needed to draw more definitive conclusions. Randomised controlled trials, comparing silver versus non-silver dressings, should be conducted to find the best uses of, and limitations of, silver dressings and topical agents, for wound care in the general population.

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MeSH
Bandages; Burns; Diabetic Foot; Humans; Pressure Ulcer; Silver; Silver Compounds; Silver Sulfadiazine; Varicose Ulcer; Wounds and Injuries

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.