Critically Appraised Topic Form

Specific Question:

What is the evidence for antimicrobial resistance in honey and silver dressings?

Completed: November 2023

Clinical bottom line

There is limited evidence that the use of topical antimicrobials increases the risk of antimicrobial resistance. Consequently, there is no change to practice recommended at this time.

Why is this important?

The question was important to the group so that they could educate patients and themselves about the potential for antimicrobial resistance arising from the use of topical antimicrobials. Antimicrobial resistance poses not just a financial cost, but a human cost and is of local, national and global concern. As a secondary question we wanted to understand the local guidance to use topical antimicrobials for two weeks.

Search timeframe

2020-2023

Search strategy

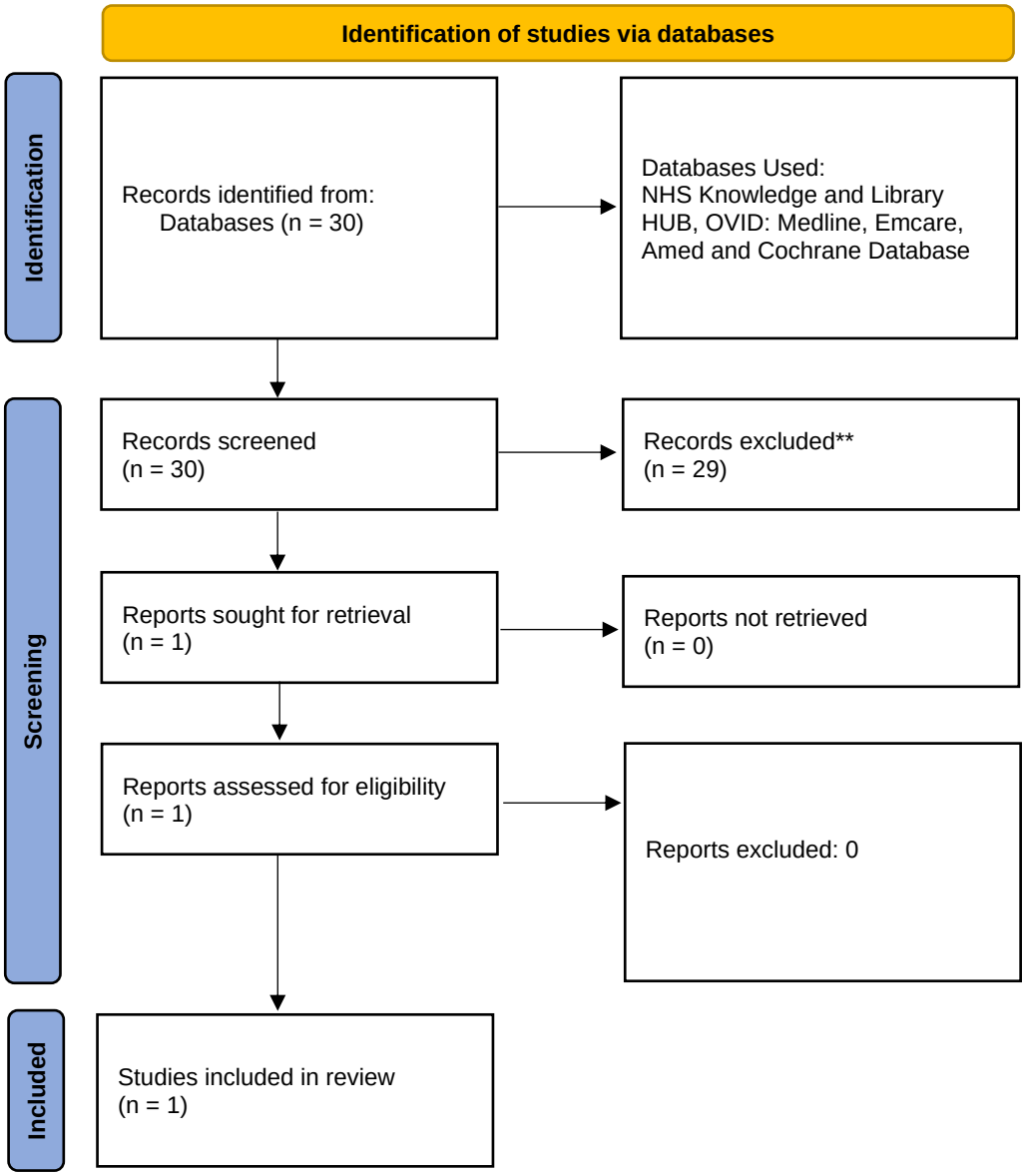
	Description	**Search terms** **(In the final document this should be a combination of your clinical and librarian search terms)**
Population	People with a wound	wound care, *wound, *wound healing
Intervention or Exposure (i.e., what is being tested) e.g., manual therapy	Honey and silver dressings	*honey *silver dressing
Comparison	N/A	N/A
Outcomes of interest	Antimicrobial resistance	*antibiotic resistance

Types of studies	Systematic reviews, Randomised controlled trials	N/A

Date of search

3rd August 2023 (Sutherland, 2023).

Results of the search



Detail of included study

First Author, year and type of study	Population and setting	Intervention	Study results	Assessment of quality and comments
Blackburn et al (2023) Systematic Review: What is the evidence that there is antimicrobial resistance associated with the use of topical antimicrobial preparations?	Half of the 25 included studies explored the use of silver in dressings as an antimicrobial. Two studies were performed in a hospital setting, one study employed an in vitro and in vivo design, with all remaining studies employing an in vitro approach. Two studies undertook research with human participants. The geographical location of the studies varied between the USA (nine studies), the UK (eight studies), Algeria (one study), Egypt (one study), Slovakia (one study), Iran (one study), Sweden (one study),	The review aimed to examine the effect of using topical antimicrobial preparations on antimicrobial resistance by critically evaluating the currently available evidence.	There was limited evidence of the effect of topical antimicrobial preparations on antimicrobial resistance. Most included studies explored the effectiveness of topical antimicrobials on infection and wound healing. Antimicrobial resistance remains an important issue for exploration and understanding to clearly determine whether topical antimicrobials contribute to antimicrobial resistance.	The systematic review was conducted by an international team of experts. The study team used quality appraised using the Evidence Based Literature appraisal checklist. The mean validity score for all studies was 92% (studies were considered valid if the scored ≥75%). However, it is not clear how many of the study team critically appraised each paper. The study team themselves identify a number of limitations. Firstly, only studies published in English were included. Secondly, the broad methodological heterogeneity of the studies prevented the comparison between studies meaning meta-analysis as not possible. Lastly, six studies reported funding and/or conflict of interest and ten studies did not report whether they had funding or a conflict of interest.

	India (one study), the Czech Republic (one study) and Australia (one study).			

Summary

There is limited evidence that the use of topical antimicrobials increases the risk of antimicrobial resistance. This finding could be attributable to a focus on the effectiveness of topical antimicrobial preparations in wound healing and infection prevention. The majority of evidence surrounding the use of topical antimicrobials explores the use of silver in dressings as an antimicrobial. Antimicrobial resistance remains an important issue for exploration and understanding to clearly determine whether topical antimicrobials contribute to antimicrobial resistance (Blackburn et al., 2023).

Treatment with two weeks of a topical antimicrobial is advocated by best practice statements (wounds UK 2010, 2013, 2020). However, the appropriate duration of antimicrobial treatment is an area of debate. The concern is that using topical antimicrobials for longer than necessary could be associated with an increased risk of causing microbial resistance. The use of a highly effective antimicrobial is therefore advised for a shorter duration to kill bacteria, thereby minimising the risk of inducing microbial resistance. Antimicrobial dressings are recommended to be used for a minimum of two weeks duration. After two weeks a reassessment should take place either:

(1) discontinue if signs and symptoms of infection have resolved

(2) continue with the antimicrobial if the wound is progressing but there are still signs and symptoms

(3) consider an alternative antimicrobial if there is no improvement and refer to a tissue viability specialist (Wounds UK, 2020).

References

Blackburn, J. et al. (2023) 'What is the evidence that there is antimicrobial resistance associated with the use of topical antimicrobial preparations?', *Wound Practice & Research: Journal of the Australian Wound Management Association*, 31(1), pp.40-48.

Page, M. et al. (2021) The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ, 372:n71. doi: 10.1136/bmj.n71

Sutherland, F. (2023) Evidence search: What is the evidence for antimicrobial resistance in honey or silver dressings. 3rd August, 2023. OXFORD, UK: Oxford Health Library and Knowledge Service.

Wounds UK (2010) *Best Practice Statement: The use of topical antiseptic/antimicrobial agents in wound management*. Available at: https://wounds-uk.com/best-practice-statements/best-practice-statement-the-use-of-topical-antisepticantimicrobial-agents-in-wound-management/ (accessed 09/11/23)

Wounds UK (2013) *Best Practice Statement. The use of tropical antimicrobial agents in wound management*. Available at: https://wounds-uk.com/best-practice-statements/best-practice-statement-use-topical-antimicrobial-agents-wound-management/ (accessed 09/11/23)

Wounds UK (2020) Best Practice Statement: Antimicrobial stewardship strategies for wound management. Available at: https://wounds-uk.com/best-practice-statements/best-practice-statement-antimicrobial-stewardship-strategies-wound-management/ (accessed 09/11/23)