Choosing a silver dressing

Christina Lindholm RN PhD, Senior Professor, Karolinska University Hospital/Sophiahemmet University College, Stockholm, Sweden
Choosing a silver dressing

• Studies of silver dressings use a variety of antimicrobial testing methods and clinical endpoints making comparisons complex
• The factors influencing dressing choice may include:
  • availability/familiarity
  • additional needs of the patient/wound
  • need for a secondary dressing
  • patient preference

Duration of silver availability may also be important, eg if dressing changes are planned to take place once weekly, a dressing with silver availability for seven days is advisable
In vitro antimicrobial efficacy

• Silver is active *in vitro* against a wide range of microorganisms including MRSA, VRE, fungi and anaerobes
• Studies looking for a correlation between silver content and antimicrobial efficacy have produced mixed results
• Many factors are likely to influence antimicrobial efficacy, eg distribution and availability of silver, dressing conformability and absorptive ability

*In vitro* tests of antimicrobial efficacy of silver dressings are unlikely to be representative of clinical performance because of the complexity of the wound environment
**In vitro antimicrobial tests**

- *In vitro* antimicrobial tests include:
  - diffusion assay/zone of inhibition*
  - minimum inhibitory concentration* (MIC)
  - minimum bactericidal concentration (MBC)
  - logarithmic (log) reduction
  - direct counts*

*These tests do not provide information about bactericidal activity

It is important to understand the differences between these tests and their significance in indicating bacteriostatic or bactericidal activity
Clinical evidence

• Silver dressings have been assessed in many different types of clinical studies
• Studies are often difficult to interpret and compare because of problems with insufficient study power, problems with randomisation, and the wide range of inclusion criteria, study protocols and endpoints

Given the difficulties of comparing studies, it is not unexpected that some systematic reviews and meta-analyses have come to differing conclusions or failed to find sufficient data¹
Clinical experience

- Pressure ulcer > 2 months
- MRSA + *Pseudomonas aeruginosa* +++
Study endpoints

• Many studies use endpoints related to **healing**
• Silver dressings are intended to reduce bioburden and may be used for short periods
• Therefore, **more appropriate endpoints** for silver dressings may relate to:
  • measurement of microbial burden
  • assessment of clinical indicators of infection
Levels of evidence

• RCTs are conventionally seen as providing a high level of evidence
• Randomisation minimises the risk of bias and counteracts placebo effect
• RCTs are time consuming and expensive

Judgement of efficacy needs to examine other options such as observational studies, and expert and patient opinion
213 patients with venous leg ulcers randomised to receive a silver dressing or a non-antimicrobial control dressing
Main outcome was healing at 12 weeks
Conclusion: there was no statistically significant difference between the use of silver dressings and control dressings for the proportion of ulcers healed, time to healing and rates of recurrence
Higher cost was associated with the use of silver dressings
There has been concern that the conclusions are potentially misleading\textsuperscript{1} because the study did not use silver dressings in line with current recommendations:

- the study did not report risk of infection or evaluate wounds for infection
- silver dressings are not intended for use for extended periods
- the goal of care when using silver dressings is not healing but control of bioburden

It is unfortunate that the findings of the VULCAN study have been generalised and used to justify withdrawal of silver dressings
Cost effectiveness

• A formal cost-effectiveness analysis of silver is awaited
• Several studies have found that silver dressings are associated with outcomes that may be beneficial to cost-effectiveness
  \(^1\)
• These outcomes include fewer MRSA bacteraemias associated with MRSA-infected wounds

Healthcare budget providers should be encouraged to think beyond the cost of dressings and to consider the potential for other savings, eg reduced nursing time or hospital stays
Future research

- Clarification of the relationship between dressing formulation and silver availability
- Elucidation of how silver availability affects clinical performance
- Better understanding of silver availability, systemic absorption and potential for systemic effects
- Further studies using bioburden and indicators of infection as endpoints
- Formal quality of life and cost-effectiveness studies
- Improved understanding of the best use of antimicrobial dressings
References


