

The Use of Hydrogen Peroxide in the Treatment of Infected Burn Wounds: A Systematic Review and National Survey of Current Clinical Practice in the United Kingdom

Toni Mihailidis¹, Bethany Patenall², Amber Young³

1. University of Bristol Medical School, 2. Department of Chemistry, University of Bath 3. Bristol Royal Hospital for Children

Introduction

- Aim: to investigate the current use of hydrogen peroxide (H₂O₂) in the treatment of infected burn wounds
- Current treatment of infected burn wounds is with antibiotics and/or debridement¹, however bacterial resistance remains a significant problem.²
- *Pseudomonas aeruginosa* and *Staphylococcus aureus* have especially high frequency in burn wounds (up to 85%). Infection with these multi-drug resistant bacteria (MDR) lead to an increase in hospital stay, increased surgical intervention and increased mortality rates.³

Methods

- An 11-question survey on the use of H₂O₂ in the treatment of infected burn wounds was sent to all burn services in the United Kingdom (list obtained from the British Burns Association)
- A systematic review on the current clinical use of H₂O₂ in the treatment of infected burn wounds was performed using four main databases.



Figure 1 | **A** SEM of *P. aeruginosa* biofilm **B** image of biofilm associated bacterial infection with burn **C** SEM of *S. aureus* biofilm.

Discussion

- A 72.7% response rate was achieved. Of these, 75% do not currently use H₂O₂. Of the 25% which do, there is no established protocol on its use.
- The systematic review generated 1168 papers, with only one addressing the research question.
- This RCT demonstrated that soaking with 2% H₂O₂ prior to grafting improved graft take rate in infected burn wounds compared with grafts treated with saline prior to grafting.⁴

Conclusions

- H₂O₂ has been shown to be effective against MDR bacteria *in vitro* but only one RCT shows H₂O₂ to be an effective burn wound disinfectant
- Based on our research and the responses to the questionnaire, H₂O₂ could be used to treat superficial, contaminated burn wounds in theatre under general anaesthetic
- More large-scale research in this field is required to determine whether H₂O₂ may offer an alternative to antibiotic resistance in infected burn wounds.

Use H ₂ O ₂ ?	Use as treatment adjunct?	Time Limit?	Wound Swab Prior?	Who?	Where?	Concentration?	Volume?
4/16 services	4/4 services	1/4 at initial presentation	2/4	Plastic Surgeon or Lead Nurse	Theatre	2/4 2:1 saline:H ₂ O ₂ ; 1/4 50:50 saline; 1/4 3% diluted in saline	2/4 minimal; 1/4 200 or 400 ml; 1/4 500ml

Table 1 | Summary of Survey

References:

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