South African National Essential Medicine List
Primary Healthcare EML review process
Component: Emergencies & injuries

RAPID SCOPING REVIEW

Date: 21 October 2021

Key findings

- The purpose of this rapid scoping review was to determine if there is any new evidence since the previous review of the evidence in 2018 for burn dressings and mupirocin to trigger a formal review.
- No additional RCTs or relevant evidence from SRs since 2018 of burns dressings was found.
- No evidence signal to indicate any change to original 2018 NEMLC recommendations for local wound care (Povidone iodine, silver sulfadiazine, mupirocin, nano-crystalline dressings, *melaleuca alternifolia*) in patients with burns.
- No evidence for the effectiveness mupirocin.
- 2018 and 2019 recommendations remain unchanged.

PHC/ADULT HOSPITAL LEVEL EXPERT REVIEW COMMITEE RECOMMENDATION:

Type of recommendation	We recommend against the option and for the alternative **(strong)**	We suggest not to use the option **(conditional)**	We suggest using either the option or the alternative **(conditional)**	We suggest using the option **(conditional)**	We recommend the option **(strong)**
		X			

Recommendation: Current standard of care in the STG to be retained – topical povidone iodine for infected burns.
Rationale: No new evidence could be identified for alternative treatment options for septic burns.
Level of Evidence: Low to very low certainty
Review indicator: New evidence sufficient to change the recommendation

NEMLC RECOMMENDATION (MEETING OF 23 JUNE 2022):
NEMLC accepted the review and proposed recommendation, but recommended that the PHC/Adult Hospital Level Committee consider reviewing other dressings for wounds, noting that this topic would be prioritised in the topic prioritisation project plan and may be reviewed in the next review cycle. Furthermore, it was noted that wound dressings are not funded from the Provincial Pharmaceutical budgets.

Monitoring and evaluation considerations

Research priorities

1. Executive Summary

Date: 21 October 2021
Medicine (INN): Dressings for burns (antibiotics and chemotherapeutics for dermatological use)
Medicine (ATC): D06
Indication (ICD10 code): Burns T30.0-3/T31.0-9 + (Y34.99)
Patient population: Adults and paediatrics
Level of Care: Primary Healthcare
Prescriber Level: Nurse prescriber
Current standard of Care: Povidone iodine 5% cream
Efficacy estimates: n/a
Motivator/reviewer name(s): Dr Michael McCaul, Dr Clint Hendricks, Dr Gustav Thom
PTC affiliation: GT – KZN PPTC

2. Name of reviewer(s) : Michael McCaul (1), Clint Hendricks (2), Gustav Thom (3)

1) Division of Epidemiology and Biostatistics, Department of Global Health, Stellenbosch University. SA GRADE Network
2) Division of Emergency Medicine, University of Cape Town. Emergency Physician, Cape Town
3) District Clinical Specialist Team, Amajuba District, KZN

MM, CH, GT have no interests pertaining to topical preparations for management of burns.

3. Introduction/ Background

A proposal was made to add topical mucopirocin to the Adult Hospital Level and PHC STG for the management of septic burns. As the issue of topical preparations had been investigated and not added during the 2017-19 NEMLC review cycle it was necessary to ascertain whether new evidence had emerged since that would necessitate a new review.

4. Purpose/Objective:

To determine if new evidence has emerged since the 2018 (PHC, 21.3.2) and 2019 (Adult, 20.15) EML for dressings for burn care, specifically:

- Povidone iodine
- Silver sulfadiazine
- Mupirocin
- Nano-crystalline dressings
- Melaleuca alternifolia

5. Methods:

We conducted a rapid scoping review of the literature to determine whether there is any new evidence to trigger a formal review of burn dressings for adult and PHC level.

a. **Data sources** : Searched https://www.epistemonikos.org/ for updated or new systematic review of effect on 13 October 2021. Search terms included all intervention terms (as above, including dressings) and terms linked to the population (i.e. burns).

b. **Search strategy :** Title and abstract, and full text screening was done individually by MM, with a 2nd reviewer checking excluded studies (GT). Search strategy in Appendix 1. We used the search filers for systematic reviews and then for trials. We only included evidence (systematic reviews or RCTs) from 2018 onwards and checked CENTRAL for updated systematic reviews that originally supported the 2018 and 2019 Adult and PHC reviews.

c. **Search Yield:** We screened 74 articles, of which 10 were included in full text screening. Seven SRs were included in the narrative summary.

d. Excluded studies:

Author, date	Type of study	Reason for exclusion
Rahimi 2021	SR	Biosynthetic Dressings not relevant
Li, 2020	SR	Nano-silver dressing combined with recombinant human epidermal growth factor. Not relevant.
Harshman, 2019	SR	Acute Emergency care (pre-burn center)
Wormald, 2020	SR	Hydrosurgical debridement. Not relevant

e. Evidence synthesis

Description of included SRs

We found 4 Cochrane Systematic Reviews and 3 non-Cochrane reviews. Three SRs were included (<2018) as they were part of the original evidence review in 2018/2019 (See Table 11: Characteristics of included reviews). Below we include original evidence from the 2018/2019 review, and additional evidence, with references.

Results of Systematic Reviews

We found no new RCTs addressing burn dressings. The 2013 Cochrane review informing the previous recommendations has not been updated. New SRs across topics provide no new evidence for povidone iodine, silver sulfadiazine, mupirocin, nano-crystalline dressings and melaleuca alternifolia.

Silver Sulfadiazine

Silver sulphadiazine was consistently associated with poorer healing outcomes than biosynthetic (skin substitute) dressings, silver-containing dressings and silicon-coated dressings. (Wasiak, 2013, Cochrane Review).

Silver sulfadiazine was associated with a statistically significant increase in burn wound infection vs. dressings/skin substitute (OR = 1.87; 95% CI: 1.09 to 3.19, I2 = 0%). Though, RCTs were at high, or unclear, risk of bias. Silver sulfadiazine was also associated with significantly longer length of hospital stay vs dressings/skin substitute (MD = 2.11 days; 95% CI: 1.93 to 2.28) (Barajas-Nava, 2013, Cochrane Review)

Similar results found in other SRs for SSD (Nimia, 2019 and Maciel, 2019). Moderate quality evidence indicates that there is no significant difference in wound healing between silver-containing foam dressing and SSD dressing (Chaganti, 2019).

Povidone iodine:

Cochrane review showed that there is probably no difference in infection rates between an iodine-based treatment vs moist exposed burn ointment (moderate certainty evidence) – Mean time to healing for wounds treated with povidone iodine vs chlorhexidine: MD - 2.21 days, 95% CI 0.34 to 4.08. (Norman, 2017, Cochrane Review)

Melaleuca alternifolia:

No available evidence could be sourced for cooling burns with Melaleuca alternifolia (tea tree oil) for the first 12 hours. There is also the associated risk of hypothermia for large burn wounds, if this is practiced

Nano-crystalline dressings:

Cochrane review showed that, "There is moderate certainty evidence that, on average, burns treated with nanocrystalline silver dressings probably have a slightly shorter mean time to healing than those treated with Vaseline gauze (difference in means -3.49 days, 95%CI -4.46 to -2.52; I2 = 0%; 2 studies, n=204), but low certainty evidence that there may be little or no difference in numbers of healing events at 14 days between burns treated with silver xenograft or paraffin gauze (RR 1.13, 95% CI 0.59 to 2.16 1 study; n=32) (Norman, 2017, Cochrane Review).

Mupirocin:

We found no RCTs or SRs of Mupirocin.

Facial Burns

Topical antimicrobial agents versus topical non-antimicrobial agents *(Hoogewerf, 2020)*

There is moderate-certainty evidence that there is probably little or no difference between antimicrobial agents and non-antimicrobial agents (SSD and MEBO) in time to complete wound healing (hazard ratio (HR) 0.84 (95% confidence interval (CI) 0.78 to 1.85, 1 study, 39 participants).

Topical antimicrobial agents versus other topical antimicrobial agent *(Hoogewerf, 2020)*

There is very low-certainty evidence regarding whether topical antimicrobial agents make a difference to wound infection (RR 0.73, 95% CI 0.46 to 1.17; 1 study, 15 participants).

Skin substitutes versus topical antimicrobial agents *(Hoogewerf, 2020)*

There is low-certainty evidence that a skin substitute may slightly reduce time to partial (i.e. greater than 90%) wound healing, compared with a non-specified antibacterial agent (MD –6.00 days, 95% CI –8.69 to –3.31; 1 study, 34 participants).

We are uncertain whether skin substitutes in general make any other difference in effects as the evidence is very low certainty. Outcomes included wound infection, pain, scar quality, adverse effects of treatment and length of hospital stay.

Table of included studies

Author, date	***Type of study***	**n**	**Population**	**Comparators**	**Primary outcome**
Wasiak, 2013[1] (in original review)	Cochrane Systematic Review	30 RCTs, poor quality	Any age with superficial or partial thickness burns	hydrocolloid dressings; polyurethane film dressings; hydrogel dressings; silicon-coated nylon dressings; biosynthetic skin substitute dressings; antimicrobial (silver and iodine containing) dressings; fibre dressings; wound dressing pads	Time to healing No of dressings Pain QOL LOS Infection AE
Barajas-Navam 2013[2] (in original review)	Cochrane Systematic Review	36 RCTs (2117 participants)	People of any age or gender, with any type of burn injury	Systemic antibiotics given orally or parenterally Selective intestinal decontamination with antibiotics **Topical antibiotics, such as topical antimicrobial dressings or ointments** Local airway prophylaxis, such as aerosolised antibiotics.	Burn wound infection Invasive infection Infection-related mortality Adverse events wound healing rate Antibiotic resistance All-cause mortality LOS
Nimia, 2019[3]	Systematic Review	24 RCTs Low to unclear ROB	People with burns	SSD vs other dressings (with or without silver)	Infection control and wound healing
Marciel, 2019[4]	Systematic Review	11 RCTS	Burn patients hospitalized in the burn ward	New treatments vs SSD	Complete healing

Chaganti, 2019[5]	Systematic Review	3 RCTS	Patients with partial thickness burns	foam dressing vs SSD and non-foam dressing	Wound healing
Norman, 2017[6] (in original review)	Cochrane Systematic Review	56 RCTs (5807 participants)	people with any burn wound	topical treatments with antiseptic properties.	time to complete wound healing proportion of wounds completely healed during follow-up AEs QOL Pain Resource use
Hoogewerf, 2020[7]	Cochrane Systematic Review	12 RCTs (507 participants)	People with facial burns of any depth	Topical antimicrobial agents topical non-antimicrobial agents Skin substitutes Miscellaneous treatments	time to complete wound healing proportion of wounds completely healed during follow-up AEs QOL Pain Resource use

f. Evidence quality: Overall certainty of the evidence in the included SRs were low.

Appendix 1 – Search strategy

(title:(burn OR burns) OR abstract:(burn OR burns)) AND (title:(dressings OR dresssing OR "povione iodine" OR "silver sulfadiazine" OR mupirocin OR "nano-crystalline" OR "melaleuca alternifolia") OR abstract:(dressings OR dressing OR "povione iodine" OR "silver sulfadiazine" OR mupirocin OR "nano-crystalline" OR "melaleuca alternifolia"))

Version	Date	Reviewer(s)	Recommendation and Rationale
1	21 October 2021	MM, CH, GT	Povidone iodine, topical retained for management of septic burns, as no new evidence could be identified for alternative treatment options for septic burns.

References:

Included studies

1. Wasiak J, Cleland H, Campbell F, Spinks A. Dressings for superficial and partial thickness burns. *Cochrane Database Syst Rev*. 2013;2013(3). doi:10.1002/14651858.CD002106.pub4
2. Barajas-Nava LA, López-Alcalde J, Roqué i Figuls M, Solà I, Bonfill Cosp X. Antibiotic prophylaxis for preventing burn wound infection. *Cochrane Database Syst Rev*. 2013;2013(6). doi:10.1002/14651858.CD008738.pub2
3. Nímia HH, Carvalho VF, Isaac C, Souza FÁ, Gemperli R, Paggiaro AO. Comparative study of Silver Sulfadiazine with other materials for healing and infection prevention in burns: A systematic review and meta-analysis. *Burns*. 2019;45(2):282-292. doi:10.1016/j.burns.2018.05.014
4. Siqueira BS, Zanette GF. Versus Other Treatments : a Systematic Review and Meta-Analysis of. *An Bras Dermatol*. 2019;94(2):204-210.
5. Chaganti P, Gordon I, Chao JH, Zehtabchi S. A systematic review of foam dressings for partial thickness burns. *Am J Emerg Med*. 2019;37(6):1184-1190. doi:10.1016/j.ajem.2019.04.014
6. Norman G, Christie J, Liu Z, et al. Antiseptics for burns. *Cochrane Database Syst Rev*. 2017;2017(7). doi:10.1002/14651858.CD011821.pub2
7. Hoogewerf CJ, Hop MJ, Nieuwenhuis MK, Oen IMMH, Middelkoop E, Van Baar ME. Topical treatment for facial burns. *Cochrane Database Syst Rev*. 2020;2020(7). doi:10.1002/14651858.CD008058.pub3