**Clinical question.**

Does the use of a topical agent and/or dressing (I) for superficial wounds (I) improve healing (O) when compared to no topical therapy (C)?

**Is this question addressing an intervention/therapy, prognosis or diagnosis:** Intervention/therapy.

**State if this is a proposed new topic or revision of existing worksheet:** New

**Search strategy (including electronic databases searched).**

PubMed “abrasions” or “superficial wound” as MESH (headings) AND “topical” or “antimicrobial” or “dressing” or “bandage” “occlusive” textword in abstract.

EMBASE search using text words (all fields) abrasion AND (topical agent OR dressing)

AHA EndNote Master library, Cochrane database for systematic reviews, Central Register of Controlled Trials, Review of references from articles.

Forward search using SCOPUS and Google scholar.

• **State inclusion and exclusion criteria**

We included studies that prospectively compared a wet dressing to a dry dressing in patients/animals with superficial mechanical wounds (abrasions).

The following studies were excluded: Donor sites, burns, case reports, case series, studies with no negative controls.

• **Number of articles/sources meeting criteria for further review:**

5 studies met criteria for further review. Of these 3 were LOE 2 (non randomized comparative studies), and 3 were LOE 5 (not directly related; animal study).

**Summary of evidence**

**Evidence Supporting Clinical Question**

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**Level of evidence**

A = Return of spontaneous circulation  
B = Survival of event  
C = Survival to hospital discharge  
D = Intact neurological survival  
E = Time to healing  
* = Overlapping patients

*Italics = Animal studies*
### Evidence Neutral to Clinical question

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A = Return of spontaneous circulation  
B = Survival of event  
C = Survival to hospital discharge  
D = Intact neurological survival  
E = Other endpoint  

*Italics = Animal studies*

### Evidence Opposing Clinical Question

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A = Return of spontaneous circulation  
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E = Other endpoint  

*Italics = Animal studies*
REVIEWER’S FINAL COMMENTS AND ASSESSMENT OF BENEFIT / RISK:

DISCUSSION: The beneficial effects of a moist environment on the healing of superficial wounds were first reported in landmark studies in animals (Winter, 1962) and humans (Hindman, 1963) over half a century ago. Since then there have been multiple studies comparing dry and moist healing for a wide variety of wounds including burns, skin graft donor sites, and ulcers both in animals and humans.

There are no randomized clinical trials comparing the healing of traumatic abrasions in patients treated with a topical agent and/or occlusive dressing versus no dressing at all. Few studies have compared the effects of dry and moist healing in superficial experimentally induced abrasions. Claus et al. (1998) created four standardized superficial abrasions on the forearms of fourteen healthy volunteers ages 23-34. Abrasions were treated with a topical antibiotic (bacitracin) covered bandage, a hydrocolloid dressing, a semi-permeable film, or left uncovered. The time to healing was significantly shorter in all wounds covered by a dressing compared to those left uncovered (P<0.05).

A study by Beam (2008) using a similar standardized abrasion model in 16 healthy volunteers compared three occlusive dressings (a film, hydrogel, and hydrocolloid) to no dressing at all. When compared with no dressing at all, the film, the hydrogel and hydrocolloid dressings were associated with a faster healing rate as evidenced by a more rapid reduction in wound area and an improvement in wound color and luminance.

Initial human case series and human studies were promising but not continued. Subsequent animal studies involved complex combinations of induction of arrest models, and attempts to resuscitate, followed by a variety of techniques to induce hypothermia for a variable period of time.

• Davis et al (2001) created 645 partial-thickness dermatomal wounds in eight pigs. The wounds were randomized to a standard gauze bandage, hydrocolloid, cyanoacrylate based liquid bandage on no dressing at all. While all wounds were healed by eight days, wounds covered with a dry band-aid and those left uncovered were the slowest to heal. An animal study by Eaglstein et al (1988) suggests that in order to be effective, occlusive dressings should be applied within 2 hours after wounding and left in place for at least 24 hours. Use of a double antibiotic, a dry gauze bandage, or no treatment at all did not reduce bacterial counts. In this study, no occlusive dressing was evaluated.

Statistical summary of critical studies: Claus 1998; Beam 2008

Summary of Claus 1998:
• 14 subjects, 56 abrasions
• Time to healing in hours: DuoDerm 142.3+/−43.6; Biocclusive 145.5+/−43.6; Coverlet 138.9+/−80.0; Control 204.0+/−69.0.

Summary of Himan 1963:
• 7 subjects, 14 mid dermal excisions
• Time to reepithelialization: Reepithelialization more rapid in wounds closed with polyurethane occlusive dressing than those left to air.

REVIEWER’S CONFLICTS OF INTEREST:
None
Acknowledgements: None
Citation List


(LOE 2, fair, supports)
Summary: This is a small study in volunteers in which superficial abrasions were induced. The authors found that occlusive or wet dressings accelerated the healing time for the abrasions.


(LOE 2, fair, supports)
Summary: This is a small volunteer study in which abrasions were induced. The authors found that wounds covered with an occlusive or wet dressings healed faster than no dressing


(LOE 5, good, supports)
Summary: This is an animal experiment in which superficial mechanical wounds were induced in pigs. The authors found that wounds covered with an occlusive or wet dressing healed faster than a dry dressing.


(LOE 5, good, supports).

Summary: This was an animal experiment in which superficial abrasions were created on pigs and treated with various occlusive or wet dressings. The authors found that healing was improved when the wet dressings were applied within 2 hours of injury for at least 48 hours.


(LOE 5, fair, supports)
Summary: In this study superficial wounds were induced in volunteers. Wounds treated with an occlusive or wet dressing healed faster that wounds left dry and open to air.


(LOE 5, fair, supports)
Summary: This was an animal experiment in which superficial mechanical wounds were created in pigs. Wound covered with an occlusive or wet dressing healed faster than dry wounds.