**Clinical question.**

Does the use of wet dressings (I) compared with dry dressings (C) improve healing and pain control (O) in patients after thermal injuries (P)?

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

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

**Conflict of interest specific to this question:** Yes

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? **I have conducted a study comparing the effects of a dry and wet dressings in a porcine burn model.**

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

PubMed "Burns"[Mesh] AND "Bandages"[Mesh].
EMBASE search using text words (all fields) burns AND (bandages OR dressings)
AHA EndNote Master library, Cochrane database for systematic reviews, Central Register of Controlled Trials, Review of references from articles.
Search using text words “burns” and “bandages” OR “dressings”

**State inclusion and exclusion criteria**

Only studies including a control group of a dry dressing (dry gauze) and a study group of a wet dressing (such as an occlusive dressing or a topical cream or ointment under a dressing) were included

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

There were numerous studies comparing various dressings in burn patients and animals. While some studies included a control group of exposure to dry air, only two (2) animal studies (LOE 5) compared a wet dressing to dry gauze. A Cochrane systematic review evaluated multiple dressings for burns, but none of the studies evaluated included a control group of a dry dressing.
Summary of evidence

Evidence Supporting Clinical Question
In patients with thermal burns, treatment with wet dressings results in faster healing than treatment with a dry dressing.

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A = Return of spontaneous circulation  C = Survival to hospital discharge
B = Survival of event  D = Intact neurological survival
E1 = Healing  E2 = Infection

*Italics = Animal studies*
### Evidence Neutral to 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  
E1 = Healing  
E2 = infection  
*Italics = Animal studies*

### Evidence Opposing 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  
E1 = Healing  
E2 = infection  
*Italics = Animal studies*
**Discussion:** There are no randomized clinical trials comparing the effects of wet and dry dressings for thermal burns. However, multiple human studies found that treatment of burns with an occlusive or wet dressing that creates a moist wound environment improves healing compared with exposure to dry air with no dressing at all. Two animal studies included a comparison between dry gauze and a wet dressing.

Hoekstra et al. (Hoekstra, 1993) compared silver sulfadiazine to a woven cotton dressing in six pigs with deep dermal contact burns creating by applying a metal block preheated to 170° C to the flanks of the animals for 20 second. In wounds treated with the wet dressings (SSD), there was less progression of the injury and the burns healed faster than when treated with a dry dressing alone.

Singer et al (Singer, 1999) conducted a blinded, controlled, experimental trial using anesthetized swine. Sixty-three standardized burns were created by applying an aluminum bar preheated to 80° C for 20 seconds to the flanks of four young pigs. Three equal sets of 21 burns were randomly treated with an octylcyanoacrylate (occlusive) spray, silver sulfadiazine (SSD), or dry gauze (controls). Full-thickness biopsies were taken after 30 minutes and at seven and 14 days for blinded histopathologic evaluation by two dermatopathologists using hematoxylin and eosin staining. The percent of wound re-epithelialization was measured at days 7 and 14, calculated by dividing the length of the regenerated epidermis by the measured width of the biopsy. At seven days, there was a significant between-group difference in percent re-epithelialization. Percent re-epithelialization was greatest in the OCA group (65.0%), followed by the SSD group (37.6%), and lowest in the control group (8.8%). At 14 days, all wounds demonstrated near complete re-epithelialization and there was no significant difference in the percent of re-epithelialization among the groups.

A recent systematic review of dressings for superficial and partial thickness burns was published by the Cochrane Collaboration (Wasiak, 2008). The authors reviewed 26 randomized clinical trials evaluating a variety of dressings. While the studies did not include a control group treated with a dry dressing, the study found that the use of biosynthetic dressings that create a moist wound environment (wet dressings) decreased the time to healing and pain during dressing changes. They also concluded that silver sulfadiazine, the comparator in many studies, delayed the time to healing and increased the number of dressings changes when compared to the biosynthetic dressings.

**Acknowledgements:**
**Citation List**


(LOE 5, good, supports).  

**Summary:** This was a study of burns in swine in which various topical ointments (wet dressings) were compared with no dressings (dry). Wound treated with topical antibiotic demonstrated less necrosis and faster healing.


(LOE 5, good, support).  

**Summary:** This was a study of partial thickness burns in swine. Compared with a dry dressing (gauze), burns treated with a topical antibiotic or a topical skin adhesive (both of which create a moist wet environment) healed faster.


(LOE 5, good, support).  

**Summary:** This was a systematic review of 26 RCTs in humans. While the comparator was not dry dressings, biosynthetic dressings creating a moist wound environment healed faster and reduced the pain of dressing changes.