

## Wet-to-dry saline moistened gauze for wound dressing

19/05/2010

### Author

The Wound Healing and Management Node Group

### Question

What is the best available evidence regarding the use of wet-to-dry saline moistened gauze for wound dressing?

### Clinical Bottom Line

- Wet-to-dry gauze and dry gauze dressings are commonly used as the standard dressing material for wounds healing by secondary intention <sup>1</sup> (Level III), however their use in this regard is increasingly questioned in light of strong research evidence that demonstrates superior healing outcomes when moisture-retentive or semi-occlusive dressings are used <sup>1,2,3</sup> (Level III).
- Wet-to-dry gauze dressings are mainly intended for use in **wound debridement** and in this purpose they are conceptually distinct from wet-to-dry or wet-to-moist gauze as a primary dressing in non-infected wounds <sup>2,4</sup> (Level III). However, even when debridement is indicated, other forms of debridement that are less disruptive to healthy granulating tissue are available and recommended by evidence-based research <sup>1,2,3</sup> (Level III) <sup>5,6</sup> (Level IV).
- Wet-to-dry gauze dressings involves the application of gauze moistened with normal saline (0.9%) over a wound; extra layers of gauze or other dry dressings (usually an abdominal pad) are then placed over the moist gauze. Because gauze dries out within a few hours dressings are re-applied two or three times throughout the day or as prescribed by the prevailing healthcare guidelines for that geographical location <sup>1,3</sup> (Level III).
- In wet-to-dry dressings the gauze is allowed to dry out and is removed without applying any moisture to the dressing. Research has found however, that wet-to-dry and wet-to-moist dressings are rarely considered as two distinct procedures as clinicians often apply saline to remove the dry gauze, indicating a lack of procedural compliance <sup>1,2</sup> (Level III). This lack of compliance however may also indicate clinicians' experiential knowledge of the disadvantages associated with the removal of dry gauze dressings. These include the following <sup>1,2,3,4</sup> (Level III) <sup>5,6</sup> (Level IV):
  - Severe pain and discomfort to the patient
  - Damage to newly formed epithelial and granulating tissue with subsequent delay in healing
  - Substantial labour investment associated with multiple dressing changes
  - Increased use of dressing materials and other resources depending on treatment location
- Normal saline (0.9%) is the recommended wetting agent in wet-to-dry dressings. The use of other wetting agents with known cytotoxicity should not be used <sup>2</sup> (Level III).
- Research that has compared the cost effectiveness of wet-to-dry dressings with moisture-retentive or semi-occlusive dressings has consistently found that wet-to-dry dressings are associated with higher costs than moisture-retentive or semi-occlusive dressings. While gauze and normal saline are not necessarily high cost items, researchers have drawn attention to the following factors that need to be considered when calculating the cost effectiveness of a treatment <sup>1,2,3</sup> (Level III) :
  - Cost-effectiveness is not the same as unit price of the dressing; while semi-occlusive dressings may be more expensive than gauze and normal saline, wet-to-dry dressings need to be changed more frequently and include associated costs of wound dressing materials.
  - Wet-to-dry dressings are labour-intensive as they require multiple dressing changes throughout the day.
- Wet-to-dry dressings are associated with trauma to viable tissue on removal and further delay healing. Research has demonstrated that wounds are slower to heal when wet-to-dry dressings are used compared with wounds that are dressed with moisture-retentive or semi-occlusive dressings <sup>1,3</sup> (Level III)
- Wet-to-dry dressings fail to maintain a moist wound environment; research has consistently demonstrated that moist wound environments support epithelial cell migration and granulation while dry wounds impair this process <sup>1,3</sup> (Level III) <sup>5</sup> (Level IV)

### RISK FACTORS

- Removal of wet-to-dry dressings are associated with severe pain <sup>2,3</sup> (Level III).
- Removal of wet-to-dry dressings can damage the wound bed by also removing viable granulating tissue <sup>1,2,3</sup> (Level III).

- The removal of dry gauze from the wet-to-dry wound dressing releases bacteria into the surrounding atmosphere thereby contributing to airborne contamination <sup>2,4</sup> (Level III).
- Removal of wet-to-dry dressings can result in fibres being shed into the wound bed which act as foreign bodies that may be detrimental to healing <sup>2</sup> (Level III).
- Frequent dressing changes and/or gauze drying out results in a temperature reduction of the local tissue. This effect is associated with impaired efficiency of leukocytes and phagocytes thereby restricting healing and increasing susceptibility to infection <sup>3</sup> (Level III)
- Wounds dressed with gauze are associated with higher rates of wound infection <sup>3,4</sup> (Level III). Gauze dressings do not provide an effective barrier to exogenous bacteria <sup>3</sup> (Level III)

### Characteristics of the Evidence

This evidence summary is based on a structured search of the literature and selected evidence-based health care databases. The evidence in this summary is from:

- A descriptive, exploratory study of the use of wet-to-dry dressings by clinicians <sup>1</sup> (Level III)
- A retrospective, descriptive study of the use of wet-to-dry dressings as ordered <sup>2</sup> (Level III)
- An article that discussed advantages and disadvantages of various dressings <sup>3</sup> (Level III)
- A summary and an abstract of research that quantified airborne dispersal of bacteria upon dressing removal <sup>4</sup> (Level III)
- A review explaining the application of the TIME acronym in the systematic assessment of chronic wounds <sup>5</sup> (Level IV).
- An article that provided an overview of debriding options <sup>6</sup> (Level IV)

### Best Practice Recommendations

- Wet-to-dry dressings should be accompanied by best practice wound care (Grade A).
- Dressings should be moistened with normal saline (0.9%) but not saturated (Grade B)
- The dressing should be in contact with all surfaces of the wound bed; if packing is required ribbon gauze should be used and only gently applied to avoid damage from pressure (Grade B).
- Maceration to surrounding skin should be avoided by ensuring that the moist dressing is confined with the wound margins (Grade B).

- Dressing material that does not shed fibres into the wound should be selected (Grade B).

### References

1. Armstrong MH, Price P. Wet-to-Dry Gauze Dressings: Fact and Fiction. *Wounds*. 2004;(2) Available from: <http://www.woundsresearch.com/article/2284> (Level III)
2. Cowan LJ, Stechmiller J. Prevalence of wet-to-dry dressings in wound care. *Adv Skin Wound Care*. 2009;22(12):567-73. (Level III)
3. Ovington LG. Hanging wet-to-dry dressings out to dry. *Adv Skin Wound Care*. 2002;15(2):79-84. (Level III)
4. Lawrence JC. Dressings and wound infection. *Am J Surg*. 1994;167(1A):S21-4 (Abstract only) (Level III).
5. Schultz GS, Barillo DJ, Mozingo DW, Chin GA. Wound bed preparation and a brief history of TIME. *Int Wound J*. 2004;1(1):19-32. (Level IV)
6. Ayello EA, Cuddigan JE. Debridement: controlling the necrotic/cellular burden. *Adv Skin Wound Care*. 2004;17(2):66-75. (Level IV)

Copyright © 2011 The Joanna Briggs Institute licenced for use by the corporate member during the term of membership. [www.jbiconnectplus.org](http://www.jbiconnectplus.org)