TITLE: Continually Wet Saline Gauze Dressings for Management of Acute or Chronic Wounds: Clinical and Cost-Effectiveness and Guidelines for Use

DATE: 20 November 2008

RESEARCH QUESTIONS:

1. What is the clinical effectiveness of continually wet saline gauze dressings for wound healing?

2. What is the cost-effectiveness of continually wet saline gauze dressings for wound healing?

3. What are the guidelines for managing uncomplicated wounds for primary and secondary wound closure?

METHODS:

We contacted ECRI’s hotline service to request information on continually wet saline gauze dressings for acute or chronic wounds. The ECRI document is attached. References and abstracts from health technology assessments (HTAs), systematic reviews, economic studies, randomized controlled trials (RCTs), observational studies, and guidelines identified by ECRI are included below.

Supplemental searches for reports from Canadian health technology assessment agencies were performed, along with European sources including National Institute for Clinical Excellence (NICE) and the NHS Purchasing and Supply Agency.
RESULTS:

ECRI provided the following document, which is a guide to the available evidence on the topic with context about the evidence provided by ECRI. It is based solely on a review of the article abstracts, not an analysis of full published articles.

**Hotline response:**


References and abstracts from HTAs, systematic reviews, economic studies, RCTs, and observational studies identified by ECRI are included below. One health technology assessment (HTA), four systematic reviews, two economic evaluations, four randomized controlled trials (RCTs), and two observational studies were identified on continually wet saline gauze dressings for acute or chronic wounds. One Canadian guideline relating to wound cleansing for secondary closure was identified in the supplemental search. Studies that did not specifically examine wet saline gauze dressings and other articles of interest are included in the appendix.

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, HTAs, systematic reviews, and meta-analyses are presented first. These are followed by economic studies, RCTs, and observational studies.

**OVERALL SUMMARY OF FINDINGS:**

Results from an HTA did not find sufficient evidence to justify routine use of vacuum-assisted wound closure (VAC®) therapy instead of other interventions including moist wound dressings for the healing of chronic wounds. Estimated treatment costs of moist wound dressings changed once per day were reported at C$333 per week (range, C$222 to C$444) which were similar to VAC® at approximately C$360 per patient for one week of treatment (range, C$303 to C$445).

A systematic review by Vermeulen *et al.* (2008) did not find sufficient evidence to suggest that topical negative pressure (TNP) increases healing rate of chronic wounds when compared with gauze soaked in either 0.9% saline or Ringer’s solution.

Chaby *et al.* (2007) conducted a systematic review to assess the efficacy of modern dressings for the healing of chronic and acute wounds by secondary intention (keeping the wound open to naturally heal after surgery). Results showed that hydrocolloid dressings proved superior to saline gauze for the complete healing of chronic wounds. However, the authors concluded that there was only low quality evidence that modern dressings were more clinically effective in terms of healing with the exception of hydrocolloids; and there was no evidence that any of the modern dressings were better than another or better than saline gauze in terms of general performance criteria.

A systematic review conducted by the Australian Safety and Efficacy Register of New Interventional procedures (2003) assessed whether the management of non-healing wounds would improve using VAC® therapy compared with conventional dressings. Foot ulcers managed with VAC® significantly decreased by 28.4% in surface compared to those managed with saline-moistened gauze which increased by 9.5% (p=0.004).
One economic evaluation\(^5\) found that negative pressure wound therapy (NPWT) at home may decrease resource utilisation compared with standard wet-to-moist therapy for patients with diabetic foot ulcers. A significantly greater proportion of wounds treated with NPWT achieved a successful treatment endpoint when compared with wet-to-moist therapy. The expected 20-week treatment costs for NPWT were similar to those for wet-to-moist therapy if one nursing visit per day for the latter was assumed, but costs were 42\% less if two nursing visits per day were made.

Another economic evaluation\(^6\) compared costs of TNP with moist gauze for the management of full-thickness wounds requiring surgical closure. Higher material costs associated with TNP were compensated by a lower number of dressing changes, and a shorter time to achieve a healthy granulating wound bed, resulting in equal cost with moist gauze.

One RCT\(^7\) compared conventional moist gauze therapy with VAC\(^\text{®}\) for the treatment of full-thickness wounds in a total of 54 patients (vacuum n=29, gauze n=25). Healthier wound conditions were observed with VAC\(^\text{®}\) with a tendency to shorter duration of therapy, especially in late-treated wounds. Wound surface also reduced significantly faster with VAC\(^\text{®}\) compared with conventional moist gauze. A second RCT\(^8\) by the same authors concluded that the positive effect observed on wound healing with VAC\(^\text{®}\) (reduction in wound surface area) compared with conventional moist gauze was not the result of a reduction in bacterial load. There were no significant differences observed for the formation of granulation tissue. A third RCT\(^10\) comparing VAC\(^\text{®}\) with traditional wet-to-dry/wet-to-wet gauze soaked in Ringer’s solution changed three times a day found that the two methods were equally effective in forming granulation tissue in a total of 22 patients with pressure sores.

Alvarez et al.\(^9\) compared diabetic foot ulcer healing in patients randomly assigned to either noncontact normothermic wound therapy (Warm-Up) applied for one hour three times daily or standard care (saline-moistened gauze applied once a day). Interim results from a total of 20 patients (10 in either group) showed that after 12 weeks, 70\% of the wounds treated with Warm-Up were healed compared with 40\% in the saline-moistened gauze group.

One retrospective analysis\(^11\) compared the effectiveness of NPWT with standard wet-to-moist saline soaked gauze dressings for healing open foot wounds with significant soft tissue defects in 47 patients. Results indicated that patients in the NPWT group had fewer foot-related complications, less additional foot surgery, and fewer readmissions than patients treated with standard wet-to-moist therapy. Rates of wound cavity filling and wound healing tended to be greater in the NPWT group than the wet-to-moist gauze group, although the differences were not statistically significant.

A prospective observational study\(^12\) found that in the treatment of split-thickness skin graft donor sites, honey-impregnated gauzes showed faster epithelization time and less pain than saline-soaked gauzes.

Overall, results for the clinical effectiveness of continually wet saline gauze dressings when compared to other interventions for wound healing are conflicting. Continually wet saline gauze requires close maintenance which increases the amount of required nursing time. The removal of wet-to-moist dressing that has been allowed to dry may cause pain and remove granulation tissue, leading to delayed wound healing. Results from economic evaluations indicate that while gauze dressings are much less expensive per dressing than modern synthetic dressings,
the increase in labor costs results in an increase in the total cost of care which may the justify the use of more expensive dressings.

Guidelines developed by the Saskatchewan Skin and Wound Care Action Committee (2006) recommend that for pressure ulcers and lower limb ulcers, wounds should be cleansed initially and at each dressing change. (Strength of Evidence C; based on expert opinion). Please refer to the original guideline for more detailed recommendations for secondary wound closure.
REFERENCES SUMMARIZED:

Health technology assessments


Systematic reviews and meta-analyses


Economic analyses and cost information


Randomized controlled trials


Observational studies


Guidelines and recommendations

APPENDIX – FURTHER INFORMATION:

Systematic reviews and meta-analyses


Economic analyses and cost information


Randomized controlled trials


Guidelines and recommendations


Additional references


