

Better Outcomes for Skin Tears with New 5 Layer Bordered Foam Dressings

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Background: Skin Tears

Skin tears are traumatic wounds caused by mechanical forces. They can be painful, highly exudative and distressing to patients and families.¹ An early study suggested that more than 1.9 million institutionalized adults develop a skin tear each year in the United States.²

With an estimated prevalence of 6.2 - 11.1%, skin tears are the most numerous wound in the acute care setting yet they are marginalized with insufficient attention paid to patient comfort and healing outcomes.³ Treatment with appropriate dressings can improve clinical outcomes.⁴

The wear time of a dressing determines its actual cost to use. Some advanced dressing technologies are better able to optimize the moist wound environment, extend wear times by managing exudate to prevent desiccation or maceration and result in undisturbed healing which maximizes wound closure in a timely manner.³

An ideal dressing must not adhere to the wound bed, while adhering securely to the intact peri-wound without stripping skin upon removal. Conformability, that is, intimate contact with the wound, facilitates the cellular processes of wound healing, while dressing flexibility reduces mechanical stress and tissue trauma.³ The goal of undisturbed wound healing is promoted when all the above factors plus optimal moisture management work together to create fewer dressing changes and therefore minimized wound disruption.^{3,4}

Setting:

All nursing units at the 247-bed Cookeville Regional Medical Center in Cookeville, TN.

Problem:

The Wound Team was dissatisfied with the performance of the soft silicone 3 layer bordered foam dressing which had been on formulary for wound treatment for the last 3+ years. However, this was not well documented. Empirically, we observed peri-wound maceration indicating less than optimal absorption, epidermal skin stripping, occasional sticking to the woundbed upon dressing removal, and poor ability of the dressing to stay in place.

Improving skin tear management became a focus due to skin tears' frequent incidence at our facility, the impact of pain from flap avulsion, and patient dissatisfaction with repeated dressing changes. We also noted complaints from the staff that "the dressing stuck to the wound but wouldn't stick to the skin."

Other challenges were: knowledge deficits on the part of staff regarding skin tear prevention and treatment best practice, as well as inaccurate or incomplete documentation of skin tear dimensions, management interventions and healing outcomes.

Purpose:

The goals of this quality improvement project (QIP) were to:

- Identify challenges to skin tear management in our facility
- Find a simple protocol using a single dressing that enables staff nurses to effectively manage skin tears and preserve undisturbed healing to optimize clinical outcomes
- Compare the performance of our current 3 layer foam dressing with a new self-adherent absorbent soft silicone 5 layer bordered foam dressing with flex technology
- Collect data on dressing performance, ease of use and satisfaction using assessments by the WOC Nurse, as well as patient and staff surveys

Rapid Test of Change:

First we conducted a Rapid Test of Change to test our theory that the 5 bordered foam dressing would outperform the 3 layer bordered foam dressing, as we did not have strong documentation on performance of the 3 layer dressing. Measurements included: adhesion, evidence of maceration, wear time, absorption, ability to remain intact over the wound, patient comfort, and overall performance. See Figure 1.

References:
1. Leiberman et al. Best practice recommendations for the prevention and management of skin tears. In: *Adv Skin Wound Care*. 2018; Available to download from www.skin-tearinternational.com.
2. Malone MT, Roizen N, Gourlay M, Gordon J. [1991] The epidemiology of skin tears in the institutionalized elderly. *J Am Geriatr Soc*. 39: 6: 591-5.

3. Davies M, Davies P, White R. A case evaluation of alternative dressings for optimal healing. *Int Wound J*. 2015 Oct;12(10):516-6. Epub 2015 Sep 13.

3. Roppon M, Davies P, White R. Taking the trauma out of wound care: the importance of undisturbed healing. *J Wound Care*. 2012;21(8):359-65.

4. Kroonen G, Roth H, Seare R. The impact of introducing a new foam dressing in community practice. *EWMA*. April 2016;17(1):7-12.

Methodology:

- Prior to initiating the quality improvement project, 26 nurses completed a survey assessing the 3 layer foam dressing's performance
- In order to capture comparative data on the 3 layer and 5 layer dressings:
 - Staff nurses applied the 3 layer foam dressing to all new skin tears
 - After 1 day, the 3 layer dressing was removed, the wound assessed by the WOC Nurse and the patient asked to rate the dressing as: "very comfortable," "comfortable," "neutral" or "uncomfortable"
 - The 5 layer dressing was then applied over the skin tear
 - The WOC Nurse assessed comfort during wear and upon dressing removal for 5 layer dressing and patient rating obtained
 - The 5 layer dressing remained in place until routine dressing change or discharge, unless it needed to be changed for other reasons
 - The frequency of dressing change policy was changed from every 3 days to weekly
 - The skin tear and peri-wound were assessed and whether the dressing was intact at each dressing change
 - Ease of use was also noted
- "Healing" was determined by re-adhesion of the skin flap to the wound bed and evidence of re-epithelialization as measured
- The 26 staff nurses were surveyed following 1 month of use of the new 5 layer dressing
- To upgrade staff currency in skin tear management best practice, nurses completed a Skin Tear Prevention and Management CE course and were assessed for knowledge improvement utilizing resources at: www.connect2know.com

Results:

Healing and Wear Time

During the 6-month study, 19 patients with 42 skin tears completed full evaluation of both the 3 layer and 5 layer bordered foam dressings prior to discharge. The average skin tear measured 7.59 cm². Eleven skin tears (26%) healed prior to the dressing change at day 7. An average of 78.2% re-epithelialization was documented for the 19 patients. See Figure 2.

For this QIP, wear time is defined as the duration the dressing remained fully intact and did not require an unscheduled change. The average wear time for the 5 layer foam dressing in this QIP was 6.02 days.

Within the first day of wear for the 3 layer foam dressing, the WOC Nurse assessed several instances of leaking of exudate, poor border adhesion and sticking of the dressing to the wound bed. Four skin tears showed macerated peri-wounds, 4 wounds showed encrusting of the flap within the dressing, and 3 exhibited dressing non-adhesion and leaking of exudate.

Assessment of the new 5 layer foam dressing by the WOC Nurse showed no leaking of exudate, no problems with dressing adhesion, no sticking of the dressing to the wound bed. There were no incidence of maceration or encrusting of the skin flap. Overall the new 5 layer dressing appeared to have better absorption, better border adhesion and better patient comfort than the 3 layer dressing. See Images 1-3.

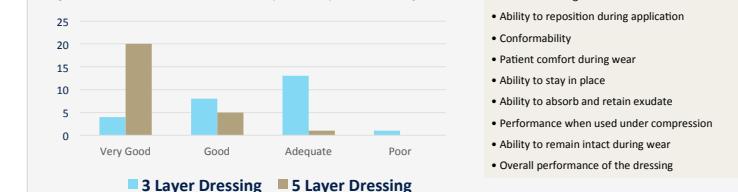
After 6 months of data collection under this protocol, use of the 3 layer dressing was discontinued and the 5 layer dressing was implemented for use on all types of wounds house-wide.

Since January 2018, 515 staff nurses have completed the Skin Tear Management and Prevention CE course at www.connect2know.com. Pre-test scores averaged 57% while post test scores averaged 77%, a 20% increase in scores. See Figure 3.

Staff Nurse Evaluation of 3 Layer and 5 Layer Foam Dressings

Nurses completed evaluations for the 3 layer foam dressing at the start of the QIP, and for the new 5 layer dressing at 1 month after house-wide implementation. The evaluation included ratings on ease and efficiency of handling, ability to reposition, stay in place and remain intact, absorption and retention of exudate, conformability, patient comfort during wear and upon removal, and overall performance. The new 5 layer dressing received higher or much higher ratings in all 9 sub-categories. Fifty percent more staff rated the 5 layer dressing overall as "very good" or "good" than they did for the 3 layer foam dressing. See Figure 4.

Figure 4. Staff Nurse Overall Evaluation of 3 Layer and 5 layer Foam Dressings



- Ease of handling
- Ability to reposition during application
- Conformability
- Patient comfort during wear
- Ability to stay in place
- Ability to absorb and retain exudate
- Performance when used under compression
- Ability to remain intact during wear
- Overall performance of the dressing

Patient comfort

Patients with skin tears were asked to rate both bordered foam dressings. There were a total of 36 comparative responses. 19 responses rated the new 5 layer foam dressing "Very Comfortable" or "Comfortable" vs. 8 of those responses for the 3 layer foam dressing. See Figure 5.

Ten responses rated the 3 layer dressing as "Uncomfortable" while none of the new 5 layer dressings were rated as "Uncomfortable."

Figure 5. Number of "Very Comfortable" or "Comfortable" rating responses for each type of dressing

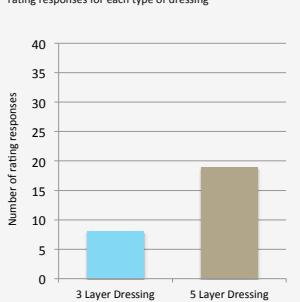


Figure 1. Rapid Test of Change

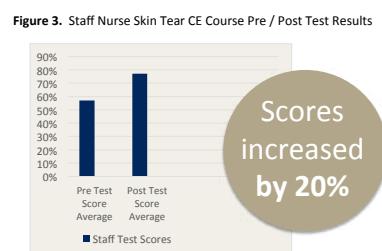
A 10-day Test of Change was initiated:

- First staff were surveyed regarding the performance of the 3 layer dressing.
- Nurses applied the 3 layer foam dressing to new skin tears on 6 patients
- Next day, the WOC Nurse assessed the wound and applied the 5 layer dressing
- The number of dressing changes, dressing-related complications and patient comfort levels were tracked for both dressings

Images 1-3. New 5 layer bordered foam dressing with flex technology



Overall CWOON assessment: Improved absorption, adhesion and patient comfort



Scores increased by 20%

Discussion:

The Real Impact of Wound Dressing Effectiveness

Clinical outcomes in wound care are important for both patients and clinicians. Managing patient symptoms, reducing pain and improving quality of life (QOL) are attributes specifically impacted by dressing characteristics and wear time. A clinician's practice is also affected by dressing construction which influences its ability to handle exudate, reduce the risk of infection and pain, and extend wear time: these allow staff members to nurse the patient and not the dressing. Wear time affects dressing cost and nursing resources.¹⁻³

The new 5 layer dressing has several improved features over other bordered foam dressings. Flex technology allows the dressing to stretch which may have contributed to the consistent adhesion noted. We also observed excellent exudate management by the new dressing which may be due to the design of the absorption and retention layers as well as the high moisture vapor transmission rate. The soft silicone wound contact layer is designed to minimize skin stripping, maceration, pain, trauma to the wound bed and to increase comfort during wear and upon removal, which was evident in the patient responses.

In today's cost-driven healthcare environment, clinicians must consider product effectiveness, how well it works in real-world practice as well as product cost. Increasingly, there is pressure to consider the cost of a dressing with little attention to product-related wound complications, cost-in-use, (as opposed to unit cost) or nursing time.⁴ The clinical outcomes and extended wear times achieved in this QIP suggest that positive healing results as well as increased patient and staff satisfaction may be achievable while reducing costs. Health economic data collection is in progress at our facility.

Limitations:

At our hospital, skin tears did not require a Wound Nurse consult and, upon audit, skin tear documentation was very inconsistent which made a robust retrospective comparison of dressing performance infeasible. On initial QIP design, we anticipated shorter patient lengths of stays (LOS) and feared we wouldn't be able to obtain a comparison prior to discharge if we waited longer than 1 day to apply the 5 layer dressing. It was difficult to collect a second set of data on patients with a shorter LOS. The patients with complete data sets tended to have longer LOS than anticipated. For this reason, we used the WOC Nurse evaluation after 1 day of wear and staff nurse surveys to evaluate the 3 layer foam dressing.

Conclusion:

Staff nurse and WOC Nurse survey results on performance of a 3 layer foam dressing confirmed problems related to adherence, absorption and patient comfort.

The new 5 layer bordered foam dressing was shown to be more comfortable, easier to use, more absorbent, showed better adhesion, and was more comfortable upon removal than the 3 layer dressing. Staff nurses were more satisfied with the 5 layer dressing.

The 5 layer dressing's wear time of 6.02 days is compatible with principles of undisturbed wound healing and may have contributed to wound closure rates and patient satisfaction.

Excellent healing progress was noted for these patients: 11 skin tears healed in 7 days or less and for all patients assessed there was an average of 78.2% re-epithelialization during hospitalization.

After 6 months of data collection under this protocol, the new 5 layer bordered foam dressing was implemented for all types of wounds house-wide.

Skin tears are the most prevalent yet marginalized wound in acute care. Change in practice implemented through data collection before and after starting an intervention, as opposed to change based solely on informal observation, helped us measure improved clinical outcomes for the new 5 layer bordered foam dressing with flex technology used for skin tear management.