Positive Outcomes Managing Deep Tissue Pressure Injuries (DTPIs) with Polymeric Membrane Dressings*

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Clinical Problem

Over the 12 months prior to this study, two SNF's had a combined 50 deep tissue pressure injuries (DTPIs) on the ankles, heels and feet. 36% (18) of these DTPIs opened as Stage 3 or 4 pressure injuries (PIs). The open DTPIs were managed with either: hydrogel, collagenase, silver alginate, border gauze or foam, taking 3 to 12 months to close.

A DTPI focused Performance Improvement Project (PIP) as part the facilities' Quality Assessment Performance Improvement (QAPI) program was initiated. Preventing DTPI's opening is a relevant PIP, given the increased regulatory PI scrutiny combined with costs to close open wounds.

Rationale

Polymeric membrane dressings* (PMDs) help to reduce ischemic and reperfusion injury; the combination of both types of injuries are believed to play a central role in DTPI deterioration.

PMDs focus inflammation, reduce swelling and pain of injured tissues and encourage healing by reducing the spread of inflammation into surrounding uninjured tissues, without interfering with the robust localized inflammatory response required for healing, which speeds healing. On open wounds the dressings absorb up to 10 times its weight in exudate, optimizing moisture balance and helping prevent maceration. Dressings are very easy to use. The dressing continuously cleanses the wound so manual cleansing is unnecessary at dressing changes. The cleansing system helps to loosen debris and necrotic tissue while facilitating autolytic debridement. Changing before the exudate, visible through the dressing, reaches the wound margin, improves outcomes.

Clinical Treatment Approach

2 groups presenting with DTPIs, in spite of pressure injury prevention protocols, were followed over 7 months. They presented with persistent, non-blanching, dusky (dark in color) purple or maroon discoloration; or, blood blisters. 3 of the PI's were admitted from another facility with intact thin eschar and identified to be DTPI's by the author. Both groups had various comorbidities including: peripheral vascular disease, hypertension, type 2 diabetes, dementia and anemia.

- **Group 1) Control Group** - 6 patients with 8 DTPIs. DTPI's on 6 heels and 2 ankles. Patients ranged in age from 71 to 91 years. Skin was cleansed first with normal saline or a wound cleanser and patted dry with gauze. A skin barrier wipe was applied 2x/day (facility Standard of Care). Open wounds for the control group were managed accordingly with a variety of advanced wound care approaches. All resolved except one patient that passed away.
- **Group 2) Intervention Group** - 10 patients with 13 DTPI's. DTPI's on 6 heels, 1 ankle, 5 feet and 1 toe. Patients ranged in age from 64 to 94 years. PMDs were cut larger than the base of the DTPI to cover periwound skin, secured with gauze wrap or transparent film dressing and changed 2X/wk., or as needed. Open wounds, in the intervention group were initially cleansed with normal saline. Referencing PMDs manufacturer's *Instructions For Use*, 2 of 3 wounds closed and 1 was discharged prior to closure but lost to follow-up. Consent was obtained by patient families to participate in the intervention group.

DTPI Management with Polymeric Membrane Dressings=More Time for Nursing Care/ Patient Activities

In the control group, nursing wound care time was 70 minutes/week/patient. In the PMD group it was only 20 minutes/week/patient. There was a 50 minute per week per patient time saving with PMDs.

With a savings of 50 minutes per week per patient, there was:

- Reduced overtime AND more time for documentation.
- More time for skin checks and the application of skin lotions or creams.
- Less time implementing skin barrier wipe 2x a day, allows patients less time to be waiting in their room for wound management and more time for them to do their rehab or not to be pulled away from activities.
- Less time wound rounding and therefore more time for primary rounds for the author.
- Facility administration is excited to see faster resolution with PMDs and increased nursing availability for other activities.

Positive Outcomes with Polymeric Membrane Dressings in SNF

	Group 1 - Control Group	Group 2 - Intervention Group
DTPI Management	**Skin barrier wipe 2X/day**	**Polymeric membrane dressings 2X/wk. and as needed**
DTPI's that Opened	**50% (4) out of 8 DTPIs opened**	**23% (3) of 13 DTPIs opened**
Wound Management Labor Time spent weekly	**70 min. per week per patient**	**20 min. per week per patient**
Difference in Time Management	**50 min. per week per patient more a week for Control Group**	
Percentage of Labor Time Saved For Wound Management		**71.4% time saved with Polymeric Membrane Dressings**

Patient Outcomes

PMDS helped to reduce inflammation, resolve DTPI's and reduce further deterioration of open DTPI's. PMDs provided padded protection on DTPI's for the 3 patients with spasms, eliminating skin shearing previously experienced. PMDs reduced frequency of daily wound management. The absorbency of the dressing protected the periwound from exudate if the DTPI opened. The dressing was very easy to use.

Conclusions

Using PMDs resulted in a 54% reduction in DPTIs opening, faster resolution of those that opened if PMD used initially and improved patients' quality of life. Faster resolution of open PIs and reduced DTPI's deteriorating reduces cost of wound management. As a result of this successful PIP, PMDs have become the standard of care for managing DPTIs at these facilities and a successful QAPI activity.

Variables Interfering with Wound Healing for these Patients

1)The patients' comorbidities, especially those with lower extremity spasms resulted in ongoing trauma to DTPI sites; 2) Some patients were not enrolled into the intervention group immediately because they could not sign the consent form themselves and a family member was not available to sign the consent, so skin barrier was applied until there was consent to use PMDs. These patients' DTPIs, managed with skin barrier wipes, had not improved prior to PMD initiation.

Definition of Deep Tissue Pressure Injury

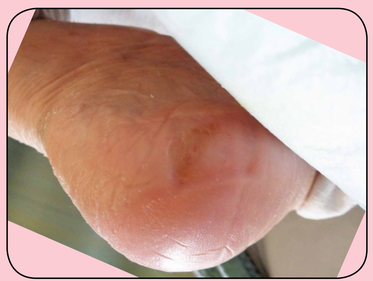
"Deep Tissue Pressure Injury: Persistent non-blanchable deep red, maroon or purple discoloration Intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3 or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions."[2]

Initial Application of Polymeric Membrane Dressings

Heel DTPI

Measurement: 0.5 x 0.7 cm

Deep red, non-blanchable, callus area in the center of DTPI



45 days after the application of polymeric membrane dressings the DTPI is resolved.

Skin is blanchable, dry and scaly. The callus was debrided with the use of polymeric membrane dressings.

Bibliography

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*PolyMem® Dressings, PolyMem Silver® Dressings, Ferris Mfg. Corp.,5133 Northeast Parkway, Fort Worth, TX 76106 USA, 1-800.POLYMEM (765.9636) • www.polymem.com

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