Improving Deep Tissue Pressure Injury (DTPI) outcomes: a 2.5 year-long Quality Improvement Project

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PROBLEM
Long-term care facility (LCF) residents with multiple co-morbidities, debility and cognitive loss are at higher risk of developing deep tissue pressure injury (DTPI). There is a limited research support for treatment options for DTPI but offloading is recommended. Two allied health care (AHC) teams were asked to initiate a different wound management approach to decrease wound inflammation and prevent deterioration of DTPIs.

RATIONALE
Polymeric Membrane Dressing® (PMDs) were applied because the dressings, applied to the skin, localize the inflammatory reaction to the acute area to wound in the epidermis, dermis and deep tissues. PMDs reduce the spread of secondary injury by including edema and swelling, into the surrounding tissue. This unique approach helps to reduce the DTPI response as well as encourage injury resolution for intact and open DTPIs.

METHODS
A Quality Improvement Project was initiated: a retrospective chart analysis of wound management of the last 2.5 years was conducted. One hundred four DTPIs were included in the 2.5 year analysis and combined over two phases. Two groups were studied with lower extremity DTPIs on the toe, ankle, foot and heel. Both groups included proper offloading.

RESULTS
1) 49 patients with a total of 64 DTPIs. SBF was applied 2x/day. SBF group had a total of 40 DTPIs. SBF was applied 2x/day.

2) 49 patients with a total of 64 DTPIs. PMDs were changed as needed. Group 2 had a total of 24 DTPIs. PMD management and then the second group continued with the use of SBF DTPI management. PMDs showed positive outcomes, so PMDs were continued as the main treatment in the LTCFs. The second phase retrospectively compared the previous SBF use to the PMD use in the 2.5 year period of time.

OUTCOMES WITH ISCHEMIC LOWER LIMB DTPI
PMDs improved outcomes even in patients with moderate to severe lower extremity arterial disease. PMDs control inflammation and edema. This feature of PMDs could account for their dramatically superior ability to resolve DTPIs without opening, even in patients whose circulatory status at their lower legs is compromised.

For the patients in both groups, the author found that the most frequent risk factor/common co-morbidities predictive of DTPI were: weight changes, cardiac vascular disease, peripheral vascular disease and anemia. PMDs proved valuable in the LTCFs where there is higher risk level of debilitation of patients and increase in co-morbidities.

WOUND CARE TIME
In SBF group, nursing wound care time required to manage the DTPI was 70 minutes/patient/week; in the PMD group 20 minutes/patient/week was required.

PMDs saved nursing wound care time by 50 minutes/patient/week.

CONCLUSION
Overall, DTPIs managed with PMD were 4.5 times more likely to resolve spontaneously (never opened) compared to those managed with SBF. DTPIs on ischemic limbs were 3.3 times more likely to resolve spontaneously (never opening) when managed with PMDs. There was faster resolution with DTPI that opened with PMDs. PMD managed DTPIs provided better outcomes while requiring the investment of 71% less DTPI management staff time. The nursing staff found the dressing very easy to use. There is a significant cost savings with resolution of DTPIs which never open, because the cost of wound management of an open wound is eliminated. PMDs have become the standard of care managing DTPIs in the two LTCFs.

Bibliography

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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 darkening wound (not opening) 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."