Use of an Absorbent Soft Silicone Self-Adherent Bordered Foam Dressing* to Decrease Sacral Pressure Ulcers in the Surgical Trauma ICU

"IDENTIFYING THE SICKEST OF THE SICK, CONTROLLING WHAT WE CAN, FIGHTING MOISTURE, FRICTION, AND SHEAR"

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ANCC MAGNET RECOGNITION

PURPOSE:

Current recommendations in pressure ulcer prevention literature, and strategies used in our acute care facility, often failed to prevent skin breakdown in critically ill Surgical Trauma patients[1]. Interventions to decrease these patients' pressure ulcer rates were sought.

SIGNIFICANCE:

Due to extensive injuries or disease processes, patients being cared for in the STICU can remain in the critical care setting for extented periods of time. Critically ill patients manifest co-morbidities which predispose them toward pressure ulcer development[2,3,4]. At VCUHS, the Braden Scale for Predicting Pressure Sore Risk[5], as well as in-depth staff education and integrated evidence-based interventions, serve to reduce pressure ulcer incidence in the STICU. However, the number of pressure ulcers remained unacceptably high[6].

STRATEGY AND IMPLEMENTATION:

Previous pressure ulcer prevalence studies at VCUHS revealed highest incidence over the sacrum and heels. The study focus was placed on sacral pressure ulcer prevention since measures to reduce heel ulcers had already been instituted.

FINDINGS: NO SACRAL PRESSURE ULCERS DEVELOPED ON THE 41 HIGH-RISK PATIENTS

THE CWOCN TOOK THE FOLLOWING ACTIONS:

STEP I. During the study period, the entire census of the STICU, 93 patients, was evaluated and followed. The patients ranged in age from 18 to 81 years. A bedside assessment tool was developed to identify high-risk STICU patients. 41 patients met criteria for inclusion. (See STICU Study toolkit)

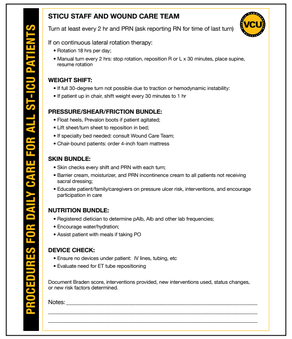
STEP II. An absorbent soft silicone self-adherent bordered foam dressing* hypothesized to absorb moisture, reduce friction, and minimize shear over the sacrum was selected for use on identified high-risk STICU patients.

STEP III. The sacral dressing was applied to the indentified patients at admission. Skin checks were completed each shift by lifting the dressing away from the intact sacral skin. The dressing was changed every three days.

STEP IV. All patients were followed by the CWOCN for a two-month period beginning with their admission to the STICU.

STEP V. At two months from admission, the sacral pressure ulcer incidence of the high-risk patients with the sacral dressing was compared to that of the lower-risk patients.

STICU STUDY TOOLKIT



PROCEDURES FOR DAILY CARE FOR ALL ST-ICU PATIENTS

STICU STAFF AND WOUND CARE TEAM

Turn at least every 2 hr and PRN (ask reporting RN for time of last turn)

If on continuous lateral rotation therapy:
- Rotation 18 hrs per day;
- Manual turn every 2 hrs: stop rotation, reposition R or L x 30 minutes, place supine, resume rotation

WEIGHT SHIFT:
- If full 30-degree turn not possible due to traction or hemodynamic instability:
- If patient up in chair, shift weight every 30 minutes to 1 hr

PRESSURE/SHEAR/FRICTION BUNDLE:
- Float heels, Prevalon boots if patient agitated;
- Lift sheet/turn sheet to reposition in bed;
- If specialty bed needed: consult Wound Care Team;
- Chair-bound patients: order 4-inch foam mattress

SKIN BUNDLE:
- Skin checks every shift and PRN with each turn;
- Barrier cream, moisturizer, and PRN incontinence cream to all patients not receiving sacral dressing;
- Educate patient/family/caregivers on pressure ulcer risk, interventions, and encourage participation in care

NUTRITION BUNDLE:
- Registered dietician to determine pAlb, Alb and other lab frequencies;
- Encourage water/hydration
- Assist patient with meals if taking PO

DEVICE CHECK:
- Ensure no devices under patient: IV lines, tubing, etc
- Evaluate need for ET tube repositioning

Document Braden score, interventions provided, new interventions used, status changes, or new risk factors determined).

Notes: _____

Procedures for daily care for all STICU patients

PROCESS FOR PATIENT ASSESSMENT FOR INCLUSION IN STUDY

SACRAL DRESSING TRIAL

Goal:
- Decrease Hospital-Acquired Pressure Ulcer in the Surgical Trauma - ICU
- Monitor Pressure ulcer incidence in the ICU
- Evaluate effectiveness of a soft silicone dressing on decreasing shear, friction, and moisture injury to the skin in high risk patients.

IMPLEMENTATION:
- ☐ Provide skin assessment daily on all patients
- ☐ Implement pressure ulcer prevention
- ☐ Evaluate patient for inclusion in study
- ☐ Criteria for inclusion: (see inclusion criteria)
  - ○ Apply sacral dressing
  - ○ Inspect skin under dressing daily
  - ○ Change dressing every 3 days
- ☐ DOCUMENT details on all patients on track sheet.

INCLUSION CRITERIA:

AUTOMATICALLY APPLY SACRAL DRESSING IF:
- ☐ Surgical procedure lasting greater than 6 hours
- ☐ Cumulative surgeries lasting 6 hours or more
- ☐ Cardiac arrest this admission
- ☐ Vasopressors greater than 48 hours
- ☐ Shock, MODS, or SIRS

APPLY SACRAL DRESSING IF 5 OR MORE OF THE FOLLOWING:
- ☐ Weeping Edema/Anasarca
- ☐ Traction
- ☐ Morbid Obesity
- ☐ Age >65 y.o.
- ☐ Diabetes Mellitus
- ☐ Bed Rest
- ☐ Liver Failure
- ☐ Malnutrition (prealbumin <20, Albumin <2.5, NPO greater than 3 days
- ☐ Sedation/ Paralytics >48 hr
- ☐ Mechanical Ventilation >48 hr
- ☐ Quadriplegia or Spinal Cord Injury
- ☐ Nitric Oxide Ventilation
- ☐ Restraints
- ☐ Drive Lines (LVAD, RVAD, Balloon pump)
- ☐ Past History of Pressure Ulcers
- ☐ Fecal or Urinary Incontinence not controlled by Foley catheter or FMS device.

Process for patient assessment for inclusion in Study

RECOMMENDATIONS:

Prevention should drive practice in pressure ulcer care. In this case series of 41 high-risk surgical trauma ICU patients, the outcome of zero incidence of sacral pressure ulcers on those using the soft silicone sacral dressing bears replicating in other critical care environments. As interventions for prevention are tested, the paradigm of prevention will be strengthened. This can only benefit the patient, the healthcare institution, and the science of nursing.

CONCLUSION:

Of the 93 patients studied, 6 pressure ulcers developed: 4 Deep-tissue injury and 2 Unstageable[10]. No pressure ulcers developed on the 41 individuals who had an absorbent soft silicone self-adherent bordered foam dressing applied for protection from excess moisture, friction, and shear. Patients who did develop pressure ulcers were found to have the following characteristics in common:

1. Did not qualify for inclusion in the high-risk group and therefore did NOT receive a soft silicone sacral dressing;

   OR

2. Had soft silicone sacral dressing discontinued due to discharge from the STICU to the Nursing Units;

   OR

3. Had dressing removed in preparation for an Operating Room procedure.

VCUHS SURGICAL TRAUMA ICU TEAM

SHEAR, FRICTION AND EXCESS MOISTURE WERE THEORIZED TO BE MAJOR FACTORS IN SKIN BREAKDOWN[7,8,9]

CASE PRESENTATIONS

Case Study # 1

23-year-old female admitted from outside hospital following emergency C-section. **Complications:** HELLP syndrome, (hemolysis, elevated liver enzymes, low platelets), sepsis, fungal necrotizing abdominal fasciitis with severe systemic complications. 25 surgeries, anasarca, prolonged vasopressor support, ventilation, MODS, malnutrition.

OUTCOME: In STICU 119 days.
No Sacral Pressure Ulcer.

Case Study # 2

26-year-old male fell off high rise, landing on his back. **Complications:** Tension hemopneumothorax with pneumomediastinum and diaphragmatic hematoma, pelvic and spine burst fractures, devascularization of left kidney, severe liver and spleen lacerations, ex lap with open abdomen, cardiac arrest.

Patient unable to be turned for 9 days due to severe hemodynamic instability.

OUTCOME: In STICU 63 days.

No Sacral Pressure Ulcer.

Case Study # 3

60-year-old male motor cycle crash victim with severe injuries to CNS and lungs. **Complications:** Cardiac arrest, quadriplegia, 6 surgeries, anasarca, ventilator dependency.

OUTCOME: In STICU 38 days.
No Sacral Pressure Ulcer.

Developed DTI when soft silicone sacral dressing was discontinued, despite ongoing evidence-based preventive interventions.

Case Study # 4

57-year-old male, life-flighted from motor cycle crash. **Complications:** Cardiac arrest with 9 episodes of defibrillation, maximum vasopressors, head injury, multiple surgeries, ventilation.

OUTCOME: In STICU 20 days (then study ended).

No Sacral Pressure Ulcer.

One week after discontinuing soft silicone sacral dressing, large DTI developed; full-thickness injury resulted.

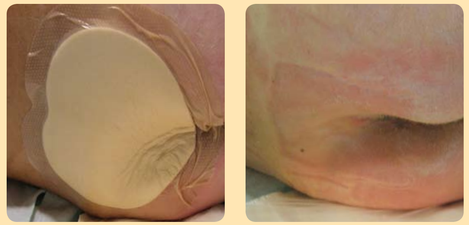
Case Study # 5

34-year-old male with ulcerative colitis including perforation. **Complications:** Steroid dependency, DVT, PE, sepsis, wound dehiscence, pneumothorax, profound lower extremity edema, 4 surgeries, and respiratory failure.

OUTCOME: In STICU 17 days.

No Sacral Pressure Ulcer.

Soft silicone sacral dressing removed when transfered to operating room. DTI discovered post-operatively.



Case Study # 2

REFERENCES:

1. Shahin E, Dassen T, Halfens R. Pressure ulcer prevalence and incidence in intensive care patients: a literature review. British Association of Critical Care Nurses, *Nursing in Critical Care. 2008;* 13 (2): 71-79.
2. Doughty D. Prevention and early detection of pressure ulcers in hospitalized patients. *Journal Wound, Ostomy and Continence Nursing.* 2008; 35 (1):76-78.
3. Worley C. Skin Failure: The permissible Pressure Ulcer? *Dermatology Nursing.* August 2007;19 (4): 384-385.
4. Armstrong D, Ayello E, Capitulo K, et al. New opportunities to improve pressure ulcer prevention and treatment. *Adv Skin Wound Care.* 2008 Oct; 21(10):469-78.
5. Braden, B. J; Bergstrom, N. Clinical utility of the Braden Scale for Predicting Pressure Sore Risk: *Decubitus.* 1989; 2. (3). 44.
6. Armstrong, D., Pg. 469.
7. Gray M, Bohacek L, Weir D, Zdanuk J. Moisture vs Pressure: Making sense out of perineal wounds. *JWOCN* 2007; 34 (2): 134-142.
8. Mayrovitz H, Sims N. Biophysical Effects of Water and Synthetic Urine on Skin. *Adv in Skin and Wound Care.* 2001; 14 (6):302-308.
9. Armstrong, D., Pg. 469.
10. NPUAP updated pressure ulcer staging guidelines 2007. http://www.npuap.org/pr2.htm. Accessed Feb. 3, 2009.

PRODUCT NOTATION:
*Mepilex® Border Sacrum Mölnlycke Health Care US, LLC, Norcross, GA 30092

FINANCIAL ASSISTANCE/DISCLOSURE
Mölnlycke Health Care US, LLC. provided assistance with poster design.

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