Two Independent Case Studies Using a New Turn and Position Device

Pressure Ulcer Statistics

Pressure ulcers (PUs) increase the risk of patient mortality,2 extend patient hospital stays,3 and result in excess costs of care and litigation.4 In 2005, overall PU prevalence in the United States ranged between 11.8% in long-term care to 29.3% in long-term acute care (LTAC).5 Facility-acquired PU incidence for long-term hospital patients between 2006 and 2007 revealed average expenditures related to PUs of U.S. $4.2 billion.6 The financial implications of facility-acquired PUs are substantial, as there is no longer any reimbursement from the Centers for Medicare and Medicaid for care related to facility-acquired PUs.7 There are also substantial economic costs associated with current turning and positioning practices (Figure 1).

Two Separate Case Histories

Two case histories were performed in separate care settings:
1. Case History #1 on a critically ill unit (CCU), and
2. Case History #2 on a long-term acute care (LTAC) unit. These two patient populations are very different but the goal of improving patient outcomes and preventing pressure ulcers remains the same.

According to the NPUAP, hospital prevalence of pressure ulcers is 14%-17% and incidence is 7%-9%.8,9 Social pressure ulcers account for 37% of all pressure ulcers.10 Medicare patients between 2005 and 2007 revealed excess care expenditures related to PUs of U.S. $2.4 billion.4 The financial implications of facility-acquired PUs are substantial, as there is no longer any reimbursement from the Centers for Medicare and Medicaid for care related to facility-acquired PUs.7 There are also substantial economic costs associated with current turning and positioning practices (Figure 1).

The Turn and Position System* stays under the patient’s bed, reducing the risk of skin breakdown in the bony prominences, helping the patient to achieve and maintain pressure redistribution, and minimizing friction and shear.7.8

Pressure Ulcer Prevention

Effective PU prevention and treatment requires multiple efforts in the clinical environment to address external factors that contribute to PU development and impede PU healing: such as pressure, friction, shear forces, and moisture.9 The joint European Pressure Ulcer Advisory Panel (EPUAP) and National Pressure Ulcer Advisory Panel (NPUAP) evidence-based guidelines published in 2009 provide extensive guidance on PU prevention and treatment, which discuss the importance of appropriate patient repositioning and controlling the skin microenvironment (local tissue temperature and moisture). The EPUAP/NPUAP recommendations include (but are not limited to) the following:11
- Repositioning of the patient should reduce or eliminate rubbing of the skin.
- The patient should be positioned off a PU whenever possible.
- The patient’s skin should not be subjected to pressure and shear forces.
- Repositioning should be undertaken using the 30° tilted side-lying or prone position.
- Transfer aids should be used to reduce friction and shear. Patients should be lifted—not dragged—during repositioning.
- For existing PUs, the support surface should improve pressure redistribution, shear reduction, and microclimate (local tissue temperature and moisture) control.

The Turn and Position System*

A new device, the Turn and Position System, has been developed to assist nurses with patient repositioning, sacral off-loading, and skin microclimate control within a facility’s established turning and PU prevention protocol. The system includes:
1. One Low-Friction Glide Sheet with grip surface and integrated handle to reduce the effort needed to turn patients, as well as a built-in Anti-Shear Strap to prevent patients from sliding in bed.
2. Two Body Wedges
   - 2.1 Fastener strip
   - 2.2 Low-Friction Glide Sheet with Anti-Shear Strap
   - 2.3 Microclimate Body Pad
   - 2.4 Two Body Wedges

The System includes:
- 1. Fastener strip
- 2. Low-Friction Glide Sheet with Anti-Shear Strap
- 3. Microclimate Body Pad
- 4. Two Body Wedges

Figure 1. Potential Pitfalls of Current Turning and Positioning Practices

<table>
<thead>
<tr>
<th>Feature</th>
<th>Average Cost</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU Development</td>
<td>$106,200</td>
<td>Treatment of existing PU, including PAD use, therapy, and specialized care</td>
</tr>
<tr>
<td>Literature</td>
<td>$250,840</td>
<td>PU prevention and treatment educational materials</td>
</tr>
<tr>
<td>Wound bed injury</td>
<td>$26,297</td>
<td>Lower Back</td>
</tr>
<tr>
<td></td>
<td>$19,030</td>
<td>Upper Back</td>
</tr>
<tr>
<td>Friction &amp; Shear</td>
<td>$24,897</td>
<td>Acute back ulcers</td>
</tr>
<tr>
<td>Source: In Source of Information, American Hospital Association, 2009. It includes all costs and charges for treatment of all PU care data.</td>
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References

Case History #1

Diane Zeek, MS, APN, NP-C, CWOCN; Renee Malandrino, APN, CWOCN

Patient description: An elderly female was admitted to the hospital in the fall of 2010 with ischemic bowel. Her Braden score was 18.

Comorbidities: Atrial fibrillation, coronary artery disease, anxiety and depression

Support surface on admission to hospital: Pressure redistribution mattress

Skin status on admission to hospital: Stage I 3-1 cm sacral PU

Contingency status: Continent on admission; liquid diarrhea started on day 4 of the hospital stay

Surgery: Left hemicolectomy and right lower quadrant colostomy performed on day 6.

Transferred to critical care unit (CCU) post-operatively: Day 6 with a Braden of 6-14

Skin status on admission to CCU: Stage II 3-1 cm sacral PU

Support surface on admission to critical care: Low air-loss mattress

Turn and Position System initiated: Day 6

PU therapy in CCU: Clear acrylic absorbent dressing, changed every 3-5 days as needed. Turn and Position System in CCU.

Initial wound care consultation: Day 8

Transfer to post-surgical unit from CCU: Day 9

Support surface on admission to post-surgical unit: Pressure redistribution mattresses with Turn and Position System.

Discharged to extended care facility: Day 20 with Turn and Position System.

Length of stay: 20 days

Duration of Turn and Position System use: 14 days

Patient Satisfaction

- The patient indicated to the wound, ostomy and continence nurse that she felt the Turn and Position System made turning easier, less cumbersome, less painful, and improved her experience with repositioning.

Caregiver Satisfaction

- Nurses (N=6) reported the following benefits with the use of the Turn and Position System:
  1. Repositioning the patient was easier. Handles were easy to grasp and could easily handle the patients.
  2. Nurses felt positively about compliance with repositioning because the experience was easier for the caregiver and less traumatic for the patient. Patient satisfaction empowered the nursing staff to comply with the facility’s repositioning protocol.
  3. The nurses utilized less linen with the Turn and Position System, which allowed compliance with the evidence-based recommendation of the 3-layer rule. This also supported the facility initiative to decrease unnecessary linen use.

Clinical Implications

- The Turn and Position System allows caregivers to adhere to EPUAP/NPIAP evidence-based recommendations by avoiding pressure, friction, and shear forces during repositioning.
- Staff are more compliant with turning and repositioning because the practice is much easier, with less strain and injury risk for the nurse. Patients are more satisfied with less pain and less fear of being moved in the bed.
- Use of the Turn and Position System supported healing of the sacral area skin breakdown by facilitating compliance to our repositioning protocol, helping to avoid shear and friction forces on the skin, and controlling skin friction.
- Patient received facility protocol wound therapy; patient was repositioned q2h and as needed in CCU. The Turn and Position System was used for patient repositioning on days 6 through 20.
- The Turn and Position System allowed nurses to adhere to “3-layer rule” (only 3 layers between the patient’s skin and therapeutic surface) and did not interfere with the wound healing process. The Turn and Position System allowed them to adhere to repositioning requirements per facility protocol.
- A total of 1-2 Microclimate Body Pads were utilized each day, dependent on the patient status (wounds are changed with every uncontrollable or moisture/soiling episode).

Figures

- Figure 1: Day 8 sacral stage 2, 6 x1cm with areas of dark purple on left sacral, open stage 2, 1.5cm
- Figure 2: Day 18 sacral/ coccyx area - resolving; dry, blanchable pink intact skin, 7.8 cm

Case History #2

Caryn Baldwin, RN, Wound Care Coordinator – Kindred Healthcare, Louisville, KY

Patient description: The patient was a 91-year-old male with an admitting diagnosis of aspiration pneumonia and past medical history significant for prostate cancer with metastasis to the bone.

Braden score on admission: 15 (high risk secondary to activity, mobility, friction/shear and nutritional status)

Laboratories on admission: Pre-albumin 17, albumin 3

Skin status on admission to hospital: The patient has a stage II sacral PU measuring 3 x 1.5 x 0.1 cm, (0% epithelial tissue, and mild incontinence-associated dermatitis (IAD) treated with moisture barrier with zinc oxide.

Contingency status: The patient was maintained on heparin drip and placed in a non-weight bearing status, with external male catheter on admission, and placement of Foley catheter during hospitalization.

Admission to long-term acute care (LTAC): The patient was admitted to the LTAC primarily for intravenous antibiotics and wound care. He was also treated by speech therapy, physical therapy, and occupational therapy.

Pain on admission to LTAC: The patient’s pain was assessed q2h on a scale of 0 to 10, with 0 being the absence of pain and 10 being severe pain. On admission, the patient complained of significant pain in his back, reporting pain levels of 8-9 with repositioning, and consistently requested p.r.n. pain medication. The patient required 1 morphine for pain control 2-3 times daily initially.

Pain medication regimen on admission to LTAC: The patient had a physician order for Darvocet p.o. b.i.d. p.r.n. or morphine iv q8h p.r.n.

Initial wound care consultation: 10/17/2010

Turn and Position System initiated: 10/22/2010

Pain on discharge from LTAC: After the Turn and Position System was initiated and utilized, the patient reported a pain level of 0 consistently for the last 5 days of his LTAC stay.

Skin status on discharge: The time of discharge from the LTAC, the patient’s wound had 70% epithelial tissue and IAD had resolved.

Length of stay: The patient’s length of stay at the LTAC was 19 days from 10/15/2010 to 11/02/2010

Caregiver Satisfaction

- All nurses who completed a caregiver survey (N=4) stated:
  - The patient was more compliant with repositioning q2h and p.r.n. when the Turn and Position System was used (4/4)
  - Use of the Turn and Position System prevented unnecessary pressure, friction, and shear during patient repositioning (4/4)
  - The patient’s niece, the primary caregiver at home, ensured the Turn and Position System was utilized appropriately q2h during the hospital stay. She was very satisfied with the product.

The majority of caregivers stated:

1. They spent less time repositioning the patient with the Turn and Position System compared with time spent for “usual” repositioning without the system (3 of 4)
2. The Turn and Position System eased their usual physical efforts extended for patient repositioning (3 of 4)
3. They felt the design of the Turn and Position System helped maintain appropriate body mechanics with patient repositioning (3 of 4)
4. The Turn and Position System lessened the patient’s usual physical efforts extended for repositioning (3 of 4)
5. The Turn and Position System decreased patient pain associated with efforts of repositioning (3 of 4)
6. Use of the Turn and Position System helped them comply with a minimum of q2h and needed patient repositioning (3 of 4)
7. The Turn and Position System prevented the patient from sliding down in bed (3 of 4)

Clinical Implications

- Reduction in pain during repositioning increases patient satisfaction.
- Increased patient tolerance of repositioning facilitates wound healing and wound prevention.
- Absorbent underpads facilitate resolution of IAD.
- Ease of use for caregivers increases compliance with patient repositioning.

Figures

- Figure 1: Stage II pressure ulcer noted on sacrum with mild IAD.
- Figure 2: Resolution of IAD and improvement of stage II sacral PU noted.

Wound care protocol

- The patient reported satisfaction with the Turn and Position System, due to his substantial decrease in pain with repositioning (8-9 out of 10 before Turn and Position System compared with 0 out of 10 with Turn and Position System).

Wound care protocol

- The patient was treated for a stage II sacral PU which was present on admission. The wound care protocol consisted of:
  - Daily care with Remedy™/products consisting of cleansing foam, Calamine™ moisture barrier cream, and moisturizing lotion.
  - Wound cleansed with normal saline.
  - Wound dressed with Mepilex® border changed every 3 days and p.r.n.
  - Patient placed on a low air loss support surface.
  - Patient repacked with Turn and Position System q2h and as needed.

Case History #1

- Wound care protocol

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Case History #2

- Wound care protocol

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