Preventing Pressure Ulcers: A Team Sport for Eliminating the Major Risk Factors

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Disclosures

- Sage Products Speaker Bureau & Consultant
- Hill-Rom Speaker Bureau
- Eloquest Healthcare Speaker Bureau & Consultant
- Bard Speaker Bureau
"It may seem a strange principle to enunciate as the very first requirement in a Hospital that it should do the sick no harm."

Florence Nightingale

Advocacy = Safety
Pressure Ulcer Facts

- Canada: 1 in 8 patients in Acute Care develop a HAPU, 1 in 11 Nursing Home residents, 1 in 50 at home.
- 4 days LOS, 7% greater likelihood of dying & cost to system est. 13,500.
- 2.5 million patients are treated annually in Acute Care in US
- NDNQI data base: critical care 7% Med-Surg: 1-3.3%
- Most severe pressure ulcer: sacrum (44.8%) or the heels (24.2%)
- 60,000 persons die from pressure ulcer complications each yr, ↑LOS ~ 3x longer, est. cost of $10.5-17.8 billon dollars for 2010

http://healthydebate.ca/opinions/should-ontario-be-more-proactive-in-pressure-ulcer-prevention
Vandenkerkhof EG, J Healthc Qual. 2011 Jan 11.
# Required Organizational Practices

## TESTS FOR COMPLIANCE

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Identify Patients at High Risk
Risk Assessment on Admission, Daily, Change in Patient Condition

- Use standard EBP risk assessment tool
- Research has shown Risk Assessment Tools are more accurate than RN assessment alone
- Braden Scale for Predicting Pressure Sore Risk
  - 6 subscales
  - Rated 1-4
  - Pressure on tissue
  - Mobility, sensory perception, activity
  - Tissue tolerance for pressure
  - Nutrition, moisture, shear/friction
  - Score 6-23

Clinical judgment of nurses alone achieve inadequate capacity to assess PU risk

Its About the Sub-Scale’s

- Retrospective cohort analysis of 12,566 adults patients in progressive & ICU settings for yr. 2007
- Identifying patients with HAPU Stage 2-4
- Data extracted: Demographic, Braden score, Braden subscales on admission, LOS, ICU LOS, presence of Acute respiratory and renal failure
- Calculated time to event, # of HAPU’s
- **Results:**
  - 3.3% developed a HAPU
  - Total Braden score predictive (C=.71)
  - Subscales predictive (C=.83)

Braden Score Braden Sub-
Scales

Multivariate model included 5 Braden subscales, surgery and acute respiratory failure $C=0.91$ (Mobility, Activity and sensory perception more predictive when combined with moisture or shear and friction)
“One’s mind, once stretched by a new idea, never regains its original dimensions.”

Oliver Wendell Holmes
Risk Factors

Critically Ill Patient

- Pressure
- Shear/Friction
- Moisture
- Perfusion Instability
- Device Injury
Pressure Ulcers

Pressure

SACRAL
Pressure Ulcers

MOISTURE

Shear

Friction

Pressure

Shear

Heel Pressure Ulcer

Friction
EBP Recommendations to Achieve Offloading & Reduce Pressure

- Turn & reposition every 2 hours (avoid positioning patients on a pressure ulcer)
  - Repositioning should be undertaken to reduce the duration & magnitude of pressure over vulnerable areas
  - Cushioning devices to maintain alignment /30 ° side-lying & prevent pressure on boney prominences
  - Use lifting device or other aids to reposition & make it easy to achieve the turn
  - Assess whether actual offloading has occurred

EBP Recommendations to Achieve Offloading & Reduce Pressure

- Turn & reposition every 2 hours (avoid positioning patients on a pressure ulcer)
  - Use active support surfaces for patients at higher risk of development where frequent manual turning may be difficult
- Early Mobility programs

EBP Recommendations to Reduce Shear & Friction

- Loose covers & increased immersion in the support medium increase contact area
- Use lifting/transfer devices & other aids to reduce shear & friction.
  - Mechanical lifts
  - Transfer sheets
  - 2-4 person lifts
  - Turn & assist features on beds

Current Practice: Turn & Reposition

Transfer Device  Specialty Bed

Disposable Slide Sheets

Draw Sheet/Pillows/Layers of Linen

70%  Lift Device
Comparative Study of Two Methods of Turning & Positioning

- Blocked design with convenience sample of 60 patients
- SOC: pillows/draw sheet
- TAP: breathable glide sheet/foam wedges/wick away pad
- Results:
  - Nurse satisfaction 87% versus 34%
  - 30° turn achieved versus -0-15 in SOC
  - SOC group required more resources

<table>
<thead>
<tr>
<th></th>
<th>SOC</th>
<th>TAP</th>
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<tbody>
<tr>
<td>Time on Product</td>
<td>7 days (1-29)</td>
<td>7 days (1-45)</td>
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<tr>
<td>Age</td>
<td>57.72 (SD 18.45)</td>
<td>57.73 (SD 17.67)</td>
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<tr>
<td>(18-89)</td>
<td>(23-92)</td>
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</tr>
<tr>
<td>Gender</td>
<td>14 Female, 16 male</td>
<td>10 Female, 20 Male</td>
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<tr>
<td>Braden</td>
<td>12.77</td>
<td>13.23</td>
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<tr>
<td>Mobility</td>
<td>0-1</td>
<td>0-1</td>
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<tr>
<td>BMI</td>
<td>29.52</td>
<td>30.97</td>
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<tr>
<td>PU development</td>
<td>8</td>
<td>1*</td>
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<tr>
<td>Pulled up in bed</td>
<td>3.26</td>
<td>2.58</td>
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<tr>
<td>Number to turn</td>
<td>1.97</td>
<td>1.35</td>
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</table>

and always remember, my child..... only dead fish go with the flow.
Dressing As an Adjunct to Pressure Ulcer Prevention: Consensus Panel Recommendations*

- Consider use of a 5 layer soft silicone border dressing to enhance but not replace pressure ulcer prevention strategies for the sacrum, buttock & heel (A)
- Before selecting addressed to consider the current status of the skin and the ease of dressing removal in order to prevent mechanical stripping (B)
- Apply the dressing to intact skin. Do not use emollients or other barriers as they will prevent adhesion (C)
- Inspect the skin beneath the dressing on a regular basis (C)
- Consider placement prior to prolonged procedures or continuous head elevation (B)

Panel supported by the dressing company

EBP Recommendations to Achieve Offloading & Reduce Pressure

- Turn & reposition every 2 hours (avoid positioning patients on a pressure ulcer)
  - Heal-protection devices should elevate the heel completely (off-load) in such a way as to distribute weight along the calf
  - Uses pillows to offload if expected immobility < 8hrs
  - Uses device is expected to be immobile > 8hrs

Successful Prevention of Heel Ulcers and Plantar Contracture in the High Risk Ventilated Patients

53 sedated patients over a 7 month period

**Study Inclusion Criteria**
- Sedated patient > 5 days
- May or may not be intubated
- Braden equal to or less than 16

**Procedure**
- Skin assessment and Braden completed on admission
- All pts who met criteria were measured for ROM of the ankle with goniometer, then every other day until pt did not meet criteria
- Heel appearance, Braden and Ramsey scores were assessed every other day and documented
- Identified and trained ICU nurses completed the assessments

**Results**

Quality Improvement Initiative to ↓ FAHPU’s

- 4 tier Process
- Partnership
- Comprehensive product review
- Education & engagement
- Support structures & processes

18th Annual Conference of the Canadian Association of Wound Care, November 8-11, 2012, London, Ontario
Even if you are on the right track, you will get run over if you just sit there.

Will Rogers
Making In-Bed & Out of Bed Mobility Happen

- Earlier Mobility
- Prevent injury to the skin during mobility
- Prevent Injury to the caregiver during mobility
• 50% of nurses required to do repositioning suffered back pain
• High physical demand tasks
  • 31.3% up in bed or side to side
  • 37.7% transfers in bed
• 40% of critical care unit caregivers performed repositioning tasks more than six times per shift
• Number one injury causation activity: Repositioning patients in bed

Harber P, et al. J Occupational Medicine, 27;518-524)
Fragala G. AAOHN, 2011;59:1-6
### Number, Incidence Rate, & Median Days Away From Work for Occupational Injuries RN’s with Musculoskeletal Disorders in US, 2003 – 2011

<table>
<thead>
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<th>Year</th>
<th>Ownership</th>
<th>Occupation</th>
<th>Total Cases</th>
<th>Incidence Rate</th>
<th>Median Days Away From Work</th>
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<td>RNs</td>
<td>8,760</td>
<td>51.6</td>
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<td>RNs</td>
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<td></td>
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<td>RNs</td>
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<td>-</td>
<td>5</td>
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<tr>
<td></td>
<td>state government</td>
<td>RNs</td>
<td>540</td>
<td>-</td>
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<tr>
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<td>RNs</td>
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<td>53.4</td>
<td>6</td>
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<td>2006</td>
<td>private industry</td>
<td>RNs</td>
<td>9,200</td>
<td>59.1</td>
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Factors Impacting the ability to Achieve Quality Nursing Outcomes at the Point of Care

Resource & System
- Breathable glide sheet/stays
- Foam Wedges
- Microclimate control
- Reduce layers of linen
- Wick away moisture body pad
- Protects the caregiver

Safe Patient Handling Initiative: Decreases Staff Musculoskeletal Injuries & Patient Pressure Ulcers

SAFE PATIENT HANDLING INITIATIVE PROTOCOL

1. Does the patient have a total Boden Score of 14 or less, including Boden mobility score of 1 and/or a Boden moisture score of <3?

2. Does the patient have any of the following co-morbidities:
   - Limited mobility for 24 hours or more
   - Alcohol abuse
   - Limited mobility in general due to condition
   - Neuropathy/Quadriplegia
   - Unconscious/Catatonic

3. Does the patient have a past history of pressure ulcers?

   IF YES to the above question, please use the turning and repositioning device.

   IF no, then order a low profile foam / inflatable sheet or a foot under the patient every 2 hours.

   If patient is at risk for foot drop, order a heel protector to immobile patients.

DISCONTINUE USE:

1. When patient is able to independently perform a turn.
2. No longer at risk for potential moisture injury.
3. Boden mobility score of 3 and/or mobility score of 3.

PRECAUTIONS:

1. Single use only. If soiled, replace with a clean, dry sheet. DO NOT wash.
2. Periodically check product for signs of wear. Replace if product is damaged.

RESULTS

- 28%↓ $184,720 savings
- 58%↓ $247,500 savings
In-Bed Technology
Out of Bed Technology
Early Mobility: Making it Happen In Your ICU

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Current Seating Positioning Challenges

Uncomfortable

Airway & Epiglottis compressed
Lack of Body Alignment
Shear/Friction
Sacral Pressure

Frequent repositioning & potential caregiver injury
Potential fall risk
Repositioning Patients in Chairs: An Improved Method (SPS)

- Study the exertion required for 3 methods of repositioning patients in chairs
- 31 care giver volunteers
- Each one trial of all 3 reposition methods
- Reported perceived exertion using the Borg tool, a validated scale.

Method 1: 2 care givers using old method of repositioning 246% greater exertion than SPS
Method 2: 2 caregivers with SPS
Method 3: 1 caregiver with SPS 52% greater exertion than method 2

Hemodynamic Instability

???

Is it a Barrier to Positioning?
Hemodynamic Status

- No differences noted in hemodynamic variables between supine & positions
- Lateral turn results in a 3-9% decrease in SVO2 which takes 5-10 minutes to return to baseline
- Appears the act of turning has the greatest impact on any instability seen
- Minimize factors which contribute to imbalances in oxygen supply & demand

Patients at Risk for Intolerance to Positioning

- Elderly
- Diabetes with neuropathy
- Prolonged bedrest
- Low Hb an cardiovascular reserve
- Prolonged gravitational equilibrium

Vollman KM. Crit Care Nurs Q. 2013 Jan;36(1):17-27
Decision Making Tree for Patients Who Are Hemodynamically Unstable with Movement

**Recommended Interventions for the Unstable Patient**

**IF PATIENT IS DEEMED TOO UNSTABLE TO TURN BY ABOVE PARAMETERS:**

- A TRIAL TURN SHOULD BE ATTEMPTED AT LEAST EVERY 8 HOURS TO DETERMINE ABILITY TO RESUME FREQUENT TURNING AT LEAST EVERY 2 HOURS
- Provide multiaxial support
- Weight shift patient at least every 30 minutes
- Elevate head, arms, and legs at least every 2 hours, consider passive ROM
- Consider use of Continuous Lateral Rotation Therapy to prevent development of "gravitational equilibrium" Begin: SLOW AND LOW angles of turning to gauge patient response
- When turning patient, DO NOT: Provide serial small linals from supine to lateral position to achieve limb changes, hygiene changes, and reposition with wedges and pillows.

**UNSTABLE FRACTURES**

1. Patient's with unstable pelvis injuries - LOG ROLL PATIENT ONLY with approval of Attending MD. Consider wedges or pillows placed between the legs to maintain proper alignment
2. DO NOT use continuous lateral rotation therapy (CLRT) with unstable spinal fractures these patients should be positioned with multiple wedges to maintain proper alignment
3. Cervical Fractures/UNSTABLE: Patient must have appropriately fitted cervical collar in place. Ensure security and proper positioning of collar, then log roll patient and wedge in proper alignment

**References**

- Vollman KM. *Crit Care Nurs Q*. 2013 Jan;36(1):17-27
It is not enough to do your best, you have to know what to do and then do your best.

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