Changing the Perceptions of a Culture of Safety on Your Unit: Evidence-Based Strategies to Reduce Patient Skin Injury and Address Caregiver Harm

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Disclosures for Kathleen Vollman

- Consultant-Michigan Hospital Association Keystone Center
- Consultant/Faculty for CUSP for MVP—AHRQ funded national study
- Subject matter expert CAUTI, CLABSI, HAPU, Safety culture
- Consultant and speaker bureau for Sage Products LLC
- Consultant and speaker bureau for Hill-Rom Inc
- Consultant and speaker bureau for Eloquest Healthcare
Objectives

• Discuss transforming a culture that creates safety for the patient and staff while achieving evidence-based outcomes

• Outline evidence-based prevention strategies for incontinence associated dermatitis, friction reduction and pressure injury risk reduction

• Describe key care process changes that lead to a successful reduction of skin injury and risk reduction healthcare worker injury
“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
Protect The Patient From Bad Things Happening on Your Watch

Implement Interventional Patient Hygiene
Interventional Patient Hygiene

- Hygiene…the science and practice of the establishment and maintenance of health
- Interventional Patient Hygiene….nursing action plan directly focused on fortifying the patients host defense through proactive use of evidence based hygiene care strategies

Incontinence Associated Dermatitis Risk Reduction Program

INTERVENTIONAL PATIENT HYGIENE (IPH)

- Oral Care/Mobility
- VAP/HAP
- HAND
- Skin Care/Bathing/Mobility
- Catheter Care
- CA-UTI
- CA-BSI
- SSI
- Falls
- HASI

Factors Impacting the Ability to Achieve Quality Nursing Outcomes at the Point of Care

Building Resiliency Into Interventions

- Forcing Functions and Constraints
- Automation and Computerization
- Standardization and Protocols
- Checklist and Independent Check Systems
- Rules and Policies
- Education and Information
- Vague Warning – “Be More Careful!”

Berenholtz, S John Hopkins Patient Safety Institute, 2012
Safety is avoiding both short- and long-term harm to people resulting from unsafe acts and preventable adverse events.

Current infrastructure “silos” safety programs, creating one for patients, another for workers, and yet another for others who may be at risk (Quality department, Risk Management, Employee Health, SPH).

The organizational culture, principles, methods, and tools for creating safety are the same, regardless of the population whose safety is the focus.

A true culture of safety—and the organization leaders who create and sustain it—will not be considered legitimate and genuine if the culture excludes some groups within the organization.

What Does it Mean to Be in A Safe Culture for You & Your Patient?
Changing the Paradigm

Culture of Safety in Health Care

Patient Safety

Culture of Safety for Healthcare Workers

Healthcare Worker Safety

Safety Culture for the Patient & the HCW
Changing the Perception of Safety on Your Unit

• Safety for the patient and healthcare worker are integrated
• Transcends individual improvement initiatives and departmental walls
• High reliable unit/organization: engaged leadership, culture of safety, organizational processes, and infrastructure to support safe practices
• Implement and maintain successful worker and patient safety improvement initiatives within your unit & organization
• Create measurements that integrate patient safety and healthcare worker safety

Castro GM. Am J SPHM, 2015;5(1)34-35
The Goal: Patient & Caregiver Safety

- Patient Progressive Mobility
- Safe Patient Handling
- Reduce Risk of Pressure Injuries
- Falls

Leadership
How Well Are We Doing?
Do We Even Achieve the Minimum Mobility Standard…
“Q2 Hours..”?
Body Position: Clinical Practice vs. Standard

• Methodology
  – 74 patients/566 total hours of observation
  – 3 tertiary hospitals
  – Change in body position recorded every 15 minutes
  – Average observation time 7.7 hours
  – Online MD survey

• Results
  – 49.3% of observed time no body position change
  – 2.7% had a q 2 hour body position change
  – 80-90% believed q 2 hour position change should occur but only 57% believed it happened in their ICU

Krishnagopalan S. Crit Care Med 2002;30:2588-2592
Positioning Prevalence

• Methodology
  – Prospectively recorded, 2 days, 40 ICU’s in the UK
  – Analysis on 393 sets of observations
  – Turn defined as supine position to a right or left side lying

• Results:
  – 5 patients prone at any time, 3.8% (day 1) & 5% (day 2) rotating beds
  – Patients on back 46% of observation
  – Left 28.4%
  – Right 25%
  – Head up 97.4%
  – Average time between turns 4.85 hrs (3.3 SD)
  – No significant association between time and age, wt, ht, resp dx, intubation, sedation score, day of wk, nurse/patient ratio, hospital

Goldhill DR et al. Anaesthesia 2008;63:509-515
Environmental Scan of EM Practices

- 687 randomly selected ICU’s stratified by regional density & size-500 responded (73% response rate)
- Demographics:
  - 51% academic affiliation, mixed medical/surgical (58%) or medical (22%) with a median of 16 beds (12–24)
  - 34% dedicated PT or OT for the ICU
  - Performed a median of 6 days, 52% began on admission

Factors associated with EMP:
- Dedicated PT/OT
- Written sedation protocol
- Daily MDR
- Daily written goals

Outcomes of Early Mobility Programs

- ↓ incidence of VAP
- ↓ time on the ventilator
- ↓ days of sedation
- ↓ incidence of skin injury
- ↓ delirium
- ↑ ambulatory distance
- Improved function

Thomsen GE, et al. CCM 2008;36;1119-1124
Winkelman C et al, CCN,2010;30:36-60
IF AT FIRST YOU DON'T SUCCEED, YOU'RE RUNNING ABOUT AVERAGE
Background of the Problem

- HAPU are the 4th leading preventable medical error in the United States
- 2.5 million patients are treated annually in Acute Care
- NDNQI data base: **critical care: 7%** med-surg: 1-3.3%
- Acute care: 0-12%, critical care: 3.3% to 53.4% (International Guidelines)
- Most severe pressure ulcer: **sacrum** (44.8%) or the **heels** (24.2%)
- Pressure ulcers cost $9.1-$11.6 billion per year in the US.
  - Cost of individual patient care ranges from $20,900 to $151,700 per pressure ulcer
  - 17,000 lawsuits are related to pressure ulcers annually
- 60,000 persons die from pressure ulcer complications each yr.
- National health care cost $10.5-17.8 billion dollars for 2010

http://www.ahrq.gov/professionals/systems/hospital/pressureulcertoolkit/putool1.html#11
Cambridge Media: Osborne Park: Western Australia;2014.
Clarification of Definitions:

- Pressure Injury to replace Pressure Ulcer
- Accurately describes pressure injuries of both intact and ulcerated skin

Stage I and Deep Tissue Injury (DTI) describe intact skin

Stage II through IV describe open ulcers

PRESSURE INJURY
Moisture Injury: Incontinence Associated Dermatitis

- Inflammatory response to the injury of the water-protein-lipid matrix of the skin
  - Caused by prolonged exposure to urinary and fecal incontinence
- Top-down injury
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling
- Skin breaks 4x more easily with excess moisture than dry skin

Brown DS & Sears M. OWM 1993;39:2-26
IAD: Multisite Epidemiological Study

- **5,342 patients in 424 facilities in Acute & Long Term Care in US**
- **Prevalence study**
  - To measure the prevalence of IAD in the acute care setting,
  - To describe clinical characteristics of IAD, and
  - To analyze the relationship between IAD and prevalence of sacral/coccygeal pressure ulcers
- **Results:** 1716 patients incontinent (44%)
  - 57% both FI and UI, 27% FI, 15% UI
  - 24% IAD rate
    - 60% mild
    - 27% moderate
    - 5% severe
  - 73% was facility acquired
  - ICU a 36% rate
  - IAD 5x more likely to develop a HAPU
What are Ergonomic Risk Factors in Healthcare?

- Force
- Repetition
- Posture
- Duration of Exposure
Oh, My Aching Back!

- 8 out of 10 nurses work despite experiencing musculoskeletal pain\(^1\)
- 62% of nurses report concern regarding developing a disabling musculoskeletal injury\(^1\)
- 56% of nurses report musculoskeletal pain is made worse by their job\(^1\)
- Nursing assistants had the 2\(^{nd}\) highest and RNs had the 6\(^{th}\) highest number of musculoskeletal disorders in the U.S.\(^2\)


Oh, My Aching Back!

2014 - 67%-80% of people in the US were morbidly obese, obese or overweight (Flegal et al., 2014)

- Overweight: Body mass index (BMI) of 25.0 to 29.9
- Obesity: BMI of 30.0 to 39
- Morbid Obesity: BMI 40 or higher
Oh, My Aching Back!

- The nation is facing an impending shortage of nurses, which is expected to peak by 2020
- Average age of nurses in the US is 46
- We must improve our ergonomic environment to accommodate older nurses (Buerhaus, 2004)
Contributing Factors to Injury

- Healthcare is the only industry that considers 100 pounds to be a “light” weight
- Other professions use assistive equipment when moving heavy items
- On average, nurses and assistants lift 1.8 tons per shift (ANA, n.d.)

NIOSH (National Institute of Occupational Safety and Health) Recommendations for Safe Patient Handling

- Maximum recommended weight limit set for patient lifting
  - The weight being lifted can be estimated
  - When patient is cooperative
  - The lift is smooth and slow
- Maximum recommended limits set for patient push/pull activity
- Proper body mechanics alone **will not** prevent patient handling injury (Hignett, 2003)
- Safe work practices

**IT IS NOT SAFE TO MANUALLY MOVE PATIENTS**

---
What is Safe Patient Handling?

• **Manual Patient Handling**
  - The transporting or supporting of a patient by hand or bodily force, including pushing, pulling, carrying, holding, and supporting of the patient or a body part.

• **Safe Patient Handling**
  - Evidence-based approach to reducing risk to caregivers. Includes risk assessment, use of equipment, patient assessment, algorithms, peer safety leaders, and after-action reviews.

<table>
<thead>
<tr>
<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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<tbody>
<tr>
<td>2009</td>
<td>Private industry</td>
<td>RNs</td>
<td>8,760</td>
<td>51.6</td>
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<tr>
<td>2010</td>
<td>Private industry</td>
<td>RNs</td>
<td>9,260</td>
<td>53.7</td>
<td>6</td>
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<tr>
<td>2011</td>
<td>Private industry</td>
<td>RNs</td>
<td>10,210</td>
<td></td>
<td>8</td>
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<tr>
<td>2012</td>
<td>Private industry</td>
<td>RNs</td>
<td>9,900</td>
<td>58.5</td>
<td>8</td>
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<tr>
<td>2013</td>
<td>Private Industry</td>
<td>RN</td>
<td>9820</td>
<td>56.2</td>
<td>7</td>
</tr>
<tr>
<td>2014</td>
<td>Private Industry</td>
<td>RN</td>
<td>9820</td>
<td>55.3</td>
<td>9</td>
</tr>
<tr>
<td>2014</td>
<td>Private Industry</td>
<td>NA</td>
<td>18,510</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

* Incidence rate per 10,000 FTE

Significance of Patient Falls

- Falls are the leading cause of hospital–acquired injury and can frequently prolong or complicate hospital stays (Degelau et al., 2012)
- Between 700,000 and 1 million patients suffer a fall in U.S. hospitals each year (Dupree et al., 2014)
- 30-35% of those patients sustain an injury, and approximately 11,000 falls are fatal (Health Research & Educational Trust. 2016, October)
- Falls have been identified by the Centers for Medicare and Medicaid Services as an acquired condition that should not occur (Dupree et al., 2014)
Moisture  
Pressure  
Shear Friction  
Deconditioning Falls Delirium ICU and Hospital LOS

Clean & Protect  
Reduce Pressure & Shear  
In-bed Exercise & Out of Bed Mobility

Repetitive motion, Lifting  
Repetitive motion, Lifting & Limb holding  
Repetitive motion, Dragging, patient weight

Immobility Risk, Skin Risk Factors  
Mobility, Skin & Fall Prevention Strategies  
Care Giver Risk

Mobility, Skin & Fall Prevention Strategies  
Care Giver Risk  
In-bed Exercise & Out of Bed Mobility  
Reduce Pressure & Shear  
Clean & Protect  
Deconditioning Falls Delirium ICU and Hospital LOS  
Shear Friction  
Pressure  
Moisture

Mobility, Skin & Fall Prevention Strategies  
Care Giver Risk  
In-bed Exercise & Out of Bed Mobility  
Reduce Pressure & Shear  
Clean & Protect  
Deconditioning Falls Delirium ICU and Hospital LOS  
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Moisture

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Pressure  
Moisture
The Goal: Patient & Caregiver Safety

Patient Progressive Mobility

Safe Patient Handling

Reduce Risk of Pressure Injuries

Falls
Gap Analysis of Risk Prevention Strategies

- Assessment of Risk
- Pressure Injury/Turn/Shear reduction
- Healthcare Worker Safety
- Early Mobility
- Device Related Injuries
- Managing Incontinence & Other Moisture
- Hemodynamic Instability
Pressure & Shear as a Risk Factor

Sacrum & Heels
EBP Recommendations to Achieve Offloading & Reduce Pressure (A)

- 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
  - Consider right surface with right frequency*
  - Cushioning devices to maintain alignment /30 ° side-lying & prevent pressure on boney prominences
    - Between pillows and wedges, the wedge system was more effective in reducing pressure in the sacral area (healthy subjects) (Bush T, et al. WOCN, 2015;42(4):338-345)
  - Assess whether actual offloading has occurred
  - Use lifting device or other aids to reposition & make it easy to achieve the turn

EBP Recommendations to Reduce Shear & Friction

- Loose covers & increased immersion in the support medium increase contact area
- Prophylactic dressings: emerging science
- Use lifting/transfer devices & other aids to reduce shear & friction.
  - Mechanical lifts
  - Transfer sheets
  - 2-4 person lifts
  - Turn & assist features on beds
  - Do not leave moving and handling equipment underneath the patient

### Systematic Review: Use of Prophylactic Dressing in Pressure Injury Prevention

- 21 studies met the criteria for review
- 2 RCTs, 9 had a comparator arm, five cohort studies, 1 within-subject design where prophylactic dressings were applied to one trochanter with the other trochanter dressing free

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Events</th>
<th>Control Events</th>
<th>Total Events</th>
<th>Total Weight</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callaghan 1996</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>3.8%</td>
<td>0.31 (0.09, 1.08)</td>
</tr>
<tr>
<td>Huang 2009</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>21.7%</td>
<td>0.63 (0.37, 1.05)</td>
</tr>
<tr>
<td>Weng 2008</td>
<td>28</td>
<td>60</td>
<td>88</td>
<td>74.6%</td>
<td>0.48 (0.37, 0.64)</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>78</td>
<td>48</td>
<td>126</td>
<td>100.0%</td>
<td>0.50 (0.39, 0.64)</td>
</tr>
</tbody>
</table>

- Evaluated nasal bridge device injury prevention
- Evaluated sacral pressure ulcer prevention

EBP Recommendations to Reduce Shear & Friction

- Loose covers & increased immersion in the support medium increase contact area
- Prophylactic dressings: emerging science
- Use lifting/transfer devices & other aids to reduce shear & friction.
  - Mechanical lifts
  - Transfer sheets
  - 2-4 person lifts
  - Turn & assist features on beds
  - Breathable slide stay in bed glide sheet
  - Do not leave moving and handling equip underneath the patient

Current Practice:
Turn & Reposition

Specialty Bed
Disposable Slide Sheets
Breathable Glide Sheet

Draw Sheet/Pillows/Layers of Linen
Lift Device
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

Comparative Study of Two Methods of Turning & Positioning

- Non randomized comparison design
- 59 neuro/trauma ICU mechanically ventilated patients
- Compared SOC: pillows/draw sheet vs turn and position system (breathable glide sheet/foam wedges/wick away pad)
- Measured PU incidence, turning effectiveness & nursing resources

<table>
<thead>
<tr>
<th>Demographic Comparison</th>
<th>SOC</th>
<th>PPS</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time on product (range), d</td>
<td>7 (1-29)</td>
<td>7 (1-45)</td>
<td>1.00</td>
</tr>
<tr>
<td>Mean age (SD) (range), y</td>
<td>57.72 (18.45) (18-89)</td>
<td>57.73 (17.67) (23-92)</td>
<td>1.00</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>10</td>
<td>.43</td>
</tr>
<tr>
<td>Male</td>
<td>16</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Braden Scale score</td>
<td>12.77</td>
<td>13.23</td>
<td>.46</td>
</tr>
<tr>
<td>Mobility</td>
<td>0-1</td>
<td>0-1</td>
<td>1.00</td>
</tr>
<tr>
<td>BMI</td>
<td>29.62</td>
<td>30.97</td>
<td>.65</td>
</tr>
</tbody>
</table>

Comparative Study of Two Methods of Turning & Positioning

**Results:**
- Nurse satisfaction 87% versus 34%
- 30° turn achieved versus 15.4 in SOC/7.12 degree difference at 1hr (p<.0001)

<table>
<thead>
<tr>
<th></th>
<th>SOC</th>
<th>PPS</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU development</td>
<td>6</td>
<td>1(^a)</td>
<td>.04</td>
</tr>
<tr>
<td># of times patients pulled up in bed</td>
<td>3.28</td>
<td>2.58</td>
<td>.03</td>
</tr>
<tr>
<td># of staff required to turn patient</td>
<td>1.97</td>
<td>1.35</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

\(^a\) PU development with 24hrs of admission

Impact of a Turn & Position Device on PI & Staff Time

• Prospective, QI study (1 SICU & 1 MICU)
• 2 phases
  – SOC: pillows, underpads, standard low airloss bed and additional staff if required
  – Interventional: turn and position system, a large wicking pad (part of the product)
• Inclusion criteria: newly admitted, non-ambulatory, required 2 or more to assist with turning/repositioning
• Turning procedures were timed/admitting till ICU discharge

Results
  – No difference in sociodemographic and clinical data between the groups
  – Phase 1: 14 patients (28%) Stage II sacral PI
  – Phase 2: zero sacral PI (p<.0001)
  – Timing:
    • Phase 1: 16.34 mins (range 4-60min) SD= 10.08
    • Phase 2: 3.58 mins (range 1.12-8.48) SD = 2.31 (p=0.0006)

Reducing HAPI & Patient Handling Injuries

- Compared pre-implementation turning practice: pillows/draw sheet vs turn and position system (breathable glide sheet/foam wedges/wick away pad)
- Baseline: November 2011-August 2012
- Implementation period: November 2012 to August 2015
- 3660 patients
- Compared HAPI rates, patient handling injuries and cost

<table>
<thead>
<tr>
<th>Patient Handling Injury and Costs</th>
<th>January 2012 to October 2012 (Before)</th>
<th>November 2012 to August 2013 (After)</th>
<th>November 2013 to August 2014 (After)</th>
<th>November 2014 to August 2015 (After)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injuries/Cost</td>
<td>19/$427,500</td>
<td>8/$180,000</td>
<td>2/$45,000</td>
<td>5*/$112,500</td>
</tr>
</tbody>
</table>

Way H, Am JSPHM, 2016;6(4):160-165
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
  - Microclimate management
  - Heel protection
  - Early Mobility programs
  - Seated support surfaces for patients with limited mobility when sitting in a chair

Evidence-Based Strategies for Safe Patient Handling

Evaluation of a new procedure for boosting critically ill patients in bed

Susan L. Salsbury OTR/L, CDMS, Occupational Therapist, OhioHealth, Columbus, OH • Beth Kaper, BSN RN TNCC, Safe Patient Handling and Mobility Co-Chair, OhioHealth Riverside
Justin L Martin, MPT, Physical Therapist, Safe Patient Handling and Mobility Lead at OhioHealth Mansfield and Shelby

**BACKGROUND**

Patient handling is widely recognized as a contributing factor to musculoskeletal injuries for critical care nurses. Patient handling injuries originate from repeated microscopic traumas due to high exertion, awkward posture, and frequent activities over extended periods of time without enough rest. Critical care nurses are required to boost physically dependent patients in bed as often as 6-10 times per shift. Boosting is a frequent repetitive activity that requires high exertion and awkward posture.

**RESULTS**

Forty-two nurses completed the survey. Device satisfaction was **Very Good** to **Excellent**.

- Average ease of boosting: 4.81
- Average ease of performing lateral transfers: 4.79
- Product comparison to current practice for boosting/in-bed mobility: 4.78
- Patient comfort: 4.54
- Ease of integrating product into clinical workflow: 4.79
- Impact on improving clinician safety: 4.86

1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, and 5 = Excellent.

Narrative comments included:

"With this procedure, a 100 pound nurse can boost a 300 pound patient; less strain on my back; used down in CT and it was fabulous."

**METHOD**

The purpose of this product evaluation was to appraise the effectiveness of a new airflow assist device used to boost patients in bed. Critical care nurses rated their perceptions regarding ease of boost, ease of lateral transfer compared to current practice, patient comfort, clinical workflow, and clinician safety using a 5-point Likert scale.

**CONCLUSIONS**

Critical care nurses rated the boosting device favorably in all categories. Nurses perceive the device easier to use for boosting patients in bed, which may be associated with less back strain.

**SIGNIFICANCE**

Patient handling injury is a significant safety issue for critical care nurses whose patients require assistance with even basic movements. Further evaluation is recommended to evaluate efficacy with interprofessional groups and varied clinical populations.

Salsbury S. Presented at AACN's National Teaching Institute, May 16th-19th, 2016. New Orleans, LA.
In-Bed Technology
EBP Recommendations to Achieve Offloading & Reduce Pressure

- Ensure the heels are free of the bed surface
  - Heal-protection devices should elevate the heel completely (off-load) in such a way as to distribute weight along the calf
  - The knee would be in slight flexion
  - Remove device periodically to assess the skin

Heel Protectors

Heel Pads

Miller SK, et al WOCN, 2015;42(4):346-351
Successful Intervention for the Reduction of Heel Ulcers and Plantar Contracture in the High Risk Ventilated Patients

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

53 sedated patients over a 7 month period

Sustainability of Heel Injury Reduction: QI Project

- 490 bed facility
- Evidence-based quality improvement initiative
- 4 tier Process
  - Partnership
  - Comprehensive product review
  - Education & engagement
  - Support structures & processes

Hanna-Bull D. WOCN, 2016;43(2):129-132
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 manual turning may be difficult
  - Microclimate management
  - Early Mobility programs
  - Seated support surfaces for patients with limited mobility when sitting in a chair

Transition: In-Bed to Out of Bed & Back
Out of Bed Technology
Current Seating Positioning Challenges

Uncomfortable

Airway & Epiglottis compressed

Body Alignment

Shear/Friction  Sacral Pressure

Frequent repositioning & potential caregiver injury

Potential risk of sliding from chair
Repositioning Patients in Chairs: An Improved Method (SPS)

- Study physical exertion required for 3 methods of repositioning patients in chairs
- 31 caregiver volunteers
- Each caregiver trialed all 3 repositioning methods
- Reported perceived exertion using the Borg tool, a validated scale.

Method 1: 2 caregivers 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

Ambulation Assist Devices
Prevention Strategies for IAD
Evidence-Based Components of an IAD Prevention Program

• Skin care products used for prevention or treatment of IAD should be selected based on consideration of individual ingredients in addition to consideration of broad product categories such as cleanser, moisturizer, or skin protectant. (Grade C)
  – A skin protectant or disposable cloth that combines a pH balanced no rinse cleanser, emollient-based moisturizer, and skin protectant is recommended for prevention of IAD in persons with urinary or fecal incontinence and for treatment of IAD, especially when the skin is denuded. (Grade B)
  – Commercially available skin protectants vary in their ability to protect the skin from irritants, prevent maceration, and maintain skin health. More research is needed (Grade B)
EBP Recommendations to Reduce Injury From Incontinence & Other Forms of Moisture

- Clean the skin as soon as it becomes soiled
- Use an incontinence pad and/or briefs that wick away
- Use a protective cream or ointment
  - Disposable barrier cloth recommended by IHI & IAD consensus group
- Ensure an appropriate microclimate & breathability
- < 4 layers of linen
- Barrier & wick away material under adipose and breast tissue
- Support or retraction of the adipose tissue (i.e. KanguruWeb)
- Pouching device or a bowel management system


www.ihi.org
Current Practice: Moisture Management

- Reusable Incontinence Pads
- Disposable Incontinence Pads
- Adult Diaper
- Airflow pads for Specialty Beds
EBP Recommendations to Reduce Injury From Incontinence & Other Forms of Moisture

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- Pouching device or a bowel management system

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IAD/HAPU Reduction Study

- Prospective, descriptive study
- 2 Neuro units
- Phase 1: prevalence of incontinence & incidence of IAD & HAPU
- Phase 2: Intervention
  - Use of a 1 step cleanser/barrier product
  - Education on IAD/HAPU
- Results:
  - Phase 1: incontinent 42.5%, IAD 29.4%, HAPU 29.4%, LOS 7.3 (2-14 days), Braden 14.4
  - Phase 2: incontinent 54.3%, IAD & HAPU 0, LOS 7.4 (2-14), Braden 12.74

EBP Recommendations to Reduce Injury From Incontinence & Other Forms of Moisture

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  - Disposable barrier cloth recommended by IHI & IAD consensus group
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- Barrier & wick away material under adipose and breast tissue
- Support or retraction of the adipose tissue (i.e. KanguruWeb)
- Pouching device/bowel management system/male external urinary device


Doughty, D, et al. JWOCN. 2012;39(3):303-315
“Even if you are on the right track, you will get run over if you just sit there.”

Will Rogers
Any Work on Skin Should Be Incorporated into a Progressive Mobility Protocol
Outcomes of Early Mobility Program

- ↓ incidence of skin injury
- ↓ time on the ventilator
- ↓ incidence of VAP
- ↓ days of sedation
- ↓ delirium
- ↑ ambulatory distance
- Improved function

Thomsen GE, et al. CCM 2008;36;1119-1124
Winkelman C et al, CCN, 2010;30:36-60
Challenges to Mobilizing Patients

- Patient-related barriers (50%)
  - Hemodynamic instability, ICU devices, physical & neuropysch
- Structural (18%)
  - Human or Technological Resources
- ICU culture (18%)
  - Knowledge/Priority/Habits
- Process related (14%)
  - Service delivery/lack of coordination
  - Clinician function

Potentially Modifiable Barriers

Decision-Making Tree for Patients Who Are Hemodynamically Unstable With Movement\textsuperscript{1,2}

Screen for mobility readiness within 8 hrs of admission to ICU & daily initiate in-bed mobility strategies as soon as possible

Is the patient hemodynamically unstable with manual turning?  
• \(O_2\) saturation \(\leq 90\%
• New onset cardiac arrhythmias or ischemia  
• HR < 60 < 120  
• MAP < 55 > 140  
• SPB < 90 > 180  
• New or increasing vasopressor infusion

No

Begin in-bed mobility techniques and progress out-of-bed mobility as the patient tolerates

Yes

Is the patient still hemodynamically unstable after allowing 5-10 minutes’ adaption post-position change before determining tolerance?

No

Begin in-bed mobility techniques and progress out-of-bed mobility as the patient tolerates

Yes

Screen for mobility readiness within 8 hrs of admission to ICU & daily initiate in-bed mobility strategies as soon as possible

No

Allow the patient a minimum of 10 minutes of rest between activities, then try again to determine tolerance

Yes

Has the manual position turn or HOB elevation been performed slowly?

No

Try the position turn or HOB maneuver slowly to allow adaption of cardiovascular response to the inner ear position change

Yes

Initiate continuous lateral rotation therapy via a protocol to train the patient to tolerate turning

HOB=head of bed; HR=heart rate; MAP=mean arterial pressure; SPB=systolic blood pressure.  
Clinical Findings Which Prevent Patient Turning

1. Development of life threatening arrhythmia with symptomatic response (VFIB/VTACH/SVT) This does NOT include asymptomatic AFIB.

2. Active Fluid Resuscitation: (i.e. no volume going in= no systemic blood pressure).

3. Active Hemorrhaging:
   - Following Cardiac Surgery/Active Tamponade
   - Massive GI bleeding with use of Blakemore tube.
   - Active hemorrhage following Trauma.

4. Change in baseline hemodynamic parameters (BP, HR, Oxygen Saturation, RR, etc) that does not recover within 10 Minutes of position change and is not an expected result based on diagnosis.

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

1. Provide mini-turns
2. Weight shift patient at least every 30 minutes
3. Elevate heels from surface of bed
4. Reposition patient’s head, arms and legs at least every hour, consider passive ROM
5. Consider use of Continuous Lateral Rotation Therapy to prevent development of “gravitational equilibrium”. Begin: SLOW AND LOW angles of turning to gauge patient response.
6. When turning patient: GO SLOW! Provide serial small turns from supine to lateral position to achieve linen changes, hygiene checks, 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.
WHEN WOULD NOW BE A GOOD TIME TO DO THIS?

It is not enough to do your best, you have to know what to do and then do your best.

E Deming
How Do We Make It Happen?
Driving Change

Structure

- Gap analysis
- Build the Will
- Protocol Development

Process

- Make it Prescriptive
- Overcoming Barriers
- Daily Integration

Outcomes
The Goal: Patient & Caregiver Safety

- Patient Progressive Mobility:
  - ↓ Hospital LOS
  - ↓ ICU LOS
  - ↓ Skin Injury
  - ↓ CAUTI
  - ↓ Delirium
  - ↓ Time on the vent

- Safe Patient Handling:
  - ↓ Repetitive motion injury
  - ↓ Musculoskeletal injury
  - ↓ Days away from work
  - ↓ Staffing challenges
  - Loss of experienced staff
  - Nursing shortage

- Reduce Risk of Pressure Injuries:
  - ↓ Skin Injury
  - ↓ Costs
  - ↓ Pain and suffering
  - ↓ Hospital LOS
  - ↓ ICU LOS

- Falls:
  - ↓ Falls
  - ↓ Falls with injury
  - ↓ Hospital LOS
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