Champion the Skin and Win:

Eliminating Pressure, Shear and Moisture Risk Factors to Eliminate Hospital Acquired Skin Injuries

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Disclosures

- Sage Products Speaker Bureau & Consultant
- Hill-Rom Speaker Bureau
- Eloquest Healthcare Speaker Bureau & Consultant
Objectives

• Discuss strategies to identify patients at risk for skin injury
• Outline evidence-based prevention strategies for incontinence associated dermatitis and pressure ulcers
• Describe key care processes or program components leading to a successful reduction in skin injury in the ICU, and determine when and how to begin a similar improvement initiative

It is Time to Change!!

• 44,000 to 98,000 preventable death in hospitals related to medical errors annually (IOM report, 1999)
• 92,888 deaths directly attributable to safety indicators between 2005-2007 (HealthGrades 2009)
  • Failure to rescue, pressure ulcers and post-op infections
• HAIs the 5th leading cause of death
• Lack of reimbursement for preventable injury
• 2013-lowest percent improvement/ 1% total Medicare cut
• $50 billion in total costs for preventable injury
Advocacy Starts with Us

Florence Nightingale on:

SKIN INTEGRITY

• “It may be worth while to remark, that where there is any danger of bed-sores a blanket should never be placed under the patient. It retains damp and acts like a poultice."

• “If a patient is feverish, if a patient is faint, if he is sick after taking food, if he has a bed-sore, it is generally the fault NOT OF THE DISEASE, BUT OF THE NURSING.”

• “Poisoning by the skin is no less certain than poisoning by the mouth—only it is slower in its operation.”

Notes on Nursing (1860/1969)
Patient Advocacy/Safety Related to Clinical Practice

• Nurses knowledge of the Evidence based care
• Ability to deliver the care to the right patient at the right time, every time it is needed
• The ability to communicate patient concerns in a concise, data driven manner and take appropriate action
• Understanding the chain of command when faced with resistance

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 Prevention Program

INTERVENTIONAL PATIENT HYGIENE (IPH)

Vollman KM. Australian Crit Care, 2009;22(4): 152-154
Pressure Ulcer Facts

• 4th leading preventable medical error in the United States
• 2.5 million patients are treated annually in Acute Care
• NDNQI data base: critical care 5-14% ~ ~ 22%
• Incidence in acute care 7%
• 60,000 persons die from pressure ulcer complications each yr
• ↑LOS ~ 3x longer
• PU related hospitalizations ↑80% from 1993 to 2006
• Cost to treat PU $43,000 as a secondary dx
• National health care cost $10.5-17.8 billion dollars for 2010


2003-2011 Hill-Rom
International Prevalence Study

FAPU 4.5% Acute Care

June 21, 2011
Pressure Ulcers

A pressure ulcer is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear.

Moisture increases the impact of shear and friction coefficient.

Adapted from Barb Bates-Jensen & NPUAP

What Causes a Pressure Ulcer?

- Mechanical loading
  - Pressure
  - Friction
  - Shear
- Tissue tolerance
  - Ability of skin and supporting structures to redistribute pressure
  - Affected by extrinsic and intrinsic factors

Adapted from Barb Bates-Jensen
Shear & Friction

- Skin shear stress is an internal stress caused when adjacent surfaces rub across each other, which results in twisting and tearing of the underlying blood vessels and leads to tissue ischemia and localized tissue death.

- Friction is used to describe all phenomena that relate to interface properties and sliding of surfaces with respect to each other. This type of injury is often seen on the elbows or heels due to rubbing against bed sheeting and/or from re-positioning in bed.

Moisture Injury: Incontinence Associated Dermatitis

- Inflammatory response to the injury of the water-protein-lipid matrix of the skin
  - Caused from prolonged exposure to urinary and fecal incontinence
- Top-down injury
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Brown DS & Sears M, OWM 1993;39:2-26
Not Everything is a Pressure Ulcer

Skin Tear

Shearing Wound

Maceration

Photographs ©Wound Care Strategies, Inc., 2005

- Assessment, definitions, grading & evidence based interventions
- Joan Junkin

IADIT@mediapub.com

### Incontinence-Associated Dermatitis Intervention Tool (IADIT)

<table>
<thead>
<tr>
<th>Skin Care for Incontinent Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definiton</strong></td>
</tr>
<tr>
<td><strong>HIGH-RISK</strong></td>
</tr>
<tr>
<td>Side effects:</td>
</tr>
<tr>
<td>Shearing wound:</td>
</tr>
<tr>
<td>Maceration:</td>
</tr>
<tr>
<td>Skin tear:</td>
</tr>
</tbody>
</table>

### Joan Junkin

IADIT@mediapub.com
Impact of Moisture

- Urinary and fecal incontinence are common in the acute care setting, occurring in more than one-third of hospitalized adults.
- Humidity/Moisture:
  - Strain at which the skin breaks is 4x greater with excess moisture than dry skin
  - Moisture increases the risk of shear & friction damage


Pressure Ulcers – Risk Factors

“Patients with fecal incontinence were 22 times more likely to have pressure ulcers than patients without fecal incontinence.”

When impaired mobility is combined with fecal incontinence those odds rise to 37.5 times more likely.

Pressure Ulcers

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 more accurate than RN assessment alone
- Braden Scale for Predicting Pressure Sore Risk
  - 6 subscales
  - Rated 1-4
  - Pressure on tissues
  - Mobility, sensory perception
  - Tissue tolerance for pressure
  - Nutrition, moisture, shear/friction
  - Score 6-23

www.ihi.org; Macklebust JA (2009) The Braden Scale reliable assessment to effective interventions

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

Friction Score of 1=126 times the risk

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
Skin Failure Critically Ill Patient

- 18 month prospective descriptive study to describe ICU patients with skin failure and determine relationships to other factors
- 29 patients
  - 100% had 1 or more other organ failures
  - 90% albumin level <3.5 mg/dL
  - time from adm to skin failure 7.7 days
  - Other factors in 75% of patients:
    - Generalized edema, Ventilator use, > 50 yrs old, Weight > 150lbs, Creatinine >1.5 mg/dL, MAP <70mmHg, Use of sedatives/analgesics
- Correlations of paired variables
  - Sepsis & renal failure
  - Concurrent use of vasoactives

Defined as an event in which skin and underlying tissues die due to hypoperfusion concurrent with critical illness, is considered to be unavoidable.

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

The Routine

• Barriers:
  • Time to turn: 3.5-5min up to 17 minutes
  • People resources
  • Current equipment not user friendly

• Staff perceived barriers
  • 41/49 in-bed activities
    • Unstable VS (59%) & low respiratory and energy reserves (46%) most common reasons for restricting activity
    • 34% stated safety issues/falling or tube/catheter integrity
    • 27% reported sedation

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
  • 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
  • Progressive mobility program
  • 2 clinical trials currently underway to examine turning regimes on pressure ulcers & other outcomes in acute & ICU patients (2011)
Surface Selection
International Guidelines

- Use a higher specification foam mattress (Viso-elastic polymer foam) rather than standard hospital foam mattress for patients at risk (A)
- Use active support surface/overlay or mattress for patients at higher risk where frequent manual turning is not possible (B)
- Continue to turn and reposition regardless of the surface the patient is on (C)
- Unsere heels are free from the surface of the bed (C)
- Pillows are a short term therapy for elevation of heels (B)
- For patients not alert or cooperative use a heel device that distributes the weight along the calf (C)


Support Surfaces In Critically Ill Patients

- Comparison cohort study of 2 different support surfaces in critically ill patients
- 52 critically ill patients with anticipated 3 day LOS in a 12 bed cardiovascular unit in a University Hospital in the Mid-west were included until d/c from ICU
- 31 patients: low air-loss weight-based pressure redistribution-microclimate management bed
- 21 patients: integrated powered air redistribution bed
- Measured: positioning, skin assessment, heel elevation
- Results:
  - Mean LOS 7 days (on the surface equal amount of days)
  - LAL-MCM bed= zero pressure ulcers
  - IP-AR bed = 4/21 or 18% (p=0.046)

EBP Recommendations to Achieve Offloading & Reduce Pressure

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Successful Prevention 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

Heel Ulcer Reduction

EBP Recommendations to Reduce Shear & Friction

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

Silicone Dressing to Reduce Shear & Friction

- 303 bed hospital, level 2 trauma center, ICU unit
- 273 patients participated with a mean age of 65
- Baseline HAPU determined from previous 35 months
- Measures: the effect on HAPU with the application of a silicone-bordered foam dressing
- Prospectively evaluated for 6 months and sacral area examined x2 daily
- Educational intervention
- Results:
  - Pre-HAPU was 13.6%
  - Post-HAPU was 1.8%

Ebik N. JWOCN. 2012;39(2):143-145

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

- Clean the skin as soon as it becomes soiled.
- Use a protective cream or ointment on the skin to protect it from wetness.
  - Disposable barrier cloth prevents unprotected episodes
    (www.ihi.org 5 Million Lives Campaign)
- Use an incontinence pad and/or briefs to absorb/wick away wetness from the skin.
- Consideration of pouching device or a bowel management system
- Ensure an appropriate microclimate & breathability
- < 4 layers of linen

www.ihi.org
Current Practice: Moisture Management

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www.ihi.org
Evaluating the Efficacy of a Uniquely Delivered Skin Protectant and Its Effect on the Formation of Sacral/Buttock Pressure Ulcers

Methodology:

- Retrospective/prospective quasi-experimental study
- 57 bed LTC
- Data collected 3 months before use & 3 months following conversion
- Demographics comparable between groups
  - Age, LOS, mobility in bed, transfer between surfaces, incontinence of bowel/bladder, BMI, albumin and concurrent disease scale
- Pre-data revealed 12 residents with incontinence developed 15 sacral stage 1 & 2 ulcers.
- Monthly incidence rates over 9 months 4.7%

Clever K. OWM. 2002;48(12): 60-67

Clever et al. “Pressure Ulcer” Study

Evaluating the Efficacy of a Uniquely Delivered Skin Protectant and Its Effect on the Formation of Sacral/Buttock Pressure Ulcers

Average Monthly Incidence of Sacral/Buttock Pressure Ulcers

Old Standard of Care
July 2000 to March 2001

New Standard of Care
May to July 2001
Feb to April 2002

89% Reduction in Incidence

*No significant differences in impact variables between groups

Clever K. OWM. 2002;48(12): 60-67
What Lies Beneath the Patient

- Linen
  - Linen increases entrapment of moisture
  - Creates wrinkles
  - May increase risk of skin compromise
  - Limit linens on all beds
    - Especially on pressure redistribution beds and low air loss beds
  - Newer ICU beds are pressure redistribution surfaces
  - [www.npuap.org/npuap_s31_t d_position_statement_on_bed_surface_terminology](http://www.npuap.org/npuap_s31_t d_position_statement_on_bed_surface_terminology)


Traditional Bathing

Why are there so many bugs in here?

Spreading Microorganism
Environmental Contamination as a Source of Health Care Acquired Pathogens

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Survival</th>
<th>Data</th>
<th>Transmission Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. difficile</em></td>
<td>Months</td>
<td>3+</td>
<td>Healthcare facilities</td>
</tr>
<tr>
<td>MRSA</td>
<td>d-weeks</td>
<td>3+</td>
<td>Burn units</td>
</tr>
<tr>
<td>VRE</td>
<td>d-weeks</td>
<td>3+</td>
<td>Healthcare facilities</td>
</tr>
<tr>
<td>Acinetobacter</td>
<td>33 d</td>
<td>2/3+</td>
<td>ICUs</td>
</tr>
<tr>
<td><em>P. aeruginosa</em></td>
<td>7 h</td>
<td>1+</td>
<td>Wet environments</td>
</tr>
</tbody>
</table>


Bath Water: A Source of Health-Care Associated Microbiological Contamination

- Compared normal bath water with chlorhexidine bath water on 3 wards
- Without Chlorhexidine: All samples + for bacterial growth (14/23 > 10^5 cfu/ml)
- With Chlorhexidine: 5/32 grew bacteria with growth 240 to 1900 cfu/ml
- Gloved hands/bathing: objects touch grew significant numbers of bacteria

Bath Basins: Potential Source of Infection

- Multicenter sampling study (3 ICU's) of 92 bath basins
- Identify & quantify bacteria in patients basins
- Sampling done on basins used > 2x in patients hospitalized > 48 hours & performed 2 hours post bath
- Cultures sent to outside laboratory
- Qualitative vs. quantitative measures used to exclude growth that may have occurred in transport
- Bathing practices not controlled & no antiseptic soaps used to bathe


Results

- 98% of all cultures grew some form of bacteria after plating or enrichment

Enrichment Results

- 54% enterococci. 32% for gram -, 23% for \textit{S aureus} and 13% VRE (statistically significant)
- <10% growth rates for: MRSA 8%, \textit{P aeruginosa} 5%, \textit{C albicans} 3% & \textit{E coli} 2%

Large Multi-Center Basin Evaluation For Presence of MDRO’s

Methodology

• 88 hospitals from US & Canada
• From July 2007 to February 2011
• Randomly selected basins for damp swab culture
• External lab tested for MRSA & VRE & gram – bacilli
• All basins were clean & were not visibly soiled

Results:

• 1103 basins: 63.2% contaminated
• 385 basins (34.9%) from 80 hospitals were colonized with VRE
• 495 basins (44.9% ) from 86 hospitals had gram-negative bacilli
• 36 basins (3.3%) from 28 hospitals had MRSA


Waterborne Infections Study

• Hospital tap water is the most overlooked source for Health Care Acquired pathogens
• 29 evidenced-based studies present solid evidence of waterborne Health Care Acquired infections
• Transmission occurs via drinking, bathing, items rinsed with tap water and contaminated environmental surfaces

**Waterborne Infections Study**

- Conservative estimates suggest significant morbidity and mortality from waterborne pathogens
- Immunocompromised patients are at the greatest risk
- Recommendation I: Minimize patient exposure to hospital tap water via bottled water and pre-packaged, disposable bathing sponges


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**ICU & Hospital Water Samples**

- Systematic review published studies 1998-2005 (29 studies)
  - 9.7%-68.1% of random ICU water samples + for Pseudomonas aeruginosa
  - 14.2%-50% of patient infections were due to genotypes found in ICU water
- 9 hospital in New York city
  - Bacteria recovered in every hospital
  - 4-14 species identified
  - 1/3 organism known to be responsible for HAI’s

Bacteria Biofilm

- Organized communities of viable & non-viable microorganisms protected within a matrix of extracellular polysaccharides, nutrients & entrained particles
- Adhere to inert material (plumbing)
- Bacteria contain within Biofilm may be transmitted to at risk patients by direct contact with water used for ingestion, ice, washing


Bathing with CHG Basinless Cloths

- Prospective sequential group single arm clinical trial
- 1787 patients bathed
  - Period 1: soap & water
  - Period 2: CHG basinless cloth bath
  - Period 3: non-medicated basinless cloth bath

Veron MO et al. Archives Internal Med 2006;166:306-312
26 colonization's with VRE per 1000 patients days vs. 9 colonization's per 1000 patient days with CHG bath

Table 3. Percentage of Environmental Surface Culture Specimens That Were Positive for Vancomycin-Resistant Enterococci During the 3 Study Periods*

<table>
<thead>
<tr>
<th>Study Period</th>
<th>Soap and Water (n = 311)</th>
<th>Chlorhexidine (n = 307)†</th>
<th>Nonmedicated Cloth (n = 140)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Where Culture Specimen Was Obtained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>10 (3)</td>
<td>4 (1)</td>
<td>13 (9)</td>
</tr>
<tr>
<td>Bed rail</td>
<td>33 (11)</td>
<td>13 (4)</td>
<td>23 (16)</td>
</tr>
<tr>
<td>Pull sheet</td>
<td>63 (20)</td>
<td>17 (6)</td>
<td>43 (31)</td>
</tr>
</tbody>
</table>

Veron MO et al. Archives Internal Med 2006;166:306-312
Effect of CHG Cloth Bath of HAI’s in Trauma Patients

- Retrospective analysis 6 months before and after institution of CHG bathing
- 12 bed level 1 trauma center
  - 286 severely injured patients bathes 2% CHG cloth
  - 253 severely injured patients bathed without CHG cloth
- Results: CHG bathed patients less likely to acquire a CLA BSI (2.1-vs. 8.4), MRSA VAP 1.6 vs. 5.7 & rate of colonization was significantly lowers; 23.2 vs.69.4 per 1000 patient days


Reducing UTI’s Through Basinless Bathing

CA-UTI 7.5 per 1000 catheter days to 4.42 per 1000 catheter days, then to .46 per 1000 catheter days
Simple Cost Effective Strategies to Reduce HAI’s

Implementation:
• Utilize daily 2% CHG cloths for cleansing at night in any patient with a central line or foley catheter
• Focused on areas most prone to bacterial colonization from the neck down

CAUTI Rates in the ICU: Pre-Intervention and Post-Intervention

<table>
<thead>
<tr>
<th></th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTI Rate</td>
<td>3.88</td>
<td>0.28</td>
</tr>
<tr>
<td>91% decrease</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BSI Rates in the ICU: Pre-Intervention and Post-Intervention

<table>
<thead>
<tr>
<th></th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSI Rate</td>
<td>1.86</td>
<td>0</td>
</tr>
<tr>
<td>100% decrease</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was moved from the ICU to house wide post initial project with similar results in Med-Surg

Corcoran F. Presented at APIC 2009

REPOSITIONING THE PATIENT  CAREGIVER INJURY
## Number, Incidence Rate, & Median Days Away From Work for Occupational Injuries
### RN’s with Musculoskeletal Disorders in US, 2003 – 2009

<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>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>private industry</td>
<td>RNs</td>
<td>8,760</td>
<td>51.6</td>
<td>8</td>
</tr>
<tr>
<td>2010</td>
<td>Private industry</td>
<td>RNs</td>
<td>9,260</td>
<td>53.7</td>
<td>6</td>
</tr>
</tbody>
</table>

2008 private industry: RNs 8,120, Incidence Rate 48.4, Days Away From Work 6
Local government: RNs 960, Incidence Rate -, Days Away From Work 5
State government: RNs 540, Incidence Rate -, Days Away From Work 9

2007 private industry: RNs 8,580, Incidence Rate 53.4, Days Away From Work 6
2006 private industry: RNs 9,200, Incidence Rate 59.1, Days Away From Work 6
2005 private industry: RNs 9,060, Incidence Rate -, Days Away From Work 7
2004 private industry: RNs 8,810, Incidence Rate -, Days Away From Work 7
2003 private industry: RNs 10,050, Incidence Rate -, Days Away From Work 6

National Problem of Ergonomic Injury in Healthcare Services

COST FACTORS

- In 1990, the annual cost of back injury ranged from **$50 to $100 billion** in the US
- One low back injury: **$40,000**
- Indirect costs outweigh direct costs **5:1**
- **$20 billion** per year is spent annually on workers compensation costs associated with musculoskeletal disorders (MSDs)
- **$100 billion** per year is spent on indirect costs
- Injured nurses constitute about 1/4 of all claims and 1/3 of total compensation costs.

Source: US Department of Labor, Occupational Safety and Health Administration

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Cost of Negative Patient & Nurse Outcome

### Potential Pitfalls of Current Turning and Positioning Practices

<table>
<thead>
<tr>
<th>Potential Pitfalls of Current Turning and Positioning Practices</th>
<th>Average Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PU Development</strong></td>
<td></td>
</tr>
<tr>
<td>Treatment**</td>
<td>$10,288</td>
</tr>
<tr>
<td>Litigation**</td>
<td>$250,000</td>
</tr>
<tr>
<td><strong>Healthcare worker injury</strong></td>
<td></td>
</tr>
<tr>
<td>Lower Back**</td>
<td>$23,297</td>
</tr>
<tr>
<td>Upper Back**</td>
<td>$19,638</td>
</tr>
<tr>
<td>Arm/Shoulder**</td>
<td>$24,889</td>
</tr>
<tr>
<td>Wrist**</td>
<td>$13,399</td>
</tr>
</tbody>
</table>

Her Story: Elizabeth White, RN

- BYU School of Nursing
- SICU; 2003
- 374 lbs.
- Vent
- Slid down bed
- 27 years of practice
- Permanent back pain

THE ELEPHANT IN THE ROOM: HUGE RATES OF NURSING AND HEALTHCARE WORKER INJURY
By Elizabeth White, RN  2010  http://www.nhnurses.org/Homepage-Announcements/Alert.aspx Maryland Nurse, August-Oct, 2010 by Elizabeth White

CURRENT PRACTICE
Do We Even Achieve the Minimum Mobility Standard… “Q2 Hours in ICU’s”?

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: UK ICU’s

- 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

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

Decision Making Tress for Patients Who Are Hemodynamically Unstable
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

Achieving the Use of the Evidence For Mobility & Moisture

Vollman KM. Australian Crit Care, 2009;22(4): 152-154

Use of a Repositioning System in Postoperative Cardiovascular ICU Patients Results in a 63% Reduction in Facility-Acquired Sacral Pressure Ulcers

Linda Flockhart RN BSN Manager CVICU
Clare Fielding RN BSN CVICU

- Pre-intervention 90 days before trial FAPU
- 90 days during the trial FAPU
- Cost reduction after paying for the device

Presented at 17th Annual Wound Care Conference, Toronto, Can 11/3-6/2011
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>
</tr>
</thead>
<tbody>
<tr>
<td>Time on Product</td>
<td>7 days (1-29)</td>
<td>7 days (1-45)</td>
</tr>
<tr>
<td>Age</td>
<td>57.72 (SD 18.45) (18-86)</td>
<td>57.73 (SD 17.67) (23-92)</td>
</tr>
<tr>
<td>Gender</td>
<td>14 Female; 16 male</td>
<td>10 Female; 20 Male</td>
</tr>
<tr>
<td>Braden</td>
<td>12.77</td>
<td>13.23</td>
</tr>
<tr>
<td>Mobility</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>BMI</td>
<td>29.82</td>
<td>30.97</td>
</tr>
<tr>
<td>Bed development</td>
<td>6</td>
<td>73</td>
</tr>
<tr>
<td>Pulled up in bed</td>
<td>3.28</td>
<td>2.58</td>
</tr>
<tr>
<td>Number to turn</td>
<td>1.97</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Powers J, Presented at 27th Annual Symposium of Advances in Skin and Wound Care, Las Vegas, NV, 10/20-23, 2012

Impacting Outcomes: Decreasing Patient & Staff Injury

- 3 Select Medical System Hospital
- Intervention period over the course of a year
- Patients with anticipated > 5 days LOS, Braden subscales of moisture < 1 and mobility < 2 received the intervention
- Intervention: Turn & Position system
- Measured:
  - HAPU rates before & after
  - Staff injury before & after

Presented at ALTAAs 2012 National Clinical Conference, Dallas, TX, May 16-18, 2012
Any Work on Skin Should Be Incorporated into a Progressive Mobility Protocol

Outcomes of A Mobility Protocol/Program

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

<table>
<thead>
<tr>
<th>Level</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL I</strong></td>
<td>Tolerates Level II Activities</td>
</tr>
<tr>
<td><strong>LEVEL II</strong></td>
<td>Good upright sitting, increased strength and moves arm against gravity</td>
</tr>
<tr>
<td><strong>LEVEL III</strong></td>
<td>Goal: Increased trunk strength, moves legs against gravity and readiness to weight bear</td>
</tr>
<tr>
<td><strong>LEVEL IV</strong></td>
<td>Goal: Stands w/ minim assist, able to march in place, weight bear and transfer to chair</td>
</tr>
<tr>
<td><strong>LEVEL V</strong></td>
<td>Goal: Increase distance in ambulation &amp; ability to perform some ADLs</td>
</tr>
</tbody>
</table>

#### Mobility Level Criteria

- **RASS -5 to - 3**
- **RASS -3 & up**
- **RASS -1 & up**
- **RASS 0 & up**

#### Mobility Responsibilities

- Mobility is the responsibility of the RN, with the assistance from the RT, Unlicensed Assistive Personnel and PT/OT. PT and OT may assist the team with placement to the appropriate mobility level of activity, always prioritizing patient and provider safety. Placement is based on clinical judgment.

*Mobility is the responsibility of the RN, with the assistance from the RT, Unlicensed Assistive Personnel and PT/OT. PT and OT may assist the team with placement to the appropriate mobility level of activity, always prioritizing patient and provider safety. Placement is based on clinical judgment.*

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** WHEN WOULD NOW BE A GOOD TIME TO DO THIS? **

- **LEVEL I:** Tolerates Level II Activities
- **LEVEL II:** Good upright sitting, increased strength and moves arm against gravity
- **LEVEL III:** Goal: Increased trunk strength, moves legs against gravity and readiness to weight bear
- **LEVEL IV:** Goal: Stands w/ minim assist, able to march in place, weight bear and transfer to chair
- **LEVEL V:** Goal: Increase distance in ambulation & ability to perform some ADLs

---

**Perform Initial mobility screen w/ in 8 hours of ICU admission**

**Refer to the following criteria to assist in determining mobility level:**

- **O PAO2/FIO2 > 250**
- **O PaO2 < 100**
- **O RR 10-30**
- **O No new onset cardiac arrhythmias or ischemia**
- **O MAP >55 <140**
- **O SBP >60 <140**
- **O No new or increasing vasopressor infusions**
- **O RASS >3**

**Perform Initial mobility screen w/ in 8 hours of ICU admission**

**Reassess mobility level at least every 24 hours (Recommended at shift change)**

**START HERE**

**Goal:** upright sitting; increased strength and moves arm against gravity

**ACTIVITY:** Self or assisted Q 2 hr turning

- HOB 45º X 15 min.
- HOB 45º, Legs in dependent position X 15 min.
- Step (s) & fall chair mode
- X20 min. 3X/cd
- Full assist into cardiac chair 2X/day

**Goal:** Increased trunk strength, moves legs against gravity and readiness to weight bear

**ACTIVITY:** Self or assisted Q 2 hr turning

- HOB 45º X 15 min.
- HOB 45º, Legs in dependent position X 15 min.
- Step (s) & fall chair mode
- X20 min. 3X/cd
- Pivot to chair position 2X/cd

**Goal:** Stands w/ minim assist, able to march in place, weight bear and transfer to chair

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- X20 min. 3X/cd
- Pivot to chair position 2X/cd

---

**CLRT/Pronation**

- Initiated if patient meets criteria based on institutional practice

**Q 2 hr turning**

- Start at Level II and progress*
How Do We Make It Happen?

"Even if you are on the right track, you will get run over if you just sit there.

Will Rogers"
M2: Mobility and Moisture Protocol to Drive Care: Implementing Best Practices with Ease

- 1st step: Collection of baseline data
- 2nd step: Evaluating resources
- 3rd step: Education on products and processes
- 4th step: Sustaining change in practice
- 5th step: Evaluate outcomes

Implementing Best Practices with Ease

1st Step: Collection of baseline data
- Direct observation of current status on Q2hr turning
- Nosocomial pressure ulcer rates (NDNQI)
- Incontinence associated dermatitis rates (IAD Form)
- Staff musculoskeletal injuries (Employee Health)
- Cost-analysis of patient and staff injuries

Junkin J, Selej JL. J WOCN 2007;34(3):260-269
Implementing Best Practices with Ease

2nd Step: Evaluating resources to help staff achieve the right care, at the right time with the right pt

- Slide/Glide sheet that remains underneath the patient to reduce shear/friction & aid with turning
- Foam wedges to help sustain the turn & also check for sacral offloading
- Best surface underneath the patient based on risk
- Large enough wick away pad to remove moisture while creating an appropriate microclimate for the patient
- Appropriate layers of linen
- Tools inside the patients room (turn clock)
- Unit or hospital wide musical cues
- A protocol

Implementing Best Practices with Ease

3rd Step: Education on products and processes
- Education on the evidence based strategies
- Education on any new products and how they will be used
- Re-education when necessary to ensure appropriate use
- Use of reference cards
- Build into orientation

Implementing Best Practices with Ease

4th Step: Sustaining change in practice with frequent observation, encouragement and re-education as necessary
- Skin rounds/time frequency
- Hand-off communication
- Skin liaison/champion nurses
- Creative strategies to reinforce protocol use
  - Visual cues in the room or medical record
  - Rewards for increase compliance
- Yearly competencies on beds or positioning aids to ensure correct and maximum utilization
Implementing Best Practices with Ease

5th Step: Evaluate outcomes using comparison of data measurements pre and post implementation
- Direct observation measurement to ensure turning and repositioning is occurring
- Nosocomial pressure ulcer rates (NDNQI)
- Incontinence associated dermatitis rates (IAD Form)
- Staff musculoskeletal injuries (Employee Health)
- Cost-savings analysis of patient and staff injuries post change in practice (including any new product costs)

Notes on Hospitals: 1859

“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
For Our Patients & Ourselves
Advocacy Starts with Us

Be Courageous

We all are responsible for the safety of our patients & ourselves…Own the Issues

• “If not this, then what??”
• “If not now, then when?”
• “If not me, then who??”