It's Not Just About Pressure Anymore: Prevention of Hospital Acquired Skin Injury

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PATIENT SAFETY
Driving Forces for Change
• Scientific Driver
  – Evidence-based practice movement
• Economic & Social Drivers
  – IOM/Medical error
  – Leap Frog group
  – Institute for HealthCare Improvement/VHA
    • 100,000 lives campaign
    • 5,000,000 lives campaign
  – Joint Commission
  – CMS
• Professional Driver: Back to the basics
  Vollman KM, Crit Care Nurs Clin N Am, 2006; 18:453-467

New CMS Guidelines: If It's Not POA, We Won't Pay 10/08

Conditions No Longer Covered
  • Falls
  • Mediastinitis (after heart surgery)
  • Avoidable Pressure Ulcers
  • Vascular and Urinary Tract Infections from Catheters
  • “Never Events”
    – Objects left in body during surgery
    – Air embolisms
    – Blood incompatibility
    – SSI post some orthopedic procedures & Bariatric Surgery
    – Certain manifestations of poor blood sugar control
    – DVT/PE following total knee and hip replacements

Preventable Events: Pressure Ulcers
• Pressure ulcers (PUs) can be identified, measured, and reported
• Usually preventable (Long term care divides pressure ulcer reimbursement into avoidable & unavoidable)
• Significant body of scientific evidence is available to guide practice and prevent Pus
• CMS reported 257,412 cases of preventable pressure ulcers as secondary diagnosis
• October, 2008: Stage III and IV PUs acquired after admission will not be reimbursed
• Documented POA by a provider (a physician or any qualified practitioner legally accountable for establishing a patient’s diagnosis & must sign the comprehensive initial skin assessment

HealthGrades Report 2008
• Patient Safety Incidents for Medicare
  – Analysis of 41 million Medicare patients between 2004-2006
  – 5000 hospitals studied
  – 238,337 potential preventable deaths
  – 8.8 billion in preventable costs
  – 249 hospitals top safety performers (5%)
  – Failure to rescue improved by 11%
  – Bed-sores & post op respiratory complications
Bed sores, failure to rescue and post op respiratory failure accounted for 63.4% of all incidents.

HealthGrades April 2008
IHI 5 Million Lives Campaign

- Prevent Pressure Ulcers
- Reduce surgical complications
- Reduce MRSA infection
- Prevent harm from high-alert medications
- Deliver reliable evidence-based care for congestive heart failure

www.IHI.org

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

Fortifying Host Defense

Strengthening the Natural Barrier to Infection…the Skin Prevention of Injury

Fortifying the Host Defense

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

In God We Trust!

Everyone else please bring data
Factors Impacting the Components of Successful Long Lasting Change

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

NSO

Types of Hospital Acquired Skin Injury

- Injury caused by pressure
- Injury caused by moisture
- Injury caused by devices
- Injury caused during care activities

NPUAP & AHRQ

- National Pressure Ulcer Advisory Panel
  - www.npuaap.org
- Agency for Healthcare Research and Quality
  - www.ahrq.gov

New Definitions

- Suspected Deep Tissue Injury:
  - Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear.
  - The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

NPUAP 2007

New Definitions

- Stage I:
  - Intact skin with non-blanchable redness of a localized area usually over a bony prominence.
  - Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

NPUAP 2007
New Definition

• Stage II:
  – Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough.
  – May also present as an intact or open/ruptured serum-filled blister.
• Further description:
  – Presents as a shiny or dry shallow ulcer without slough or bruising.*
  – This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.

NPUAP 2007

Stage III (3) Pressure Ulcer

Full thickness skin loss involving damage or necrosis of subcutaneous tissue which may extend down to, but not through, underlying fascia. The ulcer presents clinically as a deep crater with or without undermining of adjacent tissue.

NPUAP 1989 Consensus Development Conference

New Definitions

• Unstageable:
  – Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.
• Further description:
  – Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as “the body’s natural (biological) cover” and should not be removed.

NPUAP 2007
Not Everything is a Pressure Ulcer

Searching for an Appropriate Name: Incontinence Associated Dermatitis

- Acknowledges that condition extends beyond perineal skin.
- Clearly identifies UI or FI as primary causative factor.
- Removes negative and unfair association with diapers.
- Broad enough to encompass secondary infections such as candidiasis.
- Usually well beyond boney prominence

What is 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
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Pressure Ulcer Prevalence & Incidence Rates in Acute Care

Prevalence Rate 15%
Incidence Rate 7%

Pressure ulcers develop within the first 2 weeks of hospitalization & within 72 hours of ICU admission*

Facts about Pressure Ulcers

- 2.5 million patients treated for pressure ulcers per year
- Associated with extended LOS
- 60,000 patients are estimated to die each year from complications related to a hospital-acquired pressure ulcer
- In the US, pressure ulcer rates have increased 63% from 1993 to 2003 while hospitalizations have only increased 11% (Lyder C & Ayello A. 2008. AHRQ).

Facts about Pressure Ulcers

- Cost per case where pressure ulcer listed as secondary diagnosis: $43,180.00
- 11 billion in preventable costs

Pressure Ulcers – Risk Factors

1. Immobility 87.0%
2. Fecal Incontinence 56.7%
3. Malnutrition 54.4%
4. Decreased Mental Status 50.7%
5. Peripheral Vascular Disease 28.1%
6. Urinary Incontinence 27.0%
7. Diabetes 23.7%

So Why Should You Care?

Patient Discomfort - Pain & Suffering

Extended stay
Labor Intensive
Huge Cost
11 Billion

Family
Other complications now possible!

Suspect Risk Factors for IAD

- Low serum albumin (40x higher risk)
- Chronic exposure to moisture
- Fecal and urinary incontinence
- Mobility subscale < 3
- Use of a containment device
- Alkaline pH
- Overgrowth or infection with pathogens
- Friction


Gray M. JWOCN 2004; 31(1 Suppl):S2-S.
Pilot Survey of Incontinence and Perineal Skin Injury Prevalence in Acute Care

- **608**
  - Total Number of Patients Surveyed
- **120/19.7%**
  - Number of Incontinent Patients
  - 20% IAD
  - 21.7% Pressure Ulcers
  - 10% Fungal Infection


Prevalence & Incidence Assessment for IAD

The things included in the measurement becomes relevant, the things omitted are out of sight out of mind

Peter F. Drucker

Getting Started: 5 Million Lives Campaign

2-Steps to Preventing Pressure Ulcers

- Identify patients at risk
- Reliably implement prevention strategies for all patients who are identified at risk
  - Maintain healthy skin
  - Minimize pressure
  - Manage moisture
  - Nutrition & hydration

Six Essential Elements of Pressure Ulcer Prevention

- Admission Assessment
- Reassess Daily
- Inspect Skin Daily
- Manage Moisture
- Optimize Nutrition and Hydration
- Minimize Pressure

http://www.ihi.org/IHI/Programs/Campaign/
Identify Patients at High Risk

Assessment of Risk

- Use of a standardized tool to assess risk on admission/once daily
- Use of multiple methods to visually cue staff as to which patients are at risk
  - Stickers of chart or outside patients’ door
  - Post days since last pressure ulcer data
  - Change documentation tools to ensure admission & daily risk assessment
  - Education of staff


Braden Validation Scales

<table>
<thead>
<tr>
<th>Area</th>
<th>Score</th>
<th>SENS</th>
<th>SPEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Med-Surg</td>
<td>16</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Step-down</td>
<td>16</td>
<td>100</td>
<td>64</td>
</tr>
<tr>
<td>ICU</td>
<td>16</td>
<td>83</td>
<td>64</td>
</tr>
</tbody>
</table>

Levels of Risk:
Mild 15-18, Moderate 13-14, High 10-12, Severe <9

Incidence of Pressure Ulcers in Neuro ICU

- 186 NICU patients
- Assessed within 12 hrs of admission with pictures/Braden and re-examine every 4 days or at d/c from unit
- Measured: risk factors, tested usefulness of the Braden as a predictor
- Results
  - 23/186 patients developed a pressure ulcer (12.4%)
  - Braden scale independent predictor of development
  - >16 Braden score no ulcer
  - Being under weight was a significant, distinct factor
  - Risk of a stage II ulcer significantly increases with a Braden score <13

Fife C, et al. CCM 2001;29:283-290

Fortifying Host Defense: Preventing Skin Injury

Skin Inspection: Bathing
Manage Moisture: Incontinence Care
Minimize Pressure

The Bath: The First Line Of Defense

Nurse!!!
What Happens During a Bath in Addition to Cleaning?
Assessments:
• Complete assessment of the skin
• Muscle tone & strength
• Range of motion
• Participation in ADL’s…physical & mental
• Pain assessment with activity
• Opportunity to communicate
• Opportunity to identify coping, feelings of powerlessness, depression, family support etc.
• Fatigue factor

Early Identification/Communication & Rapid Intervention
• Implemented a bathing process with a skin check communication tool
• Role of the non-license personnel & role of the RN
• Education & auditing

Early Identification/Communication & Rapid Intervention

Getting Started: 5 Million Lives Campaign
2-Steps to Preventing Pressure Ulcers
Identify patients at risk
• Reliably implement prevention strategies for all patients who are identified at risk
  – Maintain healthy skin
  – Minimize pressure
  – Manage moisture
  – Nutrition & hydration

Strategies from the 5 million Lives Campaign
• Maintain healthy skin
• Manage moisture
• Minimize pressure

The Bath: The First Line Of Defense
Nurse!!!
Optimal Hygiene

- Ph balanced (4.6-8.6)
  - Stable ph discourages colonization of bacteria & risk of infection
  - Bar soaps may harbor pathogenic bacteria
  - Skin ph requires 45 minutes to return to normal following a ordinary washing
- Excessive washing/use of soap compromises the water holding capacity of the skin
- Non-drying, lotion applied
- Multiple steps can lead to large process variation

<table>
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<tbody>
<tr>
<td>Voegel D. J WOCN, 2008;35(1):84-90</td>
</tr>
<tr>
<td>Hutm. Skin Disorders. St Louis: Mosby; 1994</td>
</tr>
</tbody>
</table>

Comparison of Basinless Bath to a Basin Bath

Methodology:
- 60 patient in a progressive & surgical unit in an acute care institution compared basin bath vs. comfort bath
- Served as their own control with the right side of the body bathed with basinless bath/ left side with a basin bath
- Required a partial or complete bath conducted over 3 consecutive days
- Measured: skin condition using SCDF, nurse satisfaction & patient satisfaction

Kron-Chalupa J et. al. Iowa City Veterans Medical Center

Comparison of Basinless Bath to a Basin Bath

<table>
<thead>
<tr>
<th>Questions</th>
<th>Basinless Bath</th>
<th>Basin Bath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall preference</td>
<td>97%</td>
<td>3%</td>
</tr>
<tr>
<td>Nurse satisfaction</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Time</td>
<td>10 minutes</td>
<td>21 minutes</td>
</tr>
<tr>
<td>SCDF (skin condition)</td>
<td>Significantly improved</td>
<td>Improved</td>
</tr>
</tbody>
</table>

Kron-Chalupa J et.al. Iowa City Veterans Medical Center

Impact of Wash Cloth/Soap Cleansing and Towel Drying on Skin

<table>
<thead>
<tr>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 15 healthy volunteers, 6 different W/D techniques</td>
</tr>
<tr>
<td>- 3 W/D techniques on each arm repeated twice with a 2hr rest period</td>
</tr>
<tr>
<td>- Measured: Transepidermal water loss (TEWL), skin hydration, skin pH and erythema</td>
</tr>
<tr>
<td>- Results:</td>
</tr>
<tr>
<td>- TEWL increased with each type of W/D episode, further loss with repeated procedures</td>
</tr>
<tr>
<td>- Increase skin pH with all W/D, esp with soap</td>
</tr>
</tbody>
</table>

Washing with soap & water and towel drying significantly disruptive effective on skin barrier function

Voegel D. J WOCN, 2008;35(1):84-90

Traditional vs. Disposable Bath in Critically Ill Patients

Methodology:
- 40 patients in Surgical, Medical and CT ICU received both baths on different days
- Compare basin bath vs. disposable
- Measure: time, quality of bath, microbial counts on skin (periumbilicus & groin, nurse satisfaction & costs

Larson E. et al. AJCC. 2004; 13(3):235-41
Traditional vs. Disposable Bath in Critically Ill Patients

Results:
- No difference in quality or microbial scores between the two bathing procedures
- Fewer products used*, lower costs, less time and higher nurse satisfaction with disposable bath*

\[ p < .001 \]

Larson E. et al. AJCC. 2004; 13(3):235-41

Traditional Bathing

Why are there so many bugs in here?

Spreading Microorganism

Guidelines for Hand Hygiene in Health Care Settings
- When hands visibly soiled, wash with either a non-antimicrobial or antimicrobial soap & water (Cat 1A)
- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands in all other clinical situations (Cat 1A)
- Decontaminate hands after removing gloves
- When washing with soap & water, wet hands first, apply soap, rub vigorously for 15 seconds, rinse and dry. Use towel to turn off faucet.
- Provide HCW with hand lotions & creams to minimize occurrence of irritant contact dermatitis
- Use multidimensional strategies to improve hand hygiene practice

CDC. Hand Hygiene Guidelines: MMWR 2002; 51(No. RR-16)[1-45]

SOURCE CONTROL

Reducing the Patients Risk of Infection

Reasons for Non-Compliance
- Lack of knowledge on importance and how the hands become contaminated
- Lack of understanding of correct technique
- Inconsistent following of practices to reduce load (fingernails < 2mm, absence of rings)
- Understaffing and overcrowding
- Poor access to hand gel & sinks
- Irritant contact dermatitis associated with frequent exposure
- Lack of institutional commitment to good hand hygiene


Bath Water: A Source of Health Care Acquired 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 S aureus and 13% VRE (statistically significant)
- <10% growth rates for: MRSA 8%, P aeruginosa 5%, C albicans 3% & E coli 2%


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


Bacterial Biofilm

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

Veron MD et al. Archives Internal Med 2006;166:306-312

Bathing with CHG Basinless Cloths
Multicenter Trail: Daily Bathing with CHG cloths

- Evaluated before and after implementation of daily bathing with CHG cloth
  - 32% decrease in new acquisition MRSA colonization \( (p < 0.05) \)
  - 30% decrease in new acquisition VRE \( (p < 0.01) \)
  - CA-BSI’s decreased by 21% \( (p < 0.05) \)

Climo MW, et al. SHEA 2007; Abs 297
Milstone AM et al. Clinical Infectious Disease, 2008;46:274-281

Strategies for Bathing to Reduce Source Control & Improve Skin Defense

- All ICU patients receive the CHG basinless bath
- All Patients in the ICU with a + swab for VRE, MRSA receive CHG basinless bath
- All ICU patients admitted from a high risk location* receive CHG basinless bath
- All other patients receive the non-medicated basinless bath unless admitted from a high risk location*
- All other patients receive the non-medicated basinless bath unless admitted from a high risk location*
- All other patients receive the non-medicated basinless bath

High Risk Location: LTC, Chronic dialysis, past hospitalization within 30 days

Strategies for Bathing to Reduce Source Control & Improve Skin Defense

Basin Bath

\[ \uparrow \text{transmission of organisms} \]
\[ \uparrow \text{time & effort} \]
\[ \uparrow \text{# of supplies} \]
Harmful soaps
Rough washcloths
Cold/tepid water
Scrubbing technique

Six Essential Elements of Pressure Ulcer Prevention

1. Admission Assessment
2. Reassess Daily
3. Inspect Skin Daily
4. Minimize Pressure
5. Manage Moisture
6. Optimize Nutrition and Hydration
Anatomic Locations of Pressure Ulcers

1. Sacrum 36.9%
2. Heel 30.3%
3. Ischium (sit bone) 8.0%
4. Elbow 6.9%
5. Malleolus (ankle bone) 6.1%
6. Trochanter (hip bone) 5.1%
7. Knee 3.0%
8. Scapula (shoulder blade) 2.4%
9. Occiput (back of head) 1.3%

Minimize Pressure

- Turn & reposition every 2 hours (avoid positioning patients on a pressure ulcer)
  - Pillows and cushioning devices to maintain alignment & prevent pressure on boney prominences
  - Use lifting device or draw shifts to move patients to prevent shear (loose covers & increased immersion in the support medium increase contact area)
  - Use pressure-relieving surfaces (in all areas)
- Changes to sustain the gain
  - Tools inside the patients room (turn clock)
  - Unit or hospital wide musical cues
  - Use products that makes it easier to prevent pressure

Combination of Turning and Pressure Reduction Devices on Incidence of Pressure Ulcer

Methodology

- 838 geriatric nursing home patients/4 week duration, Braden score < 17/Norton < 12
- Alternating semi-fowlers (HOB 30°) with lateral 30°
- 4 different turning schemes
  - 2 hrs on a standard institutional mattress (n=65)
  - 3 hrs on a standard institutional mattress (n=65)
  - 4 hrs on a viscoelastic foam mattress (n=65)
  - 6 hrs on a viscoelastic foam mattress (n=65)
- Standard preventive care (n=576)
- Out of bed sitting time was not standardized (prevention surface was standardized & patients stood q 1hr)
- Measured the incidence

Results

<table>
<thead>
<tr>
<th>Injury</th>
<th>Q 2hr</th>
<th>Q 3hr</th>
<th>Q 4hrs*</th>
<th>Q 6hrs</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-blanchable Erythema</td>
<td>47.6%</td>
<td>44.8%</td>
<td>46%</td>
<td>46%</td>
<td>43%</td>
</tr>
<tr>
<td>Grade II or higher</td>
<td>14.3%</td>
<td>24.1%</td>
<td>3%**</td>
<td>15.9%</td>
<td>20%</td>
</tr>
</tbody>
</table>

* Significantly greater time to pressure ulcer lesion (p=0.0001)
** Significantly less pressure ulcer lesions (odds ratio 0.12 (95% CI = 0.03-0.48)

Get Them Moving!!!!

- Combating deconditioning through progressive positioning when CLRT treatment is completed:
  - HOB elevated 45 degrees
  - HOB elevated 45 degrees and legs placed in a dependent position (partial chair position)
  - HOB elevated to 90 degrees, legs in dependant position, feet on the floor (full chair position)
  - HOB elevated to 90 degrees, legs in dependant position, feet on the floor and stand
  - HOB elevated to 90 degrees, legs in dependant position, feet on the floor, stand and walk a few feet and sit in a chair
Making Early Ambulation a Priority:
Impacting Outcomes

- Pre-post cohort study of respiratory failure patients at LDS
- Respiratory failure requiring > 4 days of mechanical ventilation who were transferred from other LDS units
- Prospective application of an early activity protocol to 104 patients
- Protocol: 3 criteria for activity initiation, neurologic (followed commands & cooperative), respiratory (FiO2 < 60% & PEEP < 10cm & circulatory (no drips or symptomatic orthostasis

Thomsen GE, et al. CCM 2008;36;1119-1124

Making Early Ambulation a Priority:
Impacting Outcomes

- Results
  - Transferring patient to the unit with an early mobility protocol significantly increased the probability of ambulation (p < .0001)
  - After 2 days in the RICU, 3 fold increase in the number of patients ambulating compared to pre-transfer rates
  - Female gender, absence of sedatives and a lower APACHE predictive of probability to ambulate (p = .017)

Thomsen GE, et al. CCM 2008;36;1119-1124

Getting Them Moving
Makes a Difference

Human & Technological Resources

- Personnel
- Aging personnel
- Use of Lift teams
- Fear
- Lines and tubes
- Patient size

Morris PE Crit Care Clin, 2007;23:1-20

Can We Safely Mobilize Intubated Patients?

Hill-Rom Patient Turning Survey

AACN/NTI Survey 2001

Why it doesn’t always get done

<table>
<thead>
<tr>
<th>Staff Concerns</th>
<th>CC Replies</th>
<th>M/S Replies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited staff available</td>
<td>85.5%</td>
<td>83.7%</td>
</tr>
<tr>
<td>Patient to difficult to move</td>
<td>75.0%</td>
<td>71.6%</td>
</tr>
<tr>
<td>Patient too painful to move</td>
<td>62.0%</td>
<td>41.3%</td>
</tr>
<tr>
<td>Risk of staff injury</td>
<td>53.1 %</td>
<td>58.7%</td>
</tr>
<tr>
<td>Staff not capable of moving pt.</td>
<td>27.0 %</td>
<td>31.5%</td>
</tr>
<tr>
<td>Risk of patient injury</td>
<td>26.3 %</td>
<td>27.2%</td>
</tr>
<tr>
<td>Too time consuming</td>
<td>21.6 %</td>
<td>28.3%</td>
</tr>
</tbody>
</table>

2001 NTI Survey on Patient Positioning = 916 Critical Care Nurses responded

Early Activity is Safe & Feasible in ARF Patients

Methodology

- Prospective cohort study
- 103 patients/1449 activity events
- Mechanically ventilated patients for > 4 days
- Airway: Tracheotomy & endotracheal tube
- Measured recorded activity events & adverse events
- Activity events included:
  - Sit on bed, Sit in chair, Ambulate
- Adverse events defined as:
  - Fall to knees, tube removal, SBP > 200 mmHg, SBP < 90 mmHg, O2 desaturation < 80% & extubation

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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

Price P. CACCN, 2006, 17(1):12

Patients at Risk for Intolerance to Positioning
- Elderly
- Diabetes with neuropathy
- Prolonged bedrest
- Low Hb an cardiovascular reserve
- Prolonged gravitational equilibrium


2009 - Progressive Patient Positioning
- Old way
  - Admission, bed, immobilized, supine, complications
- New way
  - Lateral rotation
  - HOB elevation
  - Full-chair position
  - Bed egress/weight bearing
  - Bedside chair
  - Ambulation
  - Enhanced recovery

Keeping Heels Intact: Evaluation of a Protocol for Preventing Facility-Acquired Heel Ulcers

- 53 patients on intervention unit that used the prevent-pressure relieving product did not develop heel ulcers
- Product trial demonstrated higher scores in comfort, temperature, comparability with DVT prevention devices, no sharp or rough edges and total flotation of the heel achieved
- Zero heel ulcers for 3 month pilot


Heel Ulcer Reduction

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

<table>
<thead>
<tr>
<th>Study Inclusion Criteria</th>
<th>Results</th>
</tr>
</thead>
</table>
| 53 sedated patients over a 7 month period | 100% prevention of heel ulcers
| Sedated patient > 5 days | Plantar Contracture 5 patients improved
| May or may not be intubated | 100% prevention of Plantar Contracture
| Braden equal to or less than 16 | 11 | 35 |
| Procedure | 2005 | 2006 | 2007 | 2008 | 2009 |
| Skin assessment and Braden completed on admission | 100% | 100% |
| All pts who met criteria were measured for ROM of the ankle with goniometer, then every other day until pt did not meet criteria | 2005 | 2006 | 2007 | 2008 | 2009 |
| Heel appearance, Braden and Ramsey scores were assessed every other day and documented | 100% | 100% |
| Identified and trained ICU nurses completed the assessments | Meyers T, et al. 2007 Poster WOCN

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4. Decreased Mental Status 50.7%
5. Peripheral Vascular Disease 28.1%
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7. Diabetes 23.7%


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 Ulcer Prevention Guidelines for Incontinence Care

- Clean your skin as soon as it becomes soiled.
- Use a protective cream or ointment on the skin to protect it from wetness.
- Use an incontinence pad and/or briefs to absorb wetness away from the skin.

NPUAP (National Pressure Ulcer Advisory Panel) 1992
AHQR (Agency for Health Care Research and Quality) – formerly AHCPR – 1992
NIH (National Institutes of Health) Standards of Practice 2001
WOCN (Wound, Ostomy, Continence Nurses Society) 2003

Challenges of Incontinence Care

- Individually packaged products are not always within reach during incontinence clean up
- Risk of unprotected skin is high
- Cleaning and protection usually done as separate activities
- Washcloths often become disposable when soiled
- Increased risk for contamination
- Not all products have a chemical barrier

Process Variation

Your incontinence care products don’t work either - if they aren’t being used!

32 State Survey on Perineal Skin Care Protocols

Methodology:
- 76 protocols form Acute and LTC facilities
- Analyzed to determine correlation with evidence-based practices per the literature
- HPIS (Healthcare Products Information Services) data used to evaluated amount sold to each facility
- HPIS data compared to urinary & fecal incontinence prevalence data

Results:
- All 76 protocols lack 1 or more interventions considered important in perineal care
- 75% included use of skin protectants
- Analysis against HPIS data and incontinence data suggests under utilization of skin protectants (< 10 cents per day vs. $1.35)

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%

*No significant differences in impact variables between groups

**Methodology:**
- Adult patients admitted to the ICU without skin breakdown were included
- Sample size of 100 for each of the 2 study arms
- Measured how often appropriate prevention measures for IAD are used
- Measured rate of skin breakdown in patients with fecal incontinence who were managed with interventional protocol
- 1st phase examine current practice: skin cleanser and separate barrier and frequency of use
- 2nd phase introduced an all in one incontinence management system

**Fecal Containment Device**
- Bard® FCD™
  - Provides a method for managing fecal incontinence.
  - Remains securely attached to ambulatory patients
  - Kit contains collection bag, closure clip, drainage bag adapter, powder adhesive and adhesive remover
  - Fecal management system
  - Use not indicated for solid or semi formed stool
  - Small amount of leakage may occur, recommend to use skin barrier
  - Can irrigate if blockage present
  - Not intended for use beyond 29 days

**Linking Risk Assessment to Prevention Strategies**

**Methodology:**
- 112 medical/surgical ICU patients from 3 hospitals (urban, acute and community)
- Assessed Braden score, development of ulcers and number of prevention strategies
- Measured relationship of Braden score to actual development of skin breakdown, Braden score to prevention strategies chosen and Braden score & prevention strategies to actual skin breakdown

Driver D. Critical Care Nurse, 2007;27(4):42-46

Driver D. Critical Care Nurse, 2007;27(4):42-46

www.convatec.com accessed 08/1107

**Linking Risk Assessment to Prevention Strategies cont’d**

Results:

- 9 patients experienced skin breakdown
- No relation to any demographics
- Not related to total Braden score or any of the 5 subscales (3 no risk/4 low risk/2 moderate risk)
- Mobility predictive of risk for breakdown
- No relationship between risk of breakdown & choice of product
- Numbers of layers of material between patient and mattress found to be significant (4-6 layers)


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**Successful Programs**

**“Save Our Skin: Initiative Cuts Pressure Ulcer Incidence In Half”**

- OSF St Francis – 710 beds, Level 1 Trauma, Magnet, 25,000 admits.
- SOS Program; OR Skin Assessment; new skin prevention protocol including a 1-step cleanser barrier cloths (Shield Barrier Cloth)


**Save Our Skin: Six Sigma Project**

![Graph showing hospital-acquired pressure ulcers (incidence)](image)


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**New Jersey Hospital Association Collaborative: No Ulcers©**

- Nutrition and fluid status
- Observation of skin
- Up and walking or turn & position
- Lift, don’t drag skin
- Clean skin & continence care
- Elevate heels
- Risk assessment
- Support surfaces for pressure redistribution

Post 20 months: 70% reduction in pressure ulcer incidence

Ayello EA, Lyder CH. Nursing 2007: October

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**SKIN: Ascension Hospitals**

- S = Surface selection
- K = Keep Turning
- I = Incontinence management
- N = Nutrition

**Post SKIN Bundle Implementation:**

1.4 per 1000 patient days system wide. 6 of the facilities had no acquired pressure ulcers for over 1 year. No new Stage III & IV acquired btwn 08/04 & 02/06

Ayello EA, Lyder CH. Nursing 2007: October
How to Get Started in Your Unit!!!!

Tips To Get Started
• Perform an initial assessment of the current state of the union on care practices within your environment that impact skin injury (pressure ulcers and IAD)
• Build the valuing of changing of those care practices through sharing of the scientific literature with your peers
• Select a product line that allows the nurse to "do the right thing in an efficient manner"

Tips To Get Started
• Develop processes that enhance efficiency and communication to help move evidence into practice.
• Implement Intervventional Patient Hygiene
• Measure the results (use standardized definitions to capture & compile data)
• Compare against the benchmarks
• Celebrate & reward your success and growth as a team
• Check on a quarterly basis continued compliance with the new program

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."

For Further Clinical Information
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