M² : Mobility and Moisture Strategies that Drive Nurse & Patient Safety Outcomes

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Disclosures

- Sage Products Speaker
  Bureau & Consultant
- Hill-Rom consultant
- E.L. Lilly
- Eloquest Healthcare

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
- 3x longer LOS
- 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


Pressure Ulcers

Pressure Ulcer
- 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 and/or friction.
- Moisture increases the friction coefficient

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

Adapted from Barb Bates-Jensen
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
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Brown DS & Sears M. OWM 1995;39:2-26

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

- SACRAL
- Pressure Ulcers
- Friction
- MOISTURE
- Shear
- Pressure
- Heel Pressure Ulcer
- Shear

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


Reduce The Effect of Pressure

- If we accept the theory & data that the cause of pressure ulcers is related to mechanical force (pressure-shear & friction) on the skin and underlying tissues
- Then interventions to reduce or remove those forces such as repositioning should be effective
- So, on its structure, there is validity in repositioning patients
Reduce The Effect of Pressure

- Scheduled Repositioning
  - Interpreted as turning Q2 hours
- Pressure reduction surface use
- Avoid excess time in bed with mobilization and activity

Turn & Reposition: It’s in the Guidelines

NPUAP-EPUAP: 1A recommendation
AHRQ: Prevention Recommendations
AACN: Practice Guidelines
WOCN-Tissue Viability: Prevention Interventions
OSHA: Guidelines

What is the History of Q2hr Turning?

- 1873 Paget, Clinical Lecture on Bed Sores, The Student’s Journal and Hospital Gazette.
  - “The chief thing is a frequent change of posture.”
- 1899 Galloway, regular turning essential
- WWI handbook for home health care,
  - “If the patient is at all in a condition to be moved, he should be turned to his side and allowed to remain in that position for a few hours.” 2 hours worked with incontinence care schedule
- 1940-1945 Munro Deduces;
  - 2 hrs adequate for preventing ulcers in SCI
- 1945 Guttmann Stoke Mandeville Spinal Centre introduces;
  - Lifting and Turning Team for log rolling, 2 hours to complete?
- 1959 & 1961 Kosiak
  - Evaluates tissue interface pressures on healthy adults, often credited with recommending Q2 hr turning but not a direct conclusion from his data
  - 60mmHg pressure over one hour caused damage
- 1961 Exton-Smith & Sherwin demonstrate;
  - that persons with more frequent spontaneous body movements during the night had fewer pressure ulcers

Adapted from Barbara Bates-Jensen

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 & sustain the turn
  - Assess whether actual offloading has occurred

- 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)
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


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

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

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Common Belief | Truth Based on the Literature
--- | ---
Body mechanics training is effective in preventing job-related injuries. | Thirty-five years of research show that training alone is not effective.
Thick belts are effective in reducing the risks to caregivers. | There is no evidence that these belts are effective.
Nurses who are physically fit are less likely to be injured. | The literature doesn’t support this.
Mechanical lifts are not affordable. | The long-term benefits of proper equipment far outweigh the costs related to work-related injuries.
Staff will not use equipment for safe patient handling and movement. | Staff will use the equipment when they use the equipment when they are included in the decision-making process for purchasing new equipment.

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

Cost of Negative Patient & Nurse Outcome

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<th>Potential Pitfalls of Current Turning and Positioning Practices</th>
<th>Average Cost</th>
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Zeek, D & Malandrino R.  
Case Study: Northwest Community Hospital, 2010

Her Story: Elizabeth White, RN

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

Zeek, D & Malandrino R.  
Case Study: Northwest Community Hospital, 2010

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


Challenges to Achieving Evidence Based Care

Mobility (Repositioning q2hrs, Shear & Friction)  
Moisture Management

Let’s Gather the Data to Solve the Problem

Question 1

My unit’s turn & reposition protocol is:
1. Q1
2. Q2
3. Q4
4. PRN
5. Other

Question 2

Given today’s current workload and patient complexity, how would you rate the difficulty in achieving your unit’s turn & repositioning protocol?
1. Very Difficult
2. Difficult
3. Not Difficult
Question 3
Does your facility currently have any performance improvement initiatives for patient turning and positioning focused on reducing skin injury?
1. Yes
2. No
3. Not Sure

Question 4
On average, how long does it take to reposition a patient with your current practice?
1. 2 minutes
2. 5 minutes
3. 8 minutes
4. 10 minutes
5. 10+ minutes

Question 5
What are your currently using to turn & reposition patients?
1. Lift Systems (removed after use)
2. Lift System (able to stay underneath the patient)
3. Glide Sheet (removed after use)
4. Draw sheets
5. Turn & Assist Mechanism (part of the bed)
6. Other ________________

Question 6
What are your currently using to sustain a lateral position once the patient is turned?
1. Pillows
2. Foam wedges
3. Blankets
4. Other

Question 7
How often does a patient move “out of position” following a turn?
1. Very Often
2. Rarely
3. Not Sure

Question 8
Have you ever suffered from an injury as a result of repositioning or turning a patient?
1. Yes
2. No
Current Practice

Risk Assessment on Admission, Daily, Change in Patient Condition

- Use standard EBP risk assessment tool
- Research has shown Risk Assessment Tools are more accurate than RN assessment alone
- Braden Scale (6 subscales)
  - Rated 1-4
  - Pressure on tissue
  - Mobility, sensory perception, activity
  - 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

Current Practice: Turn & Reposition

- Transfer Device
- Specialty Bed
- Disposable Slide Sheets
- Draw Sheet/Pillows/Layers of Linen
- Lift Device

The Routine

- Barriers:
  - Time to turn: 3.5-5 min 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
  - Repositioning necessary to reduce the duration & magnitude of pressure on vulnerable areas
  - Cushioning devices maintain alignment/30° side-lying & prevent pressure on boney prominences
  - Use lifting device or other aids to reposition & make it easy to achieve & sustain the turn
  - Assess whether actual offloading has occurred


National Pressure Ulcer Adviser Panel and European Pressure Ulcer Advisory Panel

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 2-hour body position change
  - 80-90% believed a 2-hour position change should occur but only 57% believed it happened in their ICU

Krishnasegaran 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

Goldthorpe 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

EBP Recommendations to Reduce Shear/Friction & Staff Injury

Use Lifting/Transfer Devices & Other Aids to Reduce Shear & Friction.....the Reality

Mechanical Lifts ≠ Lift sheet has to be removed and replaced for each use

Disposable/Reusable Glide/Transfer Sheets ≠ Sheet has to be removed and replaced for each use.

2-4 Individuals to assist with draw sheet to lift/turn ≠ Resource challenges & risk of caregiver injury

Turn & Assist Bed Mechanism ≠ Currently not used to its potential


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

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)

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

M² = Mobility & Moisture Protocol

Purpose:
The purpose of the Turn and Position System with Microclimate Body Pad is to help the caregiver achieve the goal of:
- Offloading pressure (turning) q2 hrs or more frequently to reduce the risk of pressure ulcers
- Maintaining a lateral position
- Controlling the microclimate to eliminate the risk of moisture related skin injury.
- Reducing shear & friction by repositioning with a glide sheet that is able to stay under the patient (breathable)
- Eliminates lift movements by the caregiver

M² = Mobility & Moisture Protocol

Indications for use:
1. Patient requires assistance in turning q2 hrs or more frequently and/or Braden’s mobility score of 3
2. Mobility protocol in use
3. Incontinence of urine or stool or a Braden’s mobility score of 2 or less
4. BMI>30, weight up to 350lbs, unequally distributed adipose tissue making positioning difficult
5. High risk patients; likely to be ventilated >24 hrs. History of a previous pressure ulcer, evidence of significant fluid albumin
6. Intractable pain with movement

Contraindications:
1. Unstable spine

Achieving the Use of the Evidence For Mobility & Moisture

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

Value

Attitude

Accountability

Resource & System
- Breathable glide sheet/stays
- Foam Wedges
- Microclimate control
- Reduce layers of linen
- Wick away moisture body pad
STORIES FROM THE FRONT LINE

Does the Protocol Work?

M2: Mobility and Moisture Protocol to Drive Care: 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

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 off-loading
- Large enough wick away pad to remove moisture while creating an appropriate microclimate for the patient
- Tools inside the patients room (turn clock)
- Unit or hospital wide musical cues
- A protocol

3rd Step: Education on products and processes
- Education on the evidence based strategies
- Process built for documentation of new protocol
- 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

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: Implementation of the M2 protocol
- 5th step: Sustaining change in practice
- 6th step: Evaluate outcomes

In God We Trust!


Everyone else please bring data


National Pressure Ulcer Advisory Panel and European Pressure Ulcer Advisory Panel
M2: Mobility and Moisture Protocol to Drive Care: Implementing Best Practices with Ease

4th Step: Implementation of the M2 protocol
• Integrate into any existing progressive mobility protocol
• Rounding to ensure appropriate utilization
• Select focused patients for protocol (3 types)

Indications for use:
1. Patient requires assistance in turning q2 hrs or more frequently and/or Braden’s mobility score of 1
2. Mobility protocol in use
3. Incontinence of urine or stool or a Braden’s moisture score of 2 or less
4. BMI>30, weight up to 350lbs, unequally distributed adipose tissue making positioning difficult
5. High risk patients; likely to be ventilated >24 hrs, History of a previous pressure ulcer, evidence of significant third spacing or low albumin
6. Intractable pain with movement

5th 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

6th 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

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??”