Challenging the Sacred Cows: The Evidence Behind Common Nursing Practices

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Selected topics from previous NTI presentations:
2009, 2010, and 2011

- NTI Cows I '07 Critical Care Nurse (2008) 28(2), pg 98–118
- NTI Cows II '08 Critical Care Nurse (2009) 29(2), pg 46–60
- NTI Cows III and IV '09 &10 Critical Care Nurse (2011) 31(2), pg 38–62
- NTI Cows V '11 (in press) Critical Care Nurse

EBP Sacred Cows

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Special Thank you....
Case Study

- You are new to the hospital and new to the team. You observe a peer chart "UTA" when completing a pain assessment on a non-verbal patient.
- You ask your preceptor "What is the practice policy for pain assessment on non-verbal patients?"
- The preceptor states: "You can’t really assess a non-verbal patient, so we chart UTA and treat based on vital signs or when we think the patient is in pain."

What is your practice based on?
Best Evidence?
Or Tradition?

Pain Assessment in Critically Ill Adults
The Gold Standard

- The **Gold Standard** of pain assessment is self-report of pain
- Not all patients are able to self-report
- Patient behaviors are often the only way to identify whether or not a patient is experiencing pain


What can cause pain in the critical care patient?

**Obvious**
- Existing medical condition
- Traumatic injuries
- Intubation and suctioning
- Invasive procedures
- Blood draws
- Wound care

**Not as Obvious**
- Turning and positioning
- Immobility
- Hidden infection
- Early decubiti
- Constipation

Potential Indicators of Pain

- Increased HR, BP, RR (*less reliable*)
- Agitation, Restlessness, Irritability, Changes in Activity
- Results from Thunder Project II
  - Common non-verbal behaviors exhibited by patients with procedural pain
    - Grimace, rigidity, wincing, moaning, clenched fists, eyes closed
  - Patients with procedural pain vs. without procedural pain
    - 2.8X more likely to show facial response
    - 4.1X more likely to have increased body movements
    - 10.3X more likely to have increased verbal responses

Puntillo, et al. (2004). Pain behaviors observed during six common procedures: Results from Thunder Project II, Crit Care Med, 32 (2)
Assumptions to Avoid When Assessing for Pain

- Physiologic indicators (BP, HR, RR, etc.) do not definitively indicate that pain is present, and might be an indication of another source of distress.
- The absence of increased vital signs does not mean that the patient is not experiencing pain.
- A sleeping and/or sedated patient does not have pain.
- The calm patient is not experiencing pain.
- Cultural differences.

Cade, 2004; Herr, et al., 2006

Pain Assessment Cognitively Intact

- Common Scales in use:
  - Numeric Rating Scale
  - Visual Analog Scale
  - Verbal Descriptor
  - “Pain Thermometer”
  - Faces Scale
  - Activity Interference
- Scale ranges differ

Pain Assessment Cognitively Intact But Intubated

- Research has found that cognitively intact, intubated patients can report pain through nodding, hand gestures, pointing at faces/numbers.
- Most patients wait for RN to ask about pain.
- Most report being under-medicated when they report pain.
- Many report pain with ‘basic cares’.
  - Turning
  - Breathing/coughing

Gelinas, ICCN, 2007; Puntillo, 2004
Behavioral Pain Assessment Tools

- Behavioral Pain Scale (BPS)
- Critical-Care Pain Observation Tool (CPOT)
- Non-Verbal Pain Scale (NVPS)
- Pain Assessment and Intervention Notation Algorithm (PAIN)
- Pain Behavior Assessment Tool
- FLACC in Adults
  - Reliability and validity with elderly, dementia not established


Behavioral and Observational Scales

- Do not evaluate intensity of pain
- Facial expressions, restlessness, activity are indicators of pain in non-verbal patients
- Highly variable among people
- Pt’s “Pain Signature”
- Most helpful if pt can be assessed in each category of behavior scale
- Heavily sedated pts will have low observational ratings despite pain

Pasero, C. J PeriAnes Nsg, 2009

Behavioral Pain Scale

- Behavioral observations only – no physiologic parameters
- Score range 3–12

Table 1. Behavioral pain scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial expression</td>
<td>Relaxed</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Partially tightened (e.g., brow lowering)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fully tightened (e.g., eyelid closure)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grimacing</td>
<td>4</td>
</tr>
<tr>
<td>Upper body</td>
<td>No movement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Partially bent</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fully bent with hunched shoulders</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grimacing</td>
<td>4</td>
</tr>
<tr>
<td>Compliance with ventilation</td>
<td>Tolerating movement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Gasping but tolerating ventilation for most of the time</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fighting ventilation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>H tends to control ventilation</td>
<td>4</td>
</tr>
</tbody>
</table>

Payen, et al. CCM, 2001
Acceptable reliability & validity, criterion validity, discriminant validity; Mod to high inter-rater reliability

Score range 0–8; on/off vent

Nonverbal Pain Scale (Revised)

Score range 0–10

1. Self Report should be attempted
2. Search for potential causes of pain
3. Observe patient behaviors
4. Surrogate reporting of pain and behavior changes
5. Attempt an analgesic trial
Re-Assessment

What is Most Important??
Continued Re-Assessment of Pain

Avoid the common assumptions of pain assessment
Assess each patient to determine what communication and pain assessment method is best for the patient (verbal, non-verbal)
Consistency in the method of pain and sedation assessment among caregivers is essential
Utilize evidence-based pain and sedation tools that have been shown to be reliable and valid in the critical care population
Engage the family in pain and sedation assessment
Assess and re-assess effectiveness of interventions

Implications for Practice

Evidence-Based Management of Fecal Incontinence
What do we know about moisture related skin breakdown?

- Excessive moisture causes skin breakdown

Moisture Associated Skin Damage (MASD)
- MASD is caused by prolonged exposure to various sources of moisture, including urine or stool, perspiration, wound exudate, mucus, saliva, and their contents.
- MASD is characterized by inflammation of the skin, occurring with or without erosion or secondary cutaneous injury


What Do We Know About Fecal Incontinence?

- Evolving body of science to guide practice
- Excessive Moisture Doubles the Risk for Pressure Ulcers
- Impaired Mobility & Incontinence = Greatest Risk
- Critically ill patients are at high risk of incontinence and skin breakdown because of severity of illness and treatments (e.g. antibiotics, new medications, tube feeding)
- Fecal incontinence more harmful than urinary incontinence


Incontinence-Associated Dermatitis

- Skin Exposure to Irritants (Urine, Feces)
- Inflammatory Response Initiated
- ↑ Skin Transepidermal Water Loss (TEWL) → ↓ Loss of Moisture Barrier Properties of Skin
- Ammonia (Urine), enzymes (Stool) alter skin protection
- ↑ Skin pH → ↓ Protection
- ↑ Risk PU, Infection, Pain

IAD that progressed to HAPU

Severe IAD: red, wet denuded (erosions)
Pressure ulcer stage II on coccyx with buttock IAD, denuded (erosions)

Perineal Assessment Tool

- Developed by Brown 1993
- Content Validity
- Little Research in Acute Care Settings
- Current Practice: NPUAP Staging of Pressure Ulcers
  - Concerns: Not Accurate Description
  - Suggested Practice: Describe Assessment & Cause of Breakdown...IAD


UCH EBP Guidelines 9_2010
### Best Practice Begins With Assessment of Pt Risk

Conduct Pressure Ulcer Risk Assessment With Valid Tool (i.e. Braden, Norton)

<table>
<thead>
<tr>
<th>Risk Factors for Critically Ill Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergent Admission</td>
</tr>
<tr>
<td>Repeated Surgical Interventions</td>
</tr>
<tr>
<td>Inadequate Nutrition</td>
</tr>
<tr>
<td>Immobility</td>
</tr>
<tr>
<td>Altered LOC; Reduced Sensory Perception</td>
</tr>
<tr>
<td>Moisture, Shear &amp; Friction</td>
</tr>
<tr>
<td>Obesity</td>
</tr>
</tbody>
</table>


### Assessment of Pt Risk

**Evaluate Medications**
- NSAIDs, Antimicrobials, ACE Inhibitors, Beta-Blockers, Digoxin, Lactulose, Mannitol

**Disease Processes**
- Gastrointestinal
- Hepatic
- Sepsis
- Spinal Cord Injury

**Enteral Feeding**
- Greatest Risk First Two Weeks
- Involve Nutritionist
- Anticipate Diarrhea
- Should resolve
Evidence-Based (Early) Interventions

Anticipate Moisture

What Constitutes Good Skin Care & Skin Conditioning?
- Soap & Water harms skin (Faria et al. 1996)
- No-Rinse pH balance cleaning solution
- Perineal Wipes: pH balanced contain skin protectants
- Protective Barriers: Dimethicone, Zinc, Petrolatum, Lanolin

Evidence-Based (Early) Interventions

- Moisture Wicking Pads
  - No Briefs/Diapers
- Limit Linens
  - More Than 4 Layers of Linens
- Pressure Redistribution
  - Surface
  - Pressure Redistribution
  - Low Air Loss

What is The Evidence For Rectal Tubes?

- "Rectal Tubes"
  - Mushroom & Balloon–Tipped Catheters
  - No evidence to support use
  - Not intended for fecal containment
  - Increased risk of liability
  - Sphincter & mucosal injury
- Rectal Trumpet (Grogan, 2002)
  - Nasopharyngeal Trumpet
**Evidence-Based Fecal Incontinence Management**

- Fecal Containment Devices
  - FDA Approved
  - Research on Effectiveness
  - Requires Two Healthcare Providers to Apply
  - Perineal Skin Must be Intact
    - Clean DRY Skin
    - Hold 1 Minute for Adhesive to Bind to Skin
  - Careful Removal of Device

- Palmieri, B et al. (2005) The anal bag: modern approach to fecal incontinence management OWM, S1-44

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**Evidence Supporting Bowel Management Systems (BMS)**

- Patient Selection
  - Indications
  - Contraindications
- Placement: 29 Days
- Practice Realities
- Cost Effectiveness
- Patient Outcomes

- Benoit, et al., 2007; Echols, et al., 2007; Keshavea, et al., 2007

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**What is the evidence for managing fecal incontinence?**

- Prevention of Pressure Ulcers is a Nursing Sensitive Indicator
- Moisture (Incontinence) + Immobility = 1 Risk Pressure Ulcers

**EBP Nursing Interventions:**

- Assess patient risk: **identify cause**
- Anticipate complications: **protect skin early**
- Intervene Early in the Management of Incontinence: **toileting schedule pads, pouch, FMS**
The Use of Trendelenburg Position

Trendelenberg

• Volume shifts from lower extremities and abdomen to upper thorax
• Improve perfusion to brain & heart
• What Actually Happens?
Physiologic Changes

CV: impaired vasomotor control in elderly; upper torso hypertension; increased venous & CSF pressure

Resp: 15% VC decrease at 20 degree; increased WOB; hypoxemia, hypercarbia

GI: Organs shift upward; gastric juice, saliva, mucous collect in nasopharynx.

"Practical Details"

Hewer, Canad. M.A.J. 1956

T-Burg for Hypotension: Cardiovascular Effects: The ‘60’s

> T-Burg & hemorrhagic shock 60 rats
> "mortality, duration of survival & responsiveness were least favorable in head-down position"

1967 Taylor & Weil, SGO
> 6 hypotensive shock & 5 normotensive controls
> Decreased SBP, DBP, MAP
> Compromised lung volumes, increased risk cerebral edema, detached retina
Cardiovascular Effects

- 1.8% displacement of blood volume “unlikely to have important clinical effect” 1985, Divvins
- No increase in preload or CO, but SVR increases in hypotensive pts 1979, Sibbald
- Minor HD improvement with RV dilation, decreased RVEF 1989, Reich
- No significant change in CI, DaO2, VO2, OER 1994, Sing

T-burg Cardiovascular Effects


- n= 12 post CABG, TEE, PAC, & Dye dilution
- Increased CVP & PAOP, no change in MAP or CI
- CI and MAP significantly decreased BELOW baseline when pt returned to supine

Trendelenberg

- Pulmonary Gas Exchange
- Ventilatory Mechanics
**T-Burg Pulmonary Effects**

- Increased Qs/Qt $\rightarrow$ impaired oxygenation
- Lung & chest wall mechanical impedance increase
  $\rightarrow$ Decreased compliance & increase resistance
- Decreased tidal volume
- As body weight increases $\rightarrow$ sig. increase in lung resistance

"Especially clinically relevant in patients predisposed with lung disease and in obese patients"


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**T-Burg Position: Effect on ICP**

- Increased CO, LVEDV, IJ diameter
- Calculated IJ flow unchanged
- Conclusion: *no adverse effect on cerebral circulation*

- IJ vein diameter & flow increased
- Conclusion: 25 degree achieved optimum IJ distension but may be detrimental, eg increased ICP

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**Research Limitations**

- Many Studies of Animals
- Many Studies of Normal Volunteers
- Varying Degrees of Head Down Position
- Small Sample Sizes
- Variety of Endpoints
What We Do Know Based on the Evidence?

- Increased venous return has little or no positive effect on BP, CO & O2 Delivery.
- The improvement, if any, is temporary.
- Lung mechanics & PGE are impaired.
- Cerebral blood flow & ICP may increase.
- Deleterious effects are likely more exaggerated in obese patients.

No Demonstrated Benefit Based on the Evidence

- No demonstrated CV benefit
- Unknown effect in ICP
- Impaired PGE
- Potential for gastric aspiration

Practice Implications

1976 Frey, Charles
Initial Management of the Trauma Patient
Philadelphia: Lea & Febiger, pg 83.

Fig. 8.3. The shock position speeds venous return from the legs, thereby improving cardiac output during the resuscitative period of shock therapy. The Trendelenburg position accomplishes the same thing but, because of increased respiration and central perfusion, should not be used.

Passive Leg Raising Vs Trendelenburg

- No demonstrated CV benefit
- Unknown effect in ICP
- Impaired PGE
- Potential for gastric aspiration
Passive Leg Raising Vs Trendelenburg

- HOB horizontal to trunk
- ~ 150 – 300 ml volume shift
- Increase Ao volume & SV
- Baroreceptors may not be activated
- Correlates with response to fluid loading
- Predicted need for fluid
- Avoids risk of gastric aspiration

Boulain 2002, Monnet 2006

Use of The Trendelenburg Position as The Resuscitation Position: To T or Not To T?

CONCLUSION: The general "slant" of the available data seems to indicate that the T-burg position is probably not a good position for resuscitation of patients who are hypotensive. Further clinical studies are needed to determine the optimal position for resuscitation.

N. Bridges, 2005

EBP Implementation
EPB Implementation

- Ask your burning question
- Find the evidence
- Critically evaluate the evidence
- Explore how to move best evidence into practice to improve patient outcomes
  - Evaluate knowledge, systems, products, processes
- Measure success

EBP Implementation

“A long habit of not thinking a thing wrong, gives it a superficial appearance of being right.”
Thomas Paine, *Common Sense*, 1776
What is YOUR burning question?

Thank You!
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