

# **Moisture Matters: Controlling Moisture Related to Incontinence Reduces Pressure Ulcer Incidence**

Jeannine Thompson, BSN, RN, CWOCN, DAPWCA

Dawn Angel, BSN, RN, CWS, DAPWCA

Rebecca Scribner, BSN, RN, CWON

Matthew Newton, BSN, RN, CCRN

Maria Thomas, MSN, RN



# Moisture Matters:

## Controlling Moisture Related to Incontinence Reduces Pressure Ulcer Incidence

Jeannine Thompson BSN, RN, CWCN, DAPWCA • Dawn Angel BSN, RN, CWS, DAPWCA • Rebecca Scribner BSN, RN, CWON • Matthew Newton BSN, RN, CCRN • Maria Thomas MSN, RN

VA North Texas Health Care System and Woundkair Concepts, Inc., Dallas Texas

### INTRODUCTION

The Performance Improvement (PI) Project was designed to find an air-permeable, highly absorbent incontinence pad that would address identified patient care issues including excessive linen and pad usage under a patient, Hospital-Acquired Pressure Ulcers (HAPU) related to moisture and the high cost of pressure ulcer treatment in a large tertiary hospital.

#### Primary objective:

- Reduce the incidence of Hospital-Acquired Pressure Ulcers related to moisture from urine or stool.

#### Secondary objectives:

- Reduce the number of incontinence pads and linens used under patients thereby augmenting the effectiveness of rental alternating air mattresses.
- Reduce laundry cost.
- Increase patient comfort.
- Increase staff satisfaction.
- Increase overall cost savings related to hospital-acquired pressure ulcer treatment.

### BACKGROUND

#### National Quality Forum

According to the National Quality Forum (NQF), "never events" are errors in medical care that are clearly identifiable and preventable and serious in their consequences for patients, and that indicate a real problem in safety and credibility of a health care facility.

NQF and Center for Medicare and Medicaid (CMS) list pressure ulcers as "never events".

#### Joint Commission 2009

**Patient Safety Goal # 14:** Prevent Health Care Associated Pressure Ulcers by assessing and periodically reassessing each patient's risk for developing a pressure ulcer using Braden Pressure Ulcer Risk Assessment Tool. Then take action to address any identified risk (such as moisture).

#### Literature Review

- A patient is five times more likely to have skin breakdown if exposed to excessive moisture. (Allman, 1989)
- Pressure Ulcer Risk Assessment Tools such as Braden and Norton have been studied extensively. Moisture or Incontinence was identified as a risk on both scales. (U.S. Department of Health and Human Services, 1992)
- Absorbent pads have a substantial effect on pressure redistribution properties of mattresses, raising peak pressures by 20-25%. (Fader, Bain & Cottenden, 2004)
- Low air loss mattress manufactures clinical guidelines recommend using one flat sheet, a stretchy sheet or no sheet. For incontinent patients, use paperbacked incontinent pads. Do NOT use plastic backed or reusable incontinent pads. (Hill-Rom, KCI, Sizewise)
- Smoothed pads had significantly lower peak pressure than unsmoothed pads. (Fader, Bain & Cottenden, 2004)
- It is estimated the 2.5 million patients are treated each year in U.S. acute care facilities. (Lyder, 2002)
- Incidence rates range from 4-38% in acute care. (Lyder, 2002)
- In FY 2007, there were 257,412 reported cases of Medicare patients with Hospital-Acquired Pressure Ulcers as a secondary diagnosis. (CMS 2008)
- The additional average charge for the hospital stay per case was \$43,180. (CMS, 2007)
- It is estimated that 60,000 die each year as a result of pressure ulcer complications. (CMS, 2007)

#### Hospital Patient Safety Committee Staff Identified Concerns:

Inadequate absorption from current incontinence pad. Excessive incontinence pad and linen usage. Hospital-Acquired Pressure Ulcers related to moisture.

#### Hospital Statistics

544 Bed Hospital.  
2008 Cost of treating 358 patients for pressure ulcers \$15,458,440.  
2008 Cost of treating 172 Hospital-Acquired Pressure Ulcers \$7,426,960.  
2008 Laundry cost \$3,009,156.  
2008 Cost of Specialty Bed/Mattress Rental \$626,136.

#### Current Hospital Nursing Practice

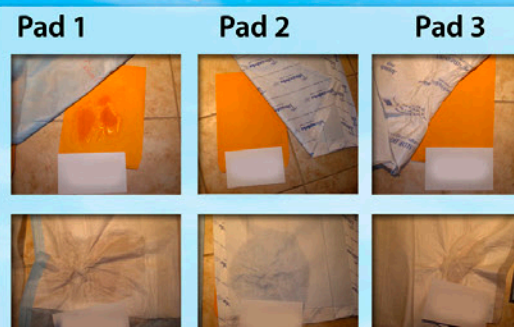
6 pads and 3 sheets are layered on each patient bed every shift. One layer (including one sheet and 2 pads) is removed with each incontinent episode.

### Hospital-Acquired Pressure Ulcer



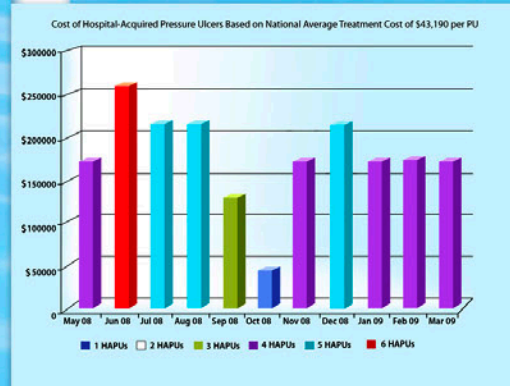
### PLAN

### Study Pads

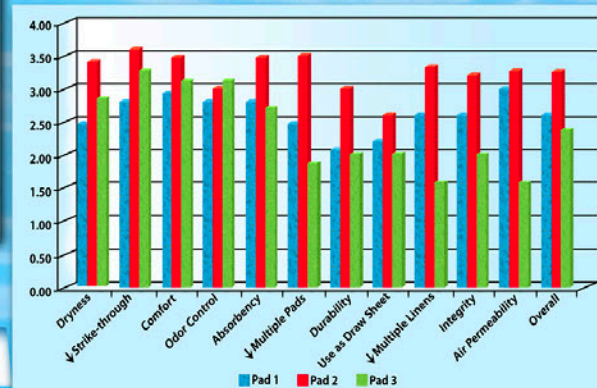


### ACT

### Cost of Hospital-Acquired Pressure Ulcers



### Pad Evaluation: Features and Benefits



### METHODS

#### Performance Improvement Model PDSA

**PLAN** For three months, the nursing staff in CCU and MICU will use only one regular sheet, one folded draw sheet and one incontinence pad. Using a different incontinence pad each month, a features and benefits questionnaire will be completed. Data will be collected on Hospital-Acquired Pressure Ulcers 3 months prior to the PI Project, during each month of the trial and 3 months post PI Project.

**DO** In-servicing of the nursing and housekeeping staff about the PI project will be done before the implementation of each pad. Plan will start September 2008.

**STUDY** The incidence of Hospital-Acquired Pressure Ulcers (HAPU) will be measured and compared to the incidence of HAPU before and after the PI project.

**ACT** Nursing practice will be changed related to appropriate pad and linen usage based on the clinical outcomes, product performance and nursing satisfaction determined by the product features and benefits questionnaire.

#### SETTING: Medical Intensive Care Unit (MICU) and Coronary Care Unit (CCU)

##### Incontinence Pad Criteria:

- Air-permeable
- Leak proof
- Highly absorbent pad
- Able to be used on all mattresses

#### DEFINITIONS:

**Air-permeable** pads are made with a film containing smaller pores allowing for sufficient air circulation on a low air-loss mattress and an absorbent airlaid backsheet to prevent leakage.

**Breathable** pads are designed with large, open holes to allow airflow however; their absorbent layer does not always prevent fluid leakage.

#### RESULTS:

##### Pad 1 Manufacturer

Provided product in-servicing  
Provided 4 weeks' worth of product  
14 Product Evaluations were completed by the staff  
Average satisfaction score on features and benefits = 2.61  
HAPUs = 3

##### Pad 2 Manufacturer

Provided product in-servicing  
Provided 4 weeks' worth of product  
14 Product Evaluations were completed by the staff  
Average satisfaction score on features and benefits = 3.26  
HAPUs = 1

##### Pad 3 Manufacturer

Did not provide in-servicing  
Provided 2 weeks' worth of the product  
7 Product Evaluations were completed by the staff (data doubled)  
Average satisfaction score on features and benefits = 2.37  
HAPUs = 4 (data doubled)

### CONCLUSIONS

- Determination of the incontinence pad with the highest desirable features and benefits rating resulted in a reduction of Hospital-Acquired Pressure Ulcers.
- The baseline incidence of Hospital-Acquired Pressure Ulcers (HAPUs) in the CCU/MICU decreased from five per month before the Performance Improvement (PI) project, down to one per month during the use of Pad 2. The incidence of HAPUs increased to 4 per month after the PI project period was completed.
- Pad 2, a super absorbent air-permeable incontinence pad, surpassed all trialed incontinence pads in desirable features and benefits and in the reduction of HAPUs.
- By using the Braden subscale 'Moisture', a patient's risk for pressure ulcers related to moisture can be determined. By controlling the amount of moisture that the skin is exposed to while the patient is in the hospital, the development of a PU and the cost of treatment can be decreased.
  - An 80% cost savings can be realized by implementing the change in both nursing practice and the use of incontinence Pad 2, as demonstrated during the PI project.
- This PI project demonstrates the potential cost savings of \$5,941,568 per year in pressure ulcer treatment costs for this hospital.
- The cost saving was calculated using the average National Pressure Ulcer treatment cost of \$43,180 and the 172 HAPU data for calendar 2008.
- Implementation and success of the new incontinence pad usage will be dependent on staff education, follow-through and accountability.

#### References

Allman, R.M. (1989). Pressure ulcers among the elderly. *The New England Journal of Medicine* 320(13), 850-853.  
Centers for Medicare & Medicaid Services (2007). Medicare Program; Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2008 Rates; Final Rule. Federal Register. 72(162):47130-48175.  
Fader, M., Bain, D., & Cottenden, A. (2004). Effects of absorbent incontinence pads on pressure management mattresses. *Journal of Advanced Nursing* 48(6), 569-574.  
Lyder, C.H. (2002). Pressure ulcer prevention and management. *Annual Review of Nursing Research*, 2035-61.  
National Pressure Ulcer Advisory Panel. (1989). Pressure ulcers prevalence, cost and risk assessment: consensus development conference statement. *Decubitus*, 2(2), 24-28.  
U.S. Department of Health and Human Services. (1992). *Pressure ulcers in adults: Prediction and Prevention* (AHCPR Pub. No. 92-0047). Rockville, MD: Author.

Pad One: Cairpad, Attends Healthcare  
Pad Two: Ultrasorb, Medline Industries  
Pad Three: Supersorb, Attends Healthcare