

Multidisciplinary Evidence-Based Quality Improvement Initiative in an Acute-Care Hospital Results in a 54% Reduction in Pressure Ulcer Incidence and a 77% Reduction in Bed Rental Costs

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Background & Rationale

The National Pressure Ulcer Advisory Panel and the European Pressure Ulcer Advisory Panel (NPUAP/EPUAP) define a pressure ulcer (PU) as “a 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.”¹ Contributing factors to PU development include impaired sensory perception, moisture, inactivity, immobility, poor nutrition, and friction shear.² In 2009, the overall national hospital-acquired pressure ulcer (HAPU) prevalence across all care settings was 5.0%.³ Development of a PU increases a patient’s risk of infection, sepsis, and mortality.⁴

As of October 1, 2008, the Center for Medicare and Medicaid Services (CMS) stated that hospitals would no longer receive payment for select hospital-acquired conditions not present on admission.⁵ Stage III and stage IV HAPUs are among the hospital-acquired conditions no longer covered by CMS.⁵ Health care facilities incur a significant financial burden from the indirect costs associated with HAPUs.⁶ The NPUAP/EPUAP developed evidence-based guidelines for the prevention of PU development.¹ These include frequent repositioning of at-risk patients to redistribute pressure exerted on vulnerable areas of the body.¹ Porter Valparaiso Hospital in Valparaiso, Indiana, invested in powered pressure redistribution, low air-loss, turn assist support surfaces* in 2010, and implemented a quality improvement (QI) initiative to reduce HAPUs and excess costs associated with bed rentals.

Methods

Clinical Setting

Porter Valparaiso Hospital is a 300-bed, acute-care hospital accredited by The Joint Commission and recipient of The Joint Commission’s Gold Seal of Approval. The QI project took place primarily on 3 units: surgical (38 beds), medical (27 beds), and the intensive care unit (ICU; 17 beds).

Baseline/Intervention Periods

The baseline period was January 1, 2009 to December 31, 2009, which was compared with the QI intervention period of January 1, 2010 to December 31, 2010.

Challenges

Preventing HAPUs: Porter Valparaiso Hospital had an existing comprehensive PU Prevention Program in place, which included skin representatives within every unit who identified specific PU risk-related issues, provided ongoing education to nursing staff on proper skin and wound care, and established interventions to individualize patient care. Prevention of HAPUs is an ongoing challenge, and the nursing team recognized the need to update their support surfaces.

Bed rental volumes/costs: The frequent use of specialized support surfaces for PU prevention within the Medical and Surgical Units and the ICU led to high rental volumes and high cost expenditures.

Nursing team challenges: After a rental bed was ordered by the Wound Ostomy Care Nurse (WOCN), the patient would frequently have to wait 24 to 48 hours for delivery of the bed and had suboptimal pressure redistribution during that period. The nursing team also struggled with nonstandardization of beds and remembering appropriate use of different types of beds.

Continuous Quality Improvement

The hospital purchased 93 powered pressure redistribution, low air-loss, turn assist support surfaces* in March and April 2010.

Metrics

Monthly Stryker PU Prevalence Surveys were used to determine which PUs were present on admission and to further classify PUs as stages I to IV, deep tissue injury (DTI), or nonstageable (Figure 1). Prevalence surveys were conducted by trained members of the Skin Care Committee (a combination of 18 RNs and WOCNs). Members of the Skin Care Committee underwent annual competency evaluations on PU prevention as well as competence evaluations regarding appropriate wound, ostomy, and continence care.

Invoices for bed rentals during fiscal year (FY) 2009 and FY 2010 were collected and compared to calculate potential cost savings.

* Stryker PositionPRO® Patient Repositioning Support Surface, Stryker Corporation, Kalamazoo, MI

FIGURE 2. Hospital policy on PU Prevention

- 1 The Skin Risk Assessment (Braden/Braden Q Scale) will be completed by nurse upon admission on every patient and scored to determine baseline. The assessment will also be completed every 8 hours, and when there is a significant change in the patient's condition. Outpatient and observation patients are excluded.
- 2 The nurse will assess sensory perception, moisture, activity, mobility, nutrition and friction/ shear. They will select the appropriate response and record the number assigned to that response. The total score will then be calculated.
- 3 The Braden Scale utilizes lower scores to indicate higher risk for PU formation. The maximum possible score is 23.
- 4 A Wound Ostomy Continence Nurse [WOCN] consultation will be initiated for scores of 13 or less in the Adult Braden and scores of 21 or less in the Braden Q Scale.
- 5 The patient's total score will fall within one of the following levels of risk.
 - a. Braden Scale
 - i. No Risk 19 or above
 - ii. Low Risk 15 -18
 - iii. Moderate Risk 13-14
 - iv. High Risk 12 or less
 - b. Braden Q Scale (Neonate and Pediatrics ages <5 years and >5 use Adult Braden)
 - i. Low Risk 22 or above
 - ii. Moderate Risk 15-21
 - iii. High Risk 14 or less
- 6 The PU Prevention Protocol will be initiated for patients who are assessed to be at Moderate or High Risk. The nurse may always initiate the PU Prevention Protocol based upon clinical nursing judgment.
- 7 PU Prevention sign will be placed outside the patient's door. Also, a card will be placed in the patient's Kardex as a reminder that the patient has been assessed to be at Moderate or High Risk, or is a patient who does not fit the above profiles but has additional complicating factors

References

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Phases of QI Initiative

There were 3 distinct phases of the QI initiative:

1 Updating policies:

The PU Prevention Protocol was updated in October 2008, and the Skin/Wound Care Protocol was updated in January 2010 according to evidence-based guidelines and best practices (Figure 2). PU prevention intervention categories were designed according to identified needs of Braden Scale² indicators regarding sensory perception, activity, mobility, and moisture (skin protection and incontinence).

2 Ongoing education:

Porter Valparaiso Hospital participated in the 2008–2009 Indiana PU Quality Improvement Initiative (IPUQII) under the direction of the Indiana State Department of Health in an effort to improve PU prevention and awareness within each facility (Figure 1). The IPUQII is a coalition of advocacy groups and health care organizations working to develop a program of education, training, and technical assistance in reducing the incidence of pressure ulcers in long-term care facilities, hospitals, hospices, and home care providers throughout the state. This 18-month initiative was designed to assist all health care arenas to implement improved evidence-based practices for pressure ulcer prevention and increase care coordination and continuity among all health care settings. This was a voluntary program at no additional cost to participating organizations, who would commit at least 3 staff to attend three 1-day implementation meetings in 2008, with regional meetings in 2009. All health care settings were expected to conduct self-assessments; gather baseline and ongoing data to measure impact of changes throughout the initiative; implement 4 key elements of the Breakthrough Series (BTS) model:⁷ process, improvement, testing cycles, and action; and involve all partners in ensuring education and care coordination.

- **September/October 2008:** Pre/post knowledge test was administered to all ICU nurses to determine the level of general knowledge on PUs.
- **October/November 2008:** Pre/post knowledge test was administered to all ICU nurses with regard to the essentials of PU prevention, risk assessment, rapid improvement events, and skin inspection.
- **April 2009:** A learning session was held to discuss lessons learned, consistency, and care coordination. In addition, a Stryker account manager provided in depth in-servicing on all new support surfaces for a period of 3 months to ensure that all nurses from all shifts received education on the appropriate use of the new beds.
- **July 2009:** Pre/post knowledge test was administered to all nurses from all departments to determine the knowledge regarding education provided by skin representatives on skin risk assessment, individualized interventions, and evidence-based practices for skin and wound care.

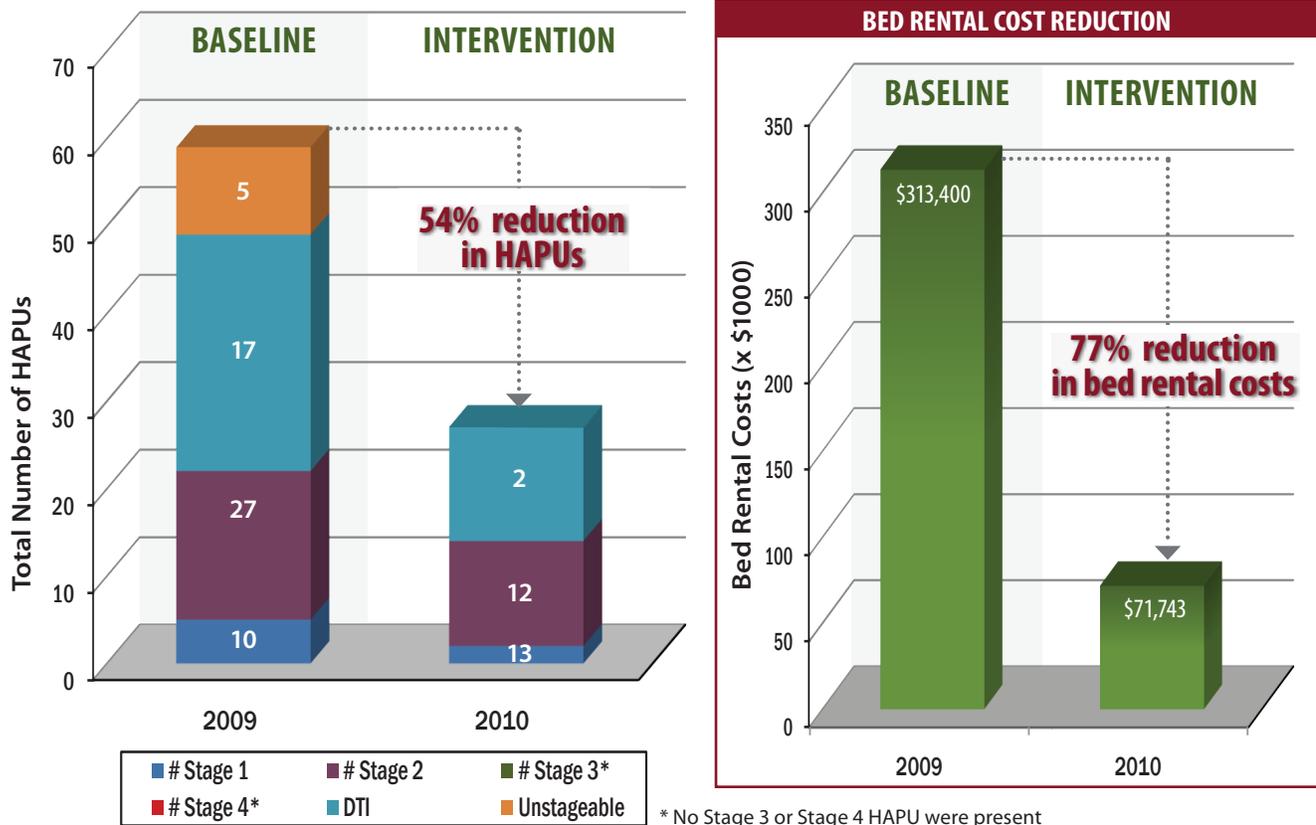
3 Updating support surfaces:

Porter Valparaiso Hospital purchased 93 powered pressure redistribution, low air-loss, turn assist support surfaces in March and April 2010. The pressure redistribution support surfaces provide lateral repositioning and low air-loss – important capabilities in the prevention of PU development – and were placed on the units with the highest-risk patients and with the highest rates of HAPU development.

Results

The QI initiative for PU prevention resulted in a 54% reduction in PU incidence (Figure 1) and a 77% reduction in bed rental costs over a 1-year period.

FIGURE 1. Successful HAPU QI Initiative



• **2009 (baseline)**

- o April: IPUQI conducted its second learning session.

• **2010**

- o January: Porter Valparaiso Hospital's skin/wound care protocol was updated.
- o March/April: Porter Valparaiso Hospital purchased 93 powered pressure redistribution, low air-loss, turn assist support surfaces.†

† Stryker PositionPRO® Patient Repositioning Support Surface, Stryker Corporation, Kalamazoo, MI

Clinical Implications

- A multidisciplinary approach to PU prevention must be adopted by all clinical staff to ensure patients receive best practices for the prevention of HAPU
- Facility policies should be updated as evidence-based guidance changes
- Ongoing staff education ensures that staff knowledge on best practices remains current
- Participation in state or national PU prevention initiatives allows health care to be coordinated consistently across facilities
- Quarterly PU prevalence and incidence surveys promote staff adherence to PU prevention efforts and detect issues as they arise, for immediate resolution
- Updating support surfaces improves patient care by reducing the development of HAPUs and bed rental costs