Service Delivery Innovation Profile

Proactive Assessment and Management of At-Risk Patients Reduces Pressure Ulcers and Saves $11 Million Annually in Two-Hospital System

Innovation | Comments (0)

Print | E-mail Link

Jump to: What They Did | Did It Work? | How They Did It | Adoption Considerations

Snapshot

Summary

The multifaceted pressure ulcer reduction program at the NCH Healthcare System includes a risk assessment of most patients, consultations with a specially trained nurse for those identified as being high risk, and implementation of specific measures to provide pressure relief and therefore reduce the risk of developing a pressure ulcer or minimize the impact of one that has already developed. A 5-year trend analysis found that the program significantly reduced the number of pressure ulcers, while a separate analysis estimated that the program saves the system more than $11 million annually.

See the Description section for information about pressure ulcer prevention strategies for incontinent patients and the Results section for updated data regarding the hospital-acquired pressure ulcer incidence rate (updated January 2012).

Related QualityTool:
Braden Scale for Predicting Pressure Sore Risk

Evidence Rating (What is this?)

Moderate: The evidence consists of a trend analysis of the prevalence of pressure ulcers (both overall ulcers and ulcers of the heel) conducted every 6 months over a 5-year period, with the initial measurement occurring immediately before program implementation.

Developing Organizations

NCH Healthcare System
Naples, FL

Date First Implemented

2002
January

What They Did

Back to Top

Problem Addressed

Pressure ulcers are a common, serious, costly, and preventable problem for hospitals. In fact, a new Centers for Medicare & Medicaid Services (CMS) ruling classifies stage 3 or 4 pressure ulcers that occur after hospital admission as a "never event" that no longer will be reimbursed under the Medicare program.[1] Nonetheless, the prevalence of pressure ulcers remains high in many institutions.

- **A common problem:** At the average hospital, more than 15 percent of patients have a pressure ulcer on a given day (this figure is commonly known as the "prevalence" of pressure ulcers). The incidence of pressure ulcers (the percentage of patients who develop one during their hospital stay) ranges between 6 and 10 percent.[2] In 2002, NCH Healthcare System faced a significant problem with pressure ulcers, with a hospital-acquired prevalence of 12.8 percent (compared with a national rate at that time of 8.5 percent); the majority of pressure ulcers among system patients were located on the heels.[3]
- **Significant human costs:** Without proper treatment, pressure ulcers can lead to severe complications, including blood and bone infections, infectious arthritis, holes below the wound that burrow into bone or deeper tissues, scar carcinoma (a form of cancer that develops in scar tissue), and death. In fact, nearly 60,000 hospitalized patients in the United States die each year from complications related to hospital-acquired pressure ulcers.[2]
- **Significant financial costs:** The cost of treating a pressure ulcer ranges from $2,000 to $70,000 per wound, with total costs of $400,000 to $700,000 annually for the average hospital. Furthermore, as noted, CMS considers hospital-acquired stage 3 and 4 pressure ulcers to be "never events," and therefore will not provide reimbursement for treatment.[1]
- **Failure to adopt preventive and treatment measures:** Most hospital pressure ulcers can be prevented with proper clinical care, but staff often fail to follow recommended procedures.[2] When pressure ulcers do occur, they can generally be effectively treated, but nurses may not consider doing so to be a high priority because they are not immediately life threatening and other issues often take precedence.[4]

Description of the Innovative Activity

The multifaceted pressure ulcer reduction program at NCH Healthcare System includes a risk assessment of all adult patients (except obstetric and mental health patients), consultations with a specially trained nurse for those identified as being high risk, and implementation of specific measures to provide pressure relief and therefore reduce the risk of developing a pressure ulcer or minimize the impact of one that has already developed. Key elements of the program include the following:

- **Risk assessment for most admitted patients:** As part of a review performed on all newly admitted patients (except obstetric and mental health patients), the admitting nurse assesses the patient's skin integrity and answers a series of questions included in the electronic medical record. The computer scores the answers according to the Braden Scale for Predicting Pressure Sore Risk[5,6]; scores are calculated for all six Braden subscales, including sensory perception, moisture, activity, mobility, nutrition, and friction/shear. Risk assessments are automatically prompted as part of the daily nursing assessment.
- **Automatic consult with specially trained nurse:** The computer automatically generates a consult to a wound ostomy continence nurse (who has expertise in preventing and treating pressure ulcers) if the patient's Braden score is less than 13 (an indication of high or very high risk). A consult is also generated for patients placed on a ventilator and patients receiving hemodialysis, which are also considered high-risk groups.
- **Pressure relief measures:** The nurse reviews all referred cases electronically and may visit the patient, if necessary, depending on the complexity of the case. The nurse orders appropriate pressure relief methods designed to reduce the risk that a pressure ulcer will develop and/or minimize the impact of one that already has developed. Specific measures that may be used are outlined below:
  - **Physical movement:** Unit nurses/aides turn the patient every 2 hours and keep the patient's heels elevated.
  - **Heel pressure-relieving boots:** Specially-made foam boots are placed on the patient to protect his or her heels. (The system uses one-size-fits-all boots, although bariatric and pediatric options are available.) Boot orders are automatically generated for patients placed on a ventilator or receiving hemodialysis.
  - **Air mattress overlay:** All critical care beds are equipped with pressure-relieving, continuous lateral rotation therapy air mattresses, and all unit beds have foam mattresses. However, for more complex cases, the nurse may order an air mattress overlay for the bed to provide additional pressure relief.
- **Ongoing consults:** Physicians and unit nurses can request a consult with the wound ostomy continence nurse regarding any developing concerns with regard to a patient's risk for or development of pressure ulcers.
- **Preventive measures for incontinent patients:** Information provided in January 2012 indicates that, because incontinence is a major risk factor for pressure ulcer development, the system has adopted several new measures for incontinent patients. Per updated Institute for Healthcare Improvement and Wound, Ostomy and Continence Nursing Society recommendations, nurses now use a premoistened disposable cloth with dimethicone 3 percent for cleaning incontinent patients and a long-term fecal containment device for patients with intractable diarrhea; the system has also upgraded its incontinence briefs.

References/Related Articles

McInerney JA. Reducing hospital-acquired pressure ulcer prevalence through a focused prevention program. Adv Skin Wound Care. 2008;21(2):75-8. [PubMed]

Contact the Innovator

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Did It Work?

Back to Top

Results

A trend analysis of the prevalence of hospital-acquired pressure ulcers, measured every 6 months between January 2002 (immediately before program implementation) and January 2007, found that the program significantly reduced the number of pressure ulcers (both overall and ulcers located on the heel). A separate analysis estimates that the program saves the system more than $11 million annually. Results are as follows:

- **Significantly fewer pressure ulcers:** The prevalence of pressure ulcers at NCH Healthcare System fell from 12.8 percent in January 2002 to 1.9 percent in January 2007; information provided in January 2010 indicated that the pressure ulcer rate averaged 1.8 percent between July 2006 and July 2009, and that in December 2009 the rate was 1.7 percent, including pediatric and mental health patients (who had not previously been included). From January 2002 to January 2007, the prevalence of pressure ulcers on the heel fell from 6.7 percent to 1.1 percent. Information provided in January 2012 indicates that they health system averaged a 1.9-percent hospital-acquired pressure ulcer prevalence rate in 2010 and 2011.
- **Millions in cost savings:** A conservative analysis (assuming savings of $3,000 per case) found that NCH Healthcare System saves approximately $11.5 million annually as a result of the program.

Evidence Rating (What is this?)

Moderate: The evidence consists of a trend analysis of the prevalence of pressure ulcers (both overall ulcers and ulcers of the heel) conducted every 6 months over a 5-year period, with the initial measurement occurring immediately before program implementation.

How They Did It

Back to Top

Context of the Innovation

The NCH Healthcare System is a 710-bed, nonprofit, two-hospital health system in southwest Florida. The system handles approximately 32,500 inpatient admissions annually, with approximately 5.5 percent of these patients being considered at high or very high risk for pressure ulcers, (i.e., Braden score less than 13). The system made some preliminary efforts to reduce pressure ulcers in the late 1990s by implementing the Braden Scale for Pressure Sore Risk[5,6] and hiring one wound ostomy continence nurse. However, these efforts failed to produce adequate results on their own. In 2002, the system created this more formal program in response to two specific events: completion of an analysis indicating that the system's pressure ulcer rate was approximately 50 percent higher than the national average and a sentinel event on the critical care unit that led to a serious injury to a patient's heels.

Planning and Development Process

Key elements of the planning and development process included the following:

- **Hiring additional nurses:** Administrators hired a second wound ostomy continence nurse in February 2002, and, by 2012, a total of three full-time wound ostomy continence nurses were part of the team (information provided in January 2012).
- **Selecting a boot:** The health system created a task force that included a critical care physician, podiatrist, risk manager, and two wound ostomy continence nurses to research available heel pressure-relieving devices. The task force obtained samples and personally tried the devices, ultimately selecting the Heelift Suspension Boot® (made by DM Systems in Evanston, IL).
- **Developing protocols:** A larger team (consisting of the original task force and the chief medical officer, nursing officers, an information technology staff person, and managers of central distribution, education, operating room, and critical care) outlined protocols for which patients would receive the boots. The group decided to provide boots to all patients with end-stage renal disease who were on hemodialysis and to all patients on ventilators, given their high risk of developing pressure ulcers and the ease with which automatic boot orders could be linked with these conditions.
- **Upgrading beds:** In the spring of 2004, the health system purchased beds equipped with pressure-relieving, continuous lateral rotation therapy air mattresses for critical care units and bought pressure-reducing foam mattresses for the beds on other units.
- **Promoting prevention:** Posters, flyers, and articles in the nursing newsletter promoted pressure ulcer prevention and boot use.
- **New reporting activity:** Information provided in February 2011 indicates that the organization now evaluates pressure ulcer prevalence quarterly and reports the resulting data to the National Database of Nursing Quality Indicators.

Resources Used and Skills Needed

- **Staffing:** Program staffing includes 2.6 full-time equivalent wound ostomy consult nurses. This level of staffing is lower than would typically be needed by a system of this size, because nurses can evaluate most at-risk patients electronically rather than visiting them.
- **Costs:** Total program costs are not available. Major expense categories include salaries and benefits for the wound ostomy continence nurses and the cost of the boots—approximately $24 each. Approximately 4,600 boots are ordered per year. The hospital absorbs the cost of the boots for at least the 75 percent of the patients who are Medicare/Medicaid or self-pay. The private insurance of the other 25 percent patients may elect to cover this cost.

Funding Sources

NCH Healthcare System

Tools and Other Resources

The Braden Scale for Pressure Sore Risk is available at http://www.bradenscale.com/images/bradenscale.pdf (If you don't have the software to open this PDF, download free Adobe Acrobat Reader® software.).

Program developers used the Agency for Health Care Practice and Research (AHCPR) Pressure Ulcer Prevention guidelines in developing program elements related to risk assessment, positioning, heel protection, and other elements. The guideline can be found at: "Pressure Ulcers in Adults: Prediction and Prevention Clinical Practice Guideline Number 3," AHCPR Pub. No. 92-0047, May 1992.

NOTE FROM AHRQ: We strongly encourage innovators and adopters to use more recent pressure ulcer evidence-based guidelines available through its National Guideline Clearinghouse™, NGC: http://www.guideline.gov.

Program developers measured prevalence as guided by "Prevalence and Incidence: A Toolkit for Clinicians," published by the Wound, Ostomy, and Continence Nurses Society. More information about this toolkit is available by calling 888-224-WOCN (9626).

The Wound, Ostomy and Continence Nursing Society Guideline for Prevention and Management of Pressure Ulcers is available at http://www.wocn.org/?page=PressureUlcerGuide.

Adoption Considerations

Back to Top

Getting Started with This Innovation

- **Use automatic ordering whenever possible:** For example, NCH Healthcare System's electronic medical record automatically generates wound ostomy continence nurse consults and boot orders, meaning that these orders do not have to be separately initiated by unit nurses. In paper-based systems, orders for the consults and boots can be attached to those for ventilators and hemodialysis so that they are automatically generated.
- **Hire dedicated, expert nurses:** Delegating responsibility for pressure ulcer prevention to dedicated staff with expertise in the area will ensure that appropriate preventive activities occur.
- **Cast a wide net:** Set up screening criteria and protocols that err on the side of including more patients when assessing risk and initiating pressure ulcer prevention interventions. Most of the interventions are low cost, and there is little or no harm in employing them on patients who may only be at moderate risk. For example, the boots are relatively inexpensive and will more than likely pay for themselves even if used on patients who are not necessarily at high risk.

Sustaining This Innovation

- **Publicize results:** Publicizing improvements in pressure ulcer rates will encourage hospital staff to maintain their focus on prevention efforts.

Additional Considerations and Lessons

- The hospital participates in the CMS Hospital Quality Incentive Demonstration (pay-for-performance) project. Pressure ulcers are included as a patient safety indicator in this project.

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[1] U.S. Centers for Medicare & Medicaid Services. CMS Improves Safety for Medicare and Medicaid by Addressing Never Events. August 4, 2008. Available at: http://www.cms.hhs.gov/apps/media/press/factsheet.asp?Counter=3224

[2] Courtney B, Ruppman J, Cooper H. Save our skin: initiative cuts pressure ulcer incidence in half. Nurs Manage. 2006;37(4):36, 38, 40 passim. [PubMed]

[3] McInerney JA. Reducing hospital-acquired pressure ulcer prevalence through a focused prevention program. Adv Skin Wound Care. 2008;21(2):75-8. [PubMed]

[4] Griffin B, Cooper H, Horack C, et al. Best-practice protocols: reducing harm from pressure ulcers. Nurs Manage. 2007;38(9):29-32. [PubMed]

[5] Bergstrom N, Braden B, Kemp M, et al. Predicting pressure ulcer risk: a multistate study of the predictive validity of the Braden Scale. Nurs Res 1998;47(5):261-9. [PubMed]

[6] Prevention Plus. The Braden Scale for Preventing Pressure Sore Risk. Available at: http://www.bradenscale.com/images/bradenscale.pdf

Comment on this Innovation

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Innovation Profile Classification

Disease/Clinical Category:
Decubitus ulcer
Nosocomial infection

Stage of Care:
Acute care
Preventive care

Setting of Care:
General hospital

Patient Care Process:
Assessment
Infection control
Patient safety
Primary prevention
Procedure and policy compliance

IOM Domains of Quality:
Effectiveness
Safety

State:
Florida

Organizational Processes:
Policies and procedures
Process improvement
Staffing
Technology - HIT
Training, knowledge management

Developer:
NCH Healthcare System

Funding Sources:
NCH Healthcare System

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